OUTLINE

- Project background:
  - Introduction.
  - Phased approach.

- Phase 1:
  - Organization and awardees.
  - Phase 1 key deliverables.

- Phase 2:
  - Project team.
  - Truck platooning system.
  - Experimental design.
  - Next steps.
PROJECT BACKGROUND
WHAT IS LEVEL 1 TRUCK PLATOONING?

- Employs longitudinal control only (throttle and brakes), driver steers the truck.
- Builds on production adaptive cruise control (ACC).
- Uses vehicle-to-vehicle (V2V) communication to deploy cooperative adaptive cruise control (CACC).

Source: FHWA
INTRODUCTION

- Truck Platooning Early Deployment Assessment builds on prior FHWA research in truck platooning.

- Goals and Objectives:
  - Understand truck platooning in real-world operations (i.e., real fleet operators carrying real loads).
  - Assess benefits and impacts across key areas of interest.
  - Inform future State/local departments of transportation (DOT) planning and decisions.

Source: FHWA
Phased approach manages risks and uncertainties in dynamic environments.

Phase 1 (March 2019 – December 2019) – completed:
- Awardees developed concept, partnerships, and evaluation plan.
- Awardees completed proposal for Phase 2.
- Independent evaluation team supported performance measures and evaluation planning.

Phase 2 (July 2020 – January 2023) – in progress:
- Awardee will finalize the plans and make sure the truck platooning systems are ready for deployment testing.
- Awardee will conduct field operational test (FOT).
- Independent evaluation will be conducted.
PHASE 1
PHASE 1 OVERVIEW

- Three teams were selected.
- Phase 1 was conducted from March 2019 to December 2019.
- Phase 1 deliverables:
  - Concept and evaluation related deliverables.
  - Independent evaluator support and feedback.
  - Other deliverables.
  - Proposal.
- Awardee teams engaged with the independent evaluator.
PHASE 1 KEY DELIVERABLES

- Deployment Operational Concept:
  - Platooning system/trucks.
  - Geographic extent and routes.
  - Operational design domain and operating rules.
  - Initial performance measures.

- Test and Performance Evaluation Plan:
  - Documents performance measures.
  - Proposes data collection and management plan.
  - Presents analysis methodology.
PHASE 1 KEY DELIVERABLES (CONT’D)

- Partnership Plan:
  - Identifies partners for Phase 2.
  - Identifies partner roles for Phase 2.
  - Identifies responsibilities and commitments for Phase 2.

- Phase 2 Readiness Assessment:
  - Assesses Phase 2 execution feasibility.
  - Identifies risks and mitigation strategies.

- Phase 2 Proposal.
PHASE 2
PROJECT TEAM

■ Project team:
  — California PATH (team lead and technology supplier).
  — Roly’s Trucking (fleet operator).
  — Westat (human factors).
  — Cambridge Systematics (partnership).

■ Other partners.

■ Noblis (independent evaluator).
TRUCK PLATOONING SYSTEM

- Implement PATH-CACC capability.
- Four new trucks:
  - 3 trucks for CACC/platooning field test.
  - The 4th truck used as a “control truck” as baseline.
- Sensors.

Source: California PATH
PROPOSED ROUTE AND EXPERIMENTAL DESIGN

- 1,400 mile-route of Interstate 10 from California to Texas.
- California, Arizona, New Mexico, Texas.
- Four trucks.
- 20 drivers.
- One round trip per week for one year, resulting in the data for 145,000 miles driven.

Source: California PATH
DATA TO BE COLLECTED

■ Engineering data: onboard sensors, J-1939 Bus, and DSRC.
■ Surrounding traffic data using extra sensors: fixed beam lidars and video cameras.
■ Truck driver data using dedicated sensors: SmartCap LifeBand and Jungo VuDrive
■ Wireless modem connection with trucks for monitoring: CACC system operation and data logging health.
**PERFORMANCE MEASURE REQUIREMENTS**

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Independent evaluation team worked with USDOT to develop “Performance Measure Requirements” in eight key areas to:

- Propose specific requirements to be addressed in Phase 2.
- Determine measures and supporting data.

NEXT STEPS

- Implementation stage (July 2020 – November 2021):
  - Test and evaluation plan.
  - Partnership plan.
  - Human use approval plan.
  - Comprehensive truck platooning deployment plan.
  - System acceptance testing.
  - Operational readiness testing with a go/no-go decision.

- Field operational test stage (November 2021 – January 2023):
  - Field operational test.
  - Data collection and evaluation.
  - Final report.
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