

# IntelliDrive Vehicle-to-Vehicle and Safety Pilot

IntelliDrive Safety Workshop  
July 20, 2010

Ray Resendes  
US Department of Transportation  
National Highway Traffic Safety Administration

# Who is NHTSA?

## ■ DOT Mission Statement

- Serve the United States by ensuring a safe transportation system that furthers our vital national interests and enhances the quality of life of the American people
  - Safety – Promote the public health and safety by working toward the elimination of transportation-related deaths and injuries

## ■ NHTSA Mission Statement

- To reduce deaths, injuries and economic losses resulting from motor vehicle crashes
- Driver behavior
- Vehicle Safety

# NHTSA Congressional Authority

- NHTSA has congressional authority to establish Federal Motor Vehicle Safety Standards (FMVSS)
  - For motor vehicles and motor vehicle equipment
  - No person may manufacture or import a vehicle or item of equipment unless it **complies** with applicable FMVSS
  - Manufacturers must **self-certify** compliance
  - Authority to establish CAFE standards
- FMVSS have the force of law

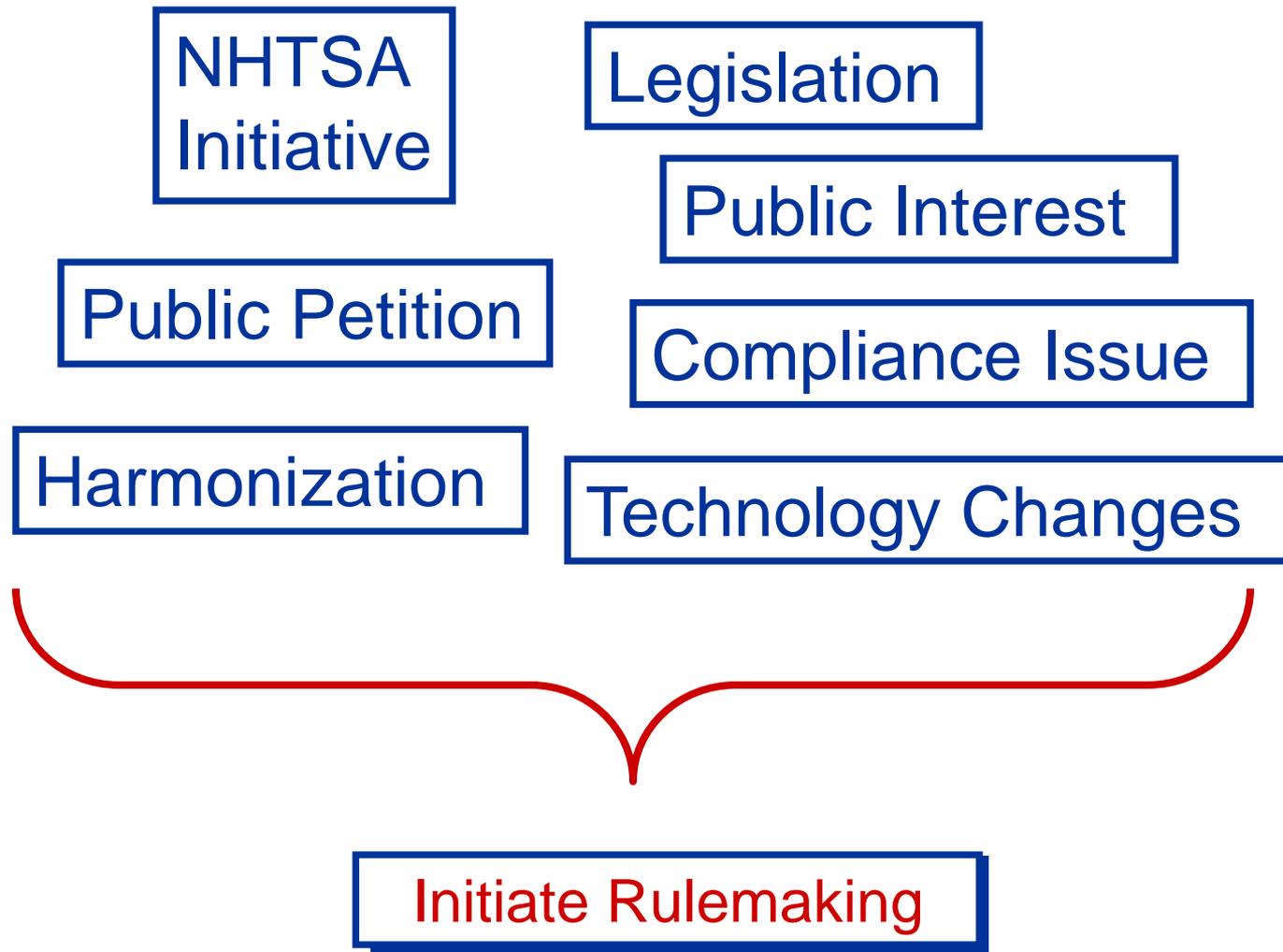
# Rulemaking Requirements

- Administrative Procedures Act
  - Transparency and openness
    - Notice and opportunity for comment
    - Public availability of information
    - Response to public comments
  - Reasoned and fair decision making

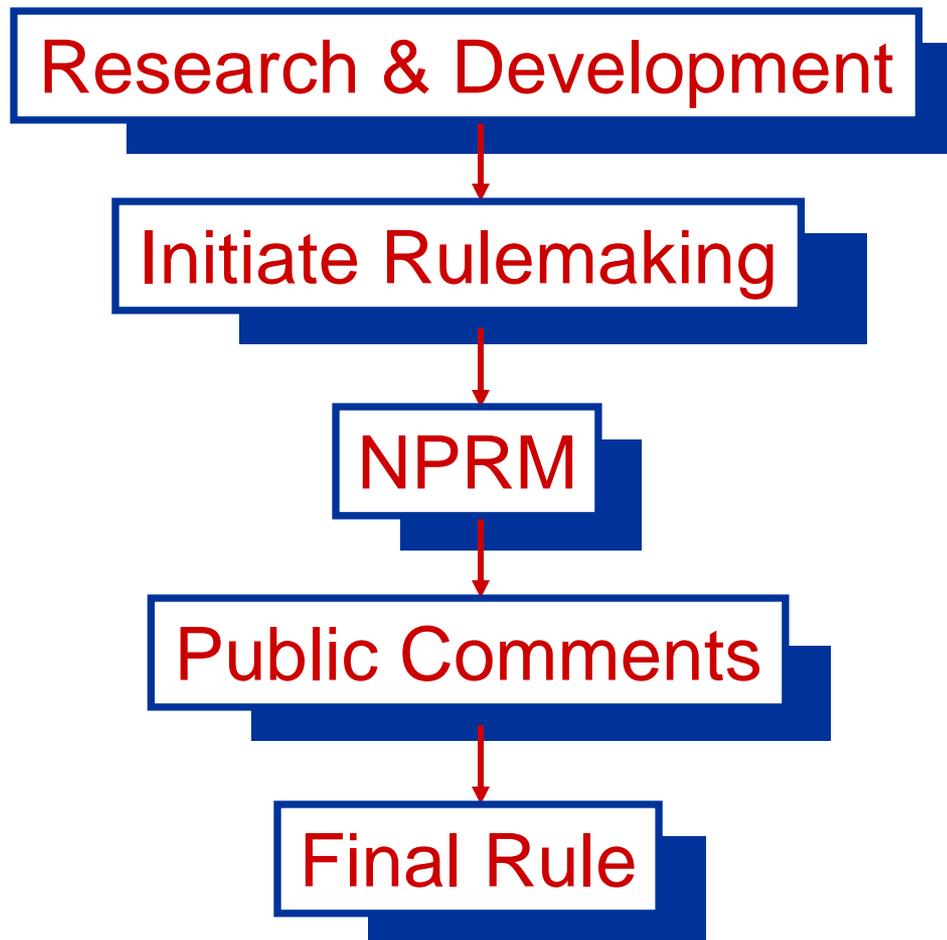
# Requirements for FMVSS

- Must meet a safety need
- Be practicable (technologically and economically)
- Objectively measurable compliance
- Performance-oriented (not design restrictive)
- Appropriate for each vehicle type

