

NDOT Truck Parking Availability System (TPAS) Pilot Project

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Presentation Overview

01 Nevada's Truck Parking Challenges

02 Project Objectives

03 TPAS Project: Four-Phase Approach

04 Challenges and Innovative Solutions

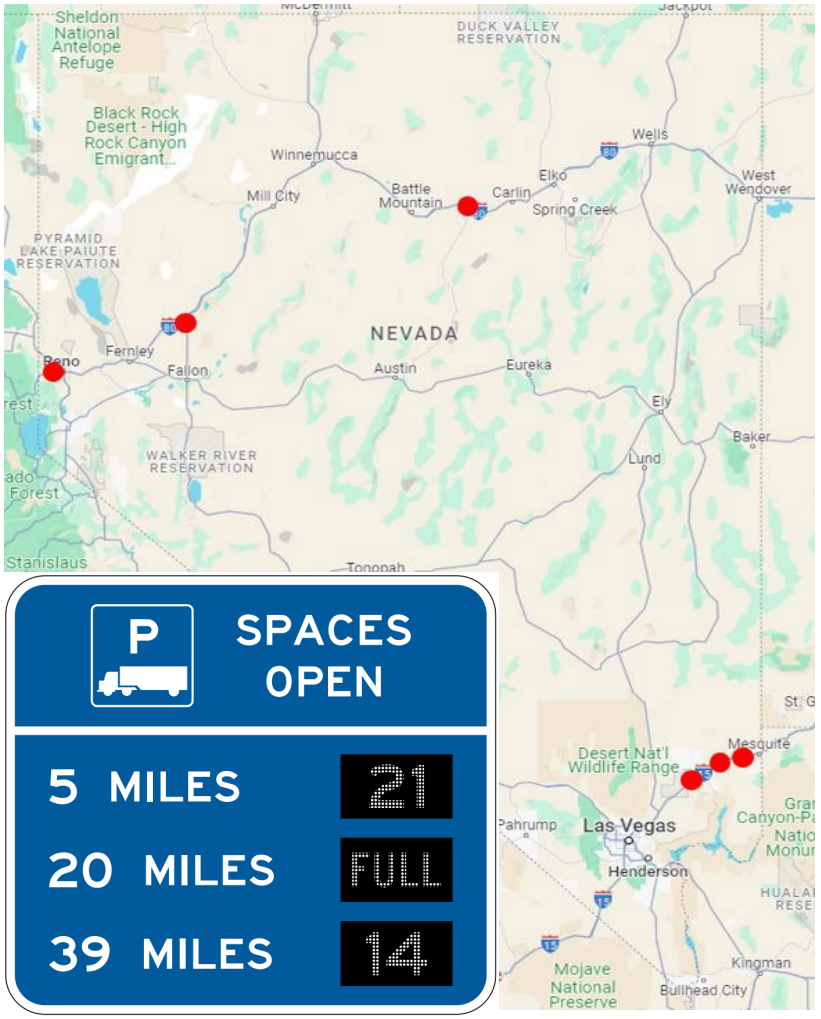
05 Next Steps

NV's Truck Parking Challenges

- Safety implications of inadequate truck parking
- NV's diverse conditions – urban/rural, environmental extremes
- Regional Context
- Regulatory requirements (Hours-of-Service)
- Economic impacts on freight movement

Project Objectives

- Recommend, test, and design a reliable, sustainable TPAS for 11 sites across Nevada
- Provide real-time parking availability information to truck drivers
- Address challenges of NV's diverse landscape
- Support regulatory compliance, improve safety



Four-Phase Approach

01

Discovery
(Complete)

02

Test-Bed
(In progress)

03

Full Design
(60% plans in progress)

04

Post-Design Support
(Upcoming)

Phase 1 – Discovery

- State of the Practice Report
  - Research into detection technologies and system architectures
  - Review of existing TPAS implementations across other states
- Stakeholder Engagement
  - Workshops
  - Surveys
- Vendor evaluation and selection
- Systems Engineering Updates
  - Concept of Operations
  - System Requirements

