

PD-14: ITS for System Operations

1-5 points

Goal: Improve the efficiency of transportation systems through deployment of technology and without adding infrastructure capacity in order to reduce emissions and energy use, and improve economic and social needs.



Affected Triple Bottom Line Principles

Sustainability Linkage

Intelligent Transportation System (ITS) applications support all of the triple bottom line principles by improving mobility, reducing congestion, and improving safety while avoiding environmentally- and economically-costly physical capacity increases.

Background and Scoring Requirements

Background

Include Intelligent Transportation System (ITS) applications listed in the ITS Joint Program Office (JPO), Office of the Assistant Secretary for Research and Technology (OST-R) [ITS Applications Overview website](#)¹ or equivalent source (also see FHWA's [Office of Operations website](#)²). Table PD-14.1.A lists the standard ITS applications and FHWA and ITS JPO website categories allowable for this criterion. All applications installed should be compliant with owner and/or state ITS architecture(s) (inter-operability). Visit the aforementioned website for more information on each of these applications.

The following list from the OST-R [Connected Vehicle Applications website](#)³ describes vehicle technologies that are being developed and researched to address real-world problems:

- **“Vehicle-to-Vehicle (V2V) Communications for Safety:** This research investigates key questions such as are vehicle based safety applications using V2V communications effective and do they have benefits. Research is designed to determine whether regulatory action by the National Highway Transportation Safety Administration is warranted to speed the adoption of these safety capabilities.
- **Vehicle-to-Infrastructure (V2I) Communications for Safety:** This research investigates similar questions about V2I communications, with an initial focus on applications based on the relay of traffic signal phase and timing information to vehicles. The purpose is to accelerate the next generation of safety applications through widespread adoption of V2I communications.
- **Agency Data:** This research assesses what traffic, transit and freight data are available today from various sources, and consider how to integrate data from vehicles acting as "probes" in the system. The goal is to accelerate the adoption of transportation management systems that can be operated in the safest, most efficient and most environmentally friendly way possible.
- **Mobility:** This research examines what technologies can help people and goods effortlessly transfer from one mode of travel (car, bus, truck, train, etc.) or route to another for the fastest and most environmentally friendly trip. The research seeks to make cross-modal travel truly possible for people and goods, and enable agencies and companies to manage their systems in light of the fact that people and goods will be changing modes often.

- **Road Weather Management:** This research considers how vehicle-based data on current weather conditions can be used by travelers and transportation agencies to enable decision-making that takes current weather conditions and future weather forecasts into account.
- **Environment:** This research explores how to enable transportation managers to manage the transportation network in a manner that better accounts for environmental impact.

Scoring Requirements

Requirement PD-14.1

1-5 points. Install ITS Features

Install one or more allowable applications for the categories in Table PD-14.1.A as defined per the FHWA ITS Applications Overview website referenced above, or equivalent. Points are awarded based on how many categories are installed; multiple applications in one category do not achieve additional points. Points for installing applications from multiple categories are cumulative; however, this criterion shall not exceed a total of five points.

TABLE PD-14.1.A. ALLOWABLE ITS APPLICATIONS FOR INTELLIGENT TRANSPORTATION SYSTEMS (CONTINUED ON NEXT PAGES)

Requirement	Points	Category	Allowable Applications (Install 1 or More per Category)
PD-14.1a	1	Electronic Payment & Pricing	Electronic Toll Collection Congestion Pricing Value Pricing
PD-14.1b	1	Emergency Management / Response & Recovery	Hazardous Materials Management Early Warning System Evacuation & Re-Entry Management Emergency Traveler Information Temporary Incident Management
PD-14.1c	1	Enforcement	Speed Enforcement Traffic Signal Enforcement Managed Lane Enforcement Ramp Meter Enforcement
PD-14.1d	1	Information Dissemination	Dynamic Message Signs (DMS) Highway Advisory Radio (HAR) In-Vehicle Systems (IVS) In-Terminal/Wayside Dynamic Parking Internet/Wireless 511
PD-14.1e	1	Information Management	Data Archiving
PD-14.1f	1	Lane Management	HOV Facilities Reversible Flow Lanes Congestion Pricing Lane Control Variable Speed Limits Emergency Evacuation Transit Signal Priority

Requirement	Points	Category	Allowable Applications (Install 1 or More per Category)
PD-14.1g	1	Ramp Control	Ramp Metering Ramp Closures Priority Access
PD-14.h	1	Road Weather Management	Pavement Conditions Atmospheric Conditions Water Level Fixed Winter Maintenance Mobile Winter Maintenance Bridge Anti-Icing Systems
PD-14.i	1	Surveillance	Traffic Surveillance Infrastructure Surveillance
PD-14.1j	1	Traffic Control	Adaptive Signal Control Advanced Signal Systems Special Events Vehicle Restrictions
PD-14.1k	1	Traffic Incident Management	Response Routing Service Patrols
PD-14.1l	1	Traveler Information	Internet/Wireless 511
PD-14.1m	1	Crash Prevention and Safety	Highway-Rail Crossing Warning Systems Active Collision Warning Active Animal Warning
PD-14.1n	1	Work Zone Management	Temporary Traffic Management Lane Control Variable Speed Limits Speed Enforcement Intrusion Detection Road Closure Management Queue Warning Systems
PD-14.1o	1	Emerging Technologies	Ongoing Research Applications

Resources

Above-Referenced Resources

The following resources are referenced in this criterion and consolidated here:

1. Office of the Assistant Secretary for Research and Technology (OST-R), ITS Applications Overview website, <https://www.standards.its.dot.gov/LearnAboutStandards/ApplicationAreas>
2. FHWA, Operations website at <http://ops.fhwa.dot.gov>
3. Office of the Assistant Secretary for Research and Technology (OST-R), Connected Vehicle Applications website, https://www.its.dot.gov/cv_basics/index.htm

Scoring Sources

The project is considered to have met this criterion if the requirements above can be reasonably substantiated through the existence of one or more of the following documentation sources (or equal where not available):

1. A list of the ITS applications and their corresponding categories.
2. Contract documents showing ITS applications to be installed on the project.
3. Photo(s) or other documentation of installed applications.