# Sources of Rulemaking Action



# Rulemaking Process Overview



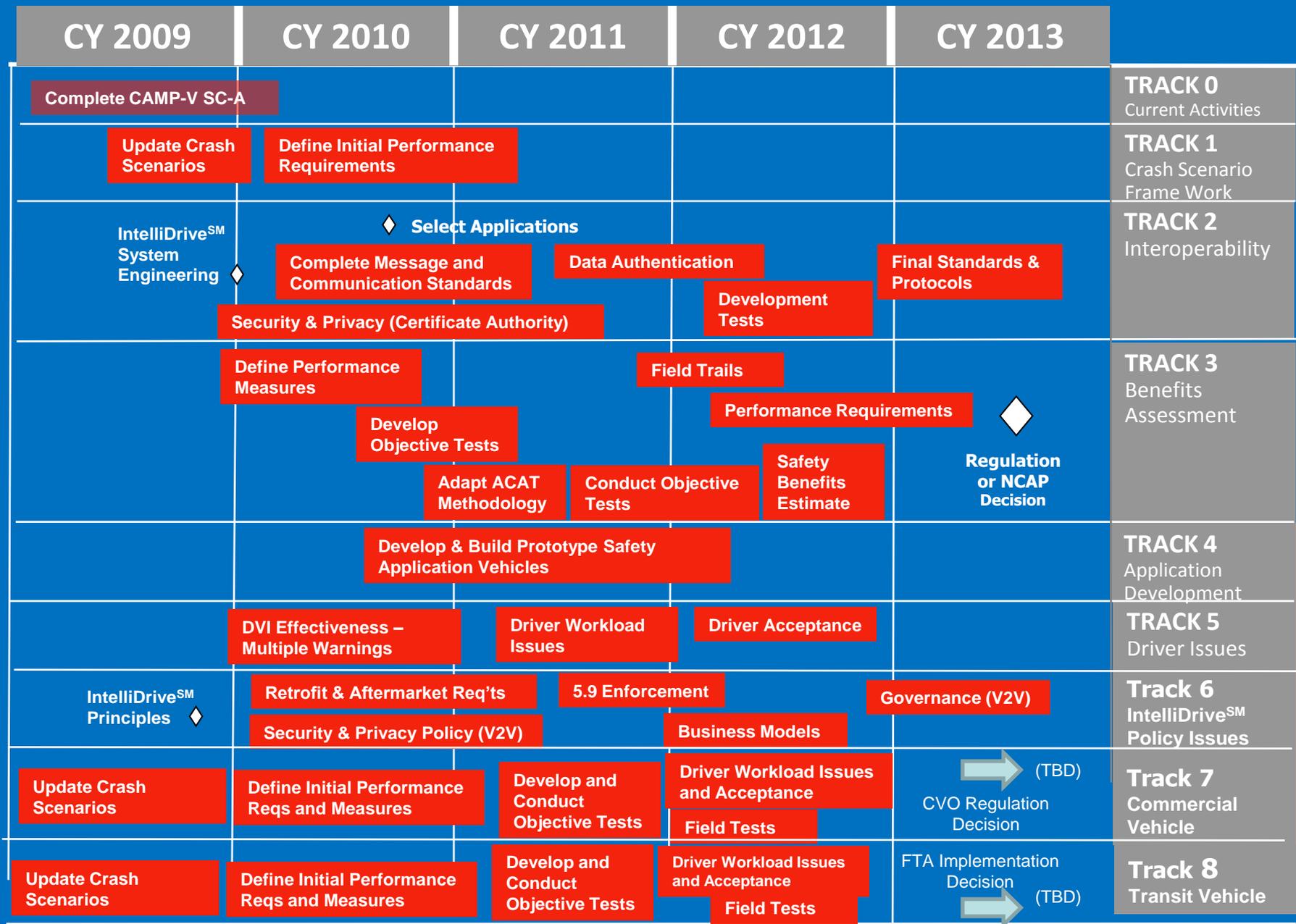
# Vehicle Safety Communications

- Replace Onboard Sensors
- Dedicated Short Range Communications (DSRC)
  - 5.9 GHz
  - Low Latency
  - ~300m Range
- Positioning
  - GPS
  - Relative Positioning
  - High Accuracy DGPS not required
- No Digital Map Required

# Research Plan Assumptions

1. The primary application of V2V is to enable safety applications.
2. The deployment of V2V can not be dependent on public infrastructure.
3. The system architecture will be compatible with the evolution in infrastructure technology and deployment.
4. DSRC at 5.9 GHz is the only communication option, at this time

# Vehicle to Vehicle Safety Application Research Plan



# V2V Program

Track	Objectives
1 – Crash Scenario	Develop a comprehensive Pre-Crash Scenario Framework, and countermeasure concept profiles for both light vehicles and heavy trucks.
2 – Interoperability	Ensure that V2V safety systems can successfully function across equipped vehicles regardless of make/model.
3 – Benefits Assessment	Benefits assessments for V2V safety applications
4 – Application Development	Develop applications for benefits assessment
5 – Driver Issues	Develop a framework to assess the impact of driver issues on the effectiveness of DVI's used with V2V safety applications.
6 – Policy	Through coordination of the technical and policy aspects of V2V this track will result in a set of policy recommendation to support V2V deployment.
7 -Commercial Vehicles	Identify and coordinate the commercial vehicle component of V2V safety applications.
8 – Transit Vehicles	Identify and coordinate the transit vehicle component of V2V safety applications.

# Safety Pilot

## Goals:

- *Support the 2013 Regulatory V2V Decision with Field Data*
- *Public Awareness & Acceptance*

