Beyond Traffic: The Smart City Challenge

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The Smart City Challenge

- Encourage cities to put forward their best and most creative ideas for innovatively addressing the challenges they are facing.

- Demonstrate how advanced data and intelligent transportation systems (ITS) technologies and applications can be used to reduce congestion, keep travelers safe, protect the environment, respond to climate change, connect underserved communities, and support economic vitality.
USDOT Vision Elements

**TECHNOLOGY ELEMENTS**

- **Vision Element #1**
  Urban Automation

- **Vision Element #2**
  Connected Vehicles

- **Vision Element #3**
  Intelligent, Sensor-Based Infrastructure

**INNOVATIVE APPROACHES TO URBAN TRANSPORTATION ELEMENTS**

- **Vision Element #4**
  User-Focused Mobility Services and Choices

- **Vision Element #5**
  Urban Analytics

- **Vision Element #6**
  Urban Delivery and Logistics

- **Vision Element #7**
  Strategic Business Models & Partnering

- **Vision Element #8**
  Smart Grid, Roadway Electrification, & EVs

- **Vision Element #9**
  Connected, Involved Citizens

**SMART CITY ELEMENTS**

- **Vision Element #10**
  Architecture and Standards

- **Vision Element #11**
  Low-Cost, Efficient, Secure, & Resilient ICT

- **Vision Element #12**
  Smart Land Use
The Smart City Challenge
SMARTCOLUMBUS US

4 Districts

10 National Partners

17 Local Partners

$50M Vulcan+ USDOT

$90M Columbus Investment

$140M Total SMARTCOLUMBUS US Investment
Urban Automation: 78 Applicants

- Driver Assisted Snow Plows
- Truck Platooning
- Low Speed Shuttle or Podcar (Campus or…)
- Driver-assisted Autonomous Delivery Trucks
- Automated Vehicle at Port
- Automated Light Rail/Street Car
- Level 3 Light Vehicle
- Level 1 VAA Transit Bus
- Low Speed Level 4 Freight Delivery
- Level 4/5 Transit Bus or BRT
- Level 4 Light Vehicle (Public Roads)
- Level 2/3 Transit Bus or BRT
- Driver Assisted Snow Plows
- Low Speed Shuttle or Podcar (Public Road)
Electric Automated Vehicles (First Mile / Last Mile)
Truck Platooning with Platoon Signal Priority
Connected Vehicles: 78 Applicants

- Border Crossing Applications
- Reduced Speed Warnings
- Work Zone Warnings
- V2V Transit Applications (e.g., warnings for stopped school buses and other...)
- Vehicle Platooning
- Accessibility Applications (e.g., wayfinding apps for people with visual disabilities)
- Connected Jitneys
- Railroad Crossing
- Queue Warning / Speed Harmonization
- Smart Parking System
- Environmental Data Collection
- Biking Applications
- Traveler Information Applications
- SPaT Application (i.e., red light warning and eco-approach applications)
- V2V Safety Applications (e.g., EEBL, FCW, IMA)
- Probe Data Collection (i.e., equipping probe vehicles and taxis to collect traffic...)
- Freight Logistics Optimization and Freight Signal Priority
- Road Weather and Maintenance Solutions (e.g., equipped snow plows /...
- Pedestrian Detection / Intersection Warning Applications
- Emergency Communications and Emergency Vehicle Preemption
- Adaptive Traffic Signal Control
- Transit Signal Priority (TSP)
- Transit Applications (e.g., DSRC-equipped vehicles, AVL, Integrated Payment,...
- Queue Warning / Speed Harmonization
- Smart Parking System
- Environmental Data Collection
- Biking Applications
- Traveler Information Applications
- SPaT Application (i.e., red light warning and eco-approach applications)
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- Transit Applications (e.g., DSRC-equipped vehicles, AVL, Integrated Payment,...
SMARTCOLUMBUS
Connected Vehicles

200 DSRC Roadside Units
100 Traffic Signal Controller Upgrades
3,000 Connected Vehicles
350 Mobileye Shield + and Enhanced Transit Safety Retrofit
50,000 RFID Customized Windshield Stickers

Proposed Applications
- Dynamic Transit Operations
- Connection Protection
- Dynamic Ridesharing
- Integrated Multi-Modal Electronic Payment
- Transit Signal Priority
- Freight Signal Priority
- Transit Stop Pedestrian Warnings
- Pedestrian in Signalized Crosswalk Warnings
- Vehicle Turning Right in Front of Bus Warnings
- Forward Collision Warning
- Emergency Brake Light Warning
- Eco-Approach and Departure
User-Focused Mobility: 78 Applicants

- On-Demand Jitney
- eBikes and Scooters
- EV Charging Station Locations / Availability Information
- Car Free Zone
- Accessibility Applications
- Incentive-based TDM Strategies
- Coordination / Integration with TNCs
- Demand Responsive Transit / Dynamic Transit Operations
- Parking Information
- Mobility on Demand (MOD) / Mobility-as-a-Service (MaaS)
- Integrated Payment Services
- Multimodal Traveler Information and Trip Planning
- Shared Use Transportation (e.g., Carshare, Bikeshare, Rideshare)
Enhanced Human Services (EHS)
Examples of Measurable Outcomes

**SAFETY**
- Reduce truck accidents
  - Leverage Columbus' Connected Traffic Signal System upgrades to safely move people

**MOBILITY**
- Minimize travel times
  - Increase mobility options, including FMLM options

**LADDERS OF OPPORTUNITY**
- Improve ladders of opportunity for residents in the most underserved neighborhoods

**CLIMATE CHANGE**
- Improve air quality resulting from truck congestion
  - Increase the number of EV charging stations
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