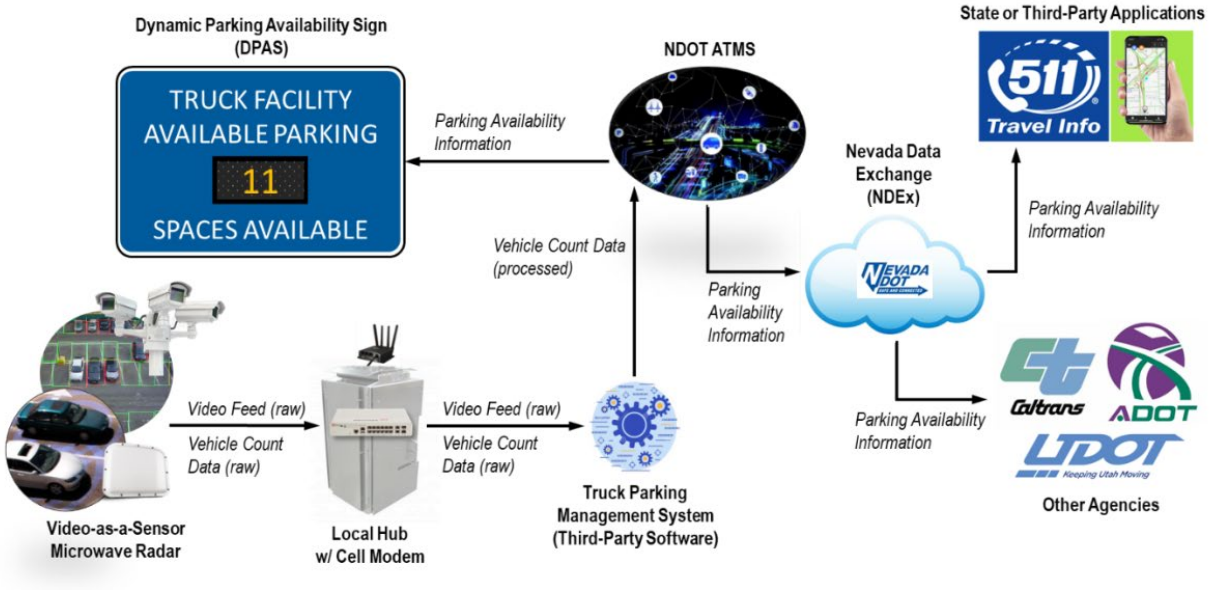
Phase 1 - Discovery

- NDOT's Site-Specific Challenges
  - Unpaved/unstriped parking facilities
  - Rural locations:
    - Limited power infrastructure
    - Limited fiber-optic communications
  - Varied site geometries
  - Extreme weather conditions



Phase 1 – Discovery

- Conclusions
  - Four data-collection methods:
    - Space-By-Space
    - Occupancy at 20’
    - Entry-Exit
    - Occupancy at 80’
  - Video analytics-based detection
  - TPAS Architecture:
    - Video/Image → Vendor Software → NDOT ATMS →Public
  - TPAS software vendor selected



Phase 2 – Test Bed Implementation

- I-80 Truck Parking Facility at Mogul
- Unique Approach:
  - Two portable TPAS trailers



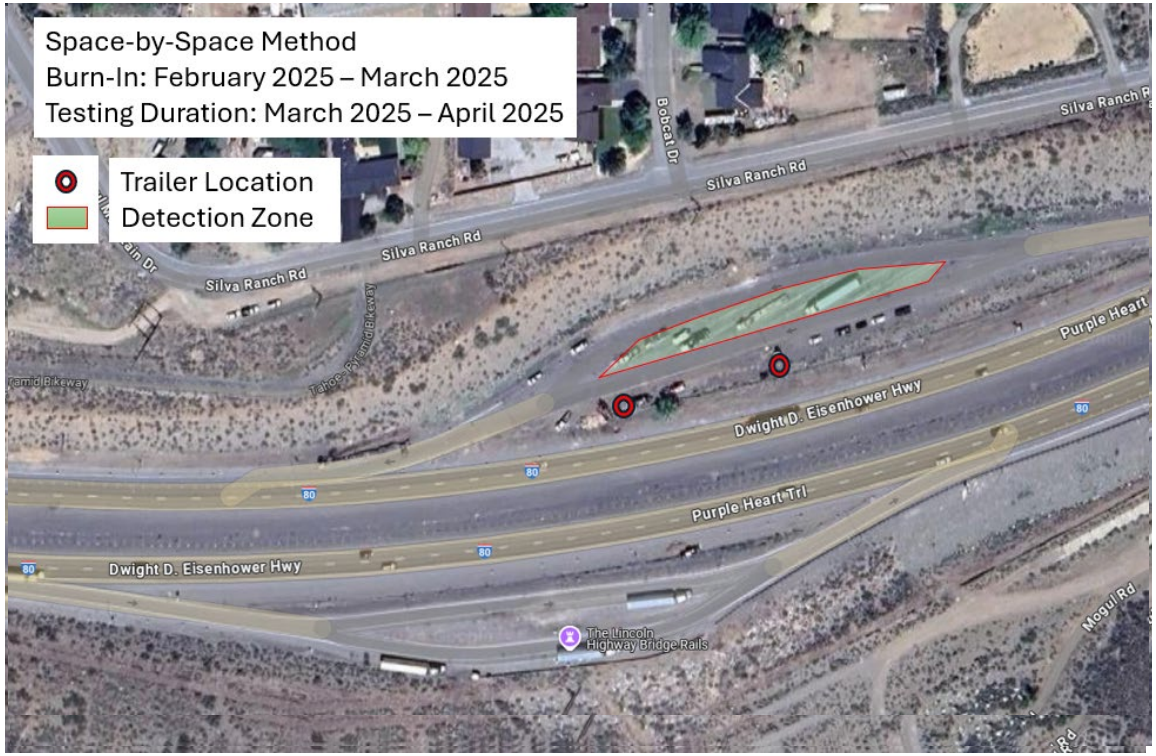
Phase 2 – Test Bed Implementation

- Two Portable Test-Bed Trailers
  - Each trailer includes:
    - Trailer: Vorp Energy Solar Trailer MDT-1600
    - Mast: 18’ + extension = 20’-4” CCTV mounting height
    - 165” wide w/ solar panels open (87” wide w/o)
    - CCTV: Bosch- NBE-7704-AL
    - CCTV: Axis Q1805-LE
    - Radar: Wavetronix SmartSensor HD
    - Solar Panels: 4x 380W
    - Cellular Modem
    - Battery: 4x 200Ah 12v SLA
    - Outriggers
    - Lock boot
    - Barrels

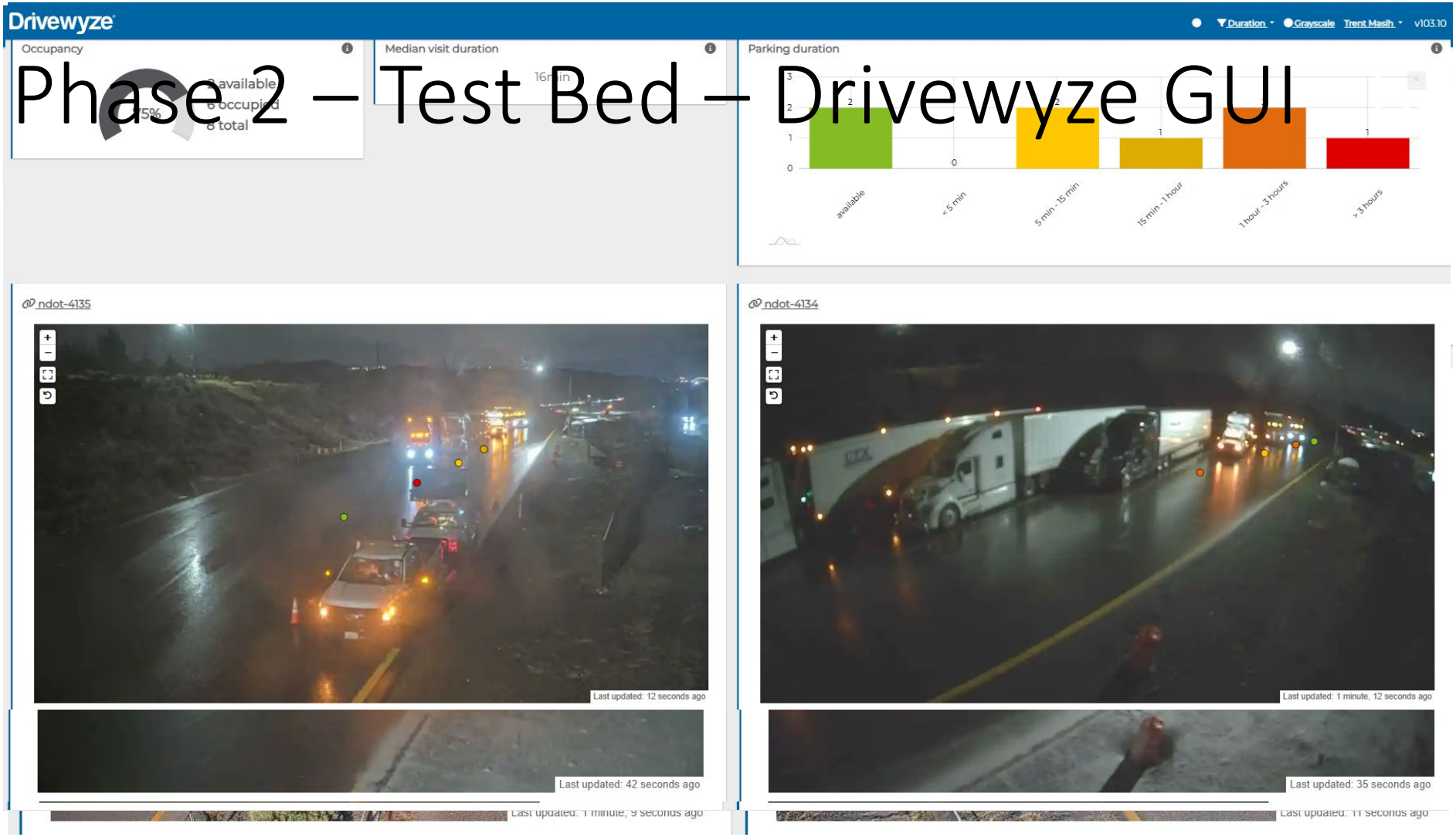


Phase 2 – Test Bed Implementation

- Evaluation Period
  - One month each method:
    - Space-By-Space
    - Occupancy at 20’
    - Entry-Exit
    - Occupancy at 80’
- Documentation
  - Check-ins to dashboard 2x/day
  - Human vs. system comparison
  - Environmental observations
  - Miscellaneous observations
- Integration with ATMS- InSight
  - Not at this time



Phase 2 – Test Bed – Drivewyze GUI



Phase 2 – Test Bed Implementation

- Test-bed Lessons Learned to-date
  - Hardware configuration time
  - Camera settings configuration time
  - Cell data usage
  - Inter-agency communication
  - Non-standard parking in snow
  - Entry/Exit requires continuous streaming



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Phase 2 – Test Bed Implementation

Test-bed Results

1. Space-By-Space
2. Occupancy at 20’
3. Entry-Exit
4. Occupancy at 80’
   - ➢ Data Bandwidth
   - ➢ Accuracy
   - ➢ Occlusion
   - ➢ Footprint of equipment



Method selected

Phase 3 – Full Design

- 11 Truck parking facilities statewide
  - 5 on I-80 (north NV)
  - 6 on I-15 (south NV – between Las Vegas and Utah)
  - ITS/Lighting infrastructure
- Plans, Specifications, & Estimate
  - 30% Concept Design (Google Earth KMZ layout)
  - 60% Plans (In-progress) > 90% Plans > Final Construction Documents
- Challenges
  - Power at rural locations – Use solar power
  - Limited fiber-optic communications – Use cellular
  - Limited lighting – Add lighting

Site	Roadway	Name	Parking Stalls	Light poles	Parking Conditions
1	I-80	Mogul	8	3	Paved, Free flow
2	I-80	Mogul	8	2	Paved, Delineated
3	I-80	Trinity	13	4	Paved, Delineated
4	I-80	Beowawe	10	6	Paved, Delineated
5	I-80	Beowawe	10	5	Paved, Delineated
6	I-15	Truck Parking Lot MP 88	12	0	Paved, Free flow
7	I-15	Truck Parking Lot MP 88	10	0	Paved, Free flow
8	I-15	Truck Parking Lot MP 96	18	0	Paved, Free flow
9	I-15	Truck Parking Lot MP 96	24	0	Paved, Free flow
10	I-15	Truck Parking Lot MP 110	34	0	Paved, Free flow
11	I-15	Truck Parking Lot MP 110	21	0	Paved, Free flow

Phase 4 – Post-Design Support

- Bid Support
- Construction Support
  - Revisions
  - RFIs
  - Shop drawing review
- Training
  - Operations and Maintenance
- NDOT Signals, Lighting, ITS (SLI) Design Guide Updates



Challenges and Innovative Solutions