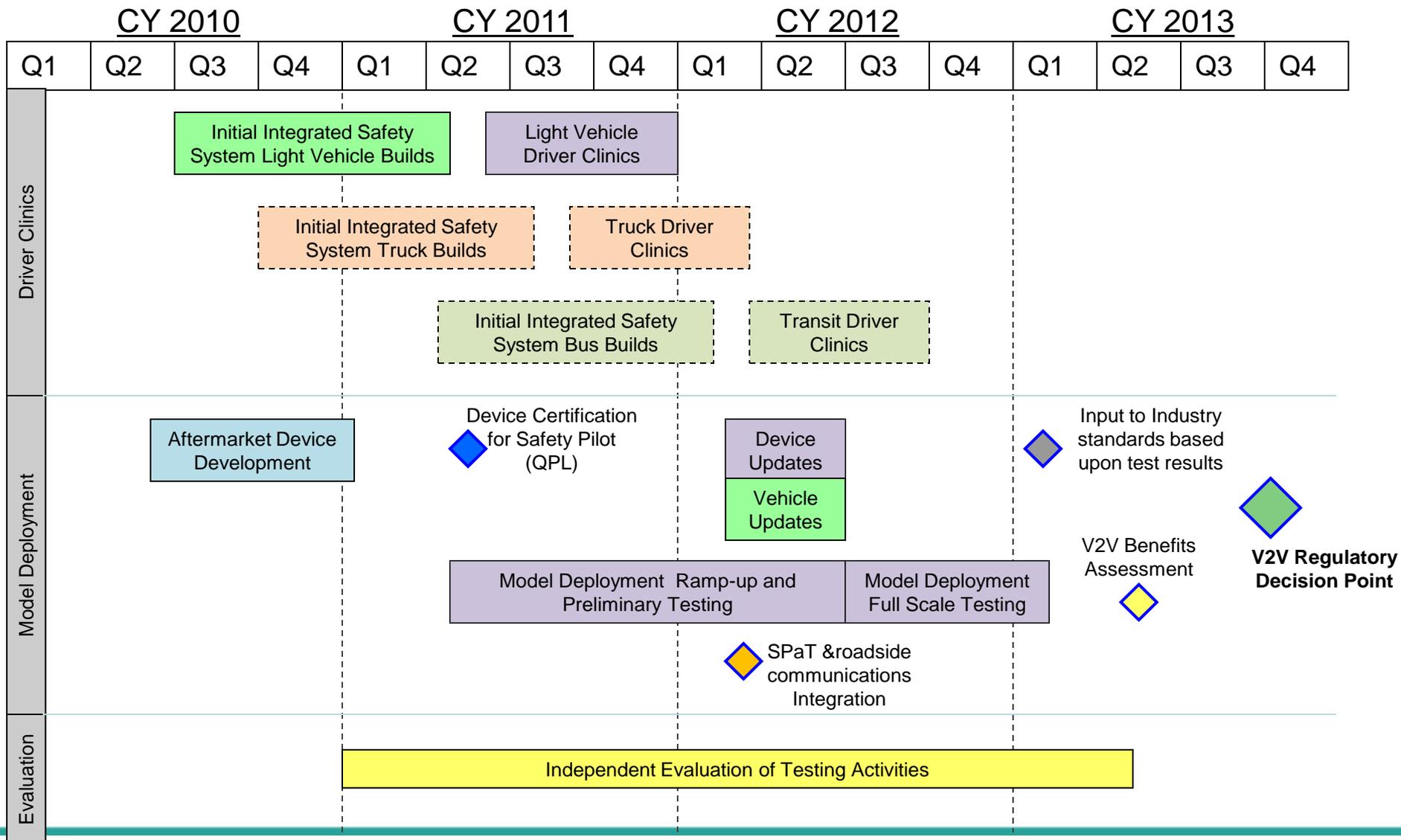
## Primary Objectives

- Demonstrate V2V real world implementation
  - Multiple vehicle types (cars, trucks, buses, rail, etc)
  - Obtain substantial empirical data
- Assess driver acceptance of vehicle based safety systems
- Explore opportunities for accelerating safety benefits through aftermarket devices and retrofit systems

## Secondary Objectives

- Enable vehicle-infrastructure (V2I) safety applications
- Leverage data for non-safety applications such as mobility, environment, and weather

# IntelliDrive Safety Pilot Roadmap (rev 16a)



# Track 1 – Light Vehicle Driver Clinics and Performance Tests

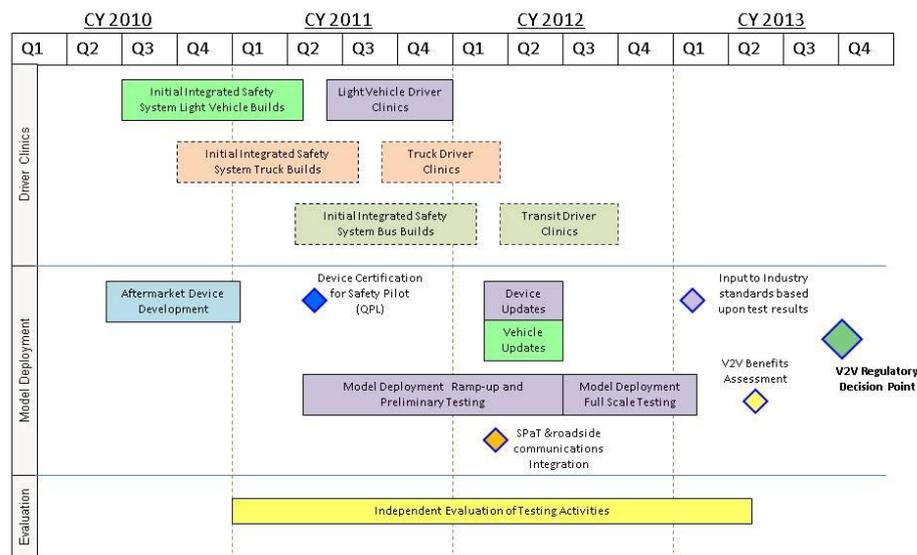
## Objectives

- Driver acceptance data from light vehicle driver clinics at various locations
- Explore similar opportunities for other vehicle types
- Performance testing in multiple geographic environments using small numbers of light vehicles and nomadic devices at same locations

## Key Tasks

- Site Selection
- Prepare Test Vehicles
- Recruit Test Subjects
- Conduct Driver Clinics
- Conduct Performance Tests
- World Congress Demonstration

IntelliDrive Safety Pilot Roadmap (rev 16a)



# Track 2 – Model Deployment

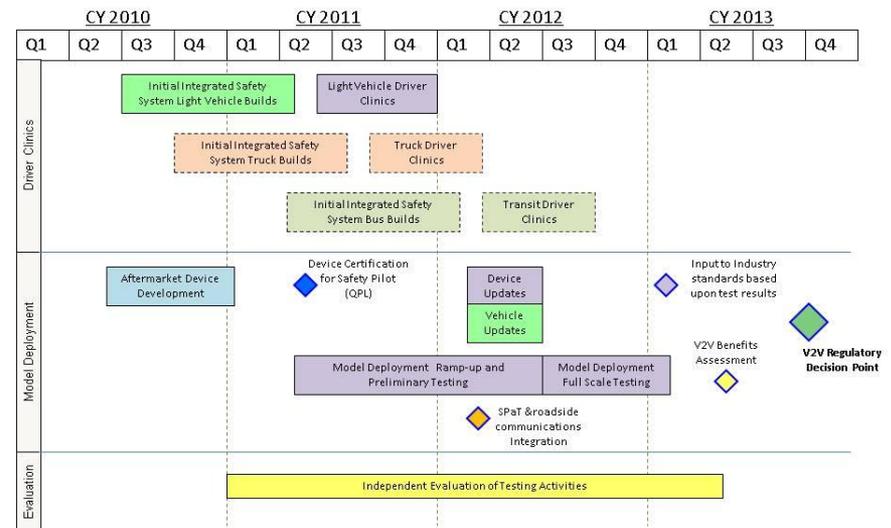
## Objective

- Critical Mass/Exposure testing → large number of vehicles and devices creating a “highly saturated” operating environment
- Mixture of integrated safety systems with nomadic devices
- Light Vehicle focus with Transit and Heavy Vehicle Option
- Lots of vehicles, limited infrastructure

## Key Tasks

- Prepare Integrated Vehicles
- Prepare Cooperative Vehicles
- Implement Interoperability Functions
- Conduct Verification Test
- Conduct Full Model Deployment
- Data Analysis and Dissemination

IntelliDrive Safety Pilot Roadmap (rev 16a)



## For More Information.....

- Vehicle-to-Vehicle Program Achievements
  - John Harding & Alrik Svenson
- Human Factors for IntelliDrive
  - Stephanie Binder

- [www.intellidriveusa.org](http://www.intellidriveusa.org)
- [www.nhtsa.gov](http://www.nhtsa.gov)
- Vehicle Safety Rulemaking and Research Priority Plan for 2009–2011
- [www.regulations.gov](http://www.regulations.gov)
- Docket No. NHTSA-2009-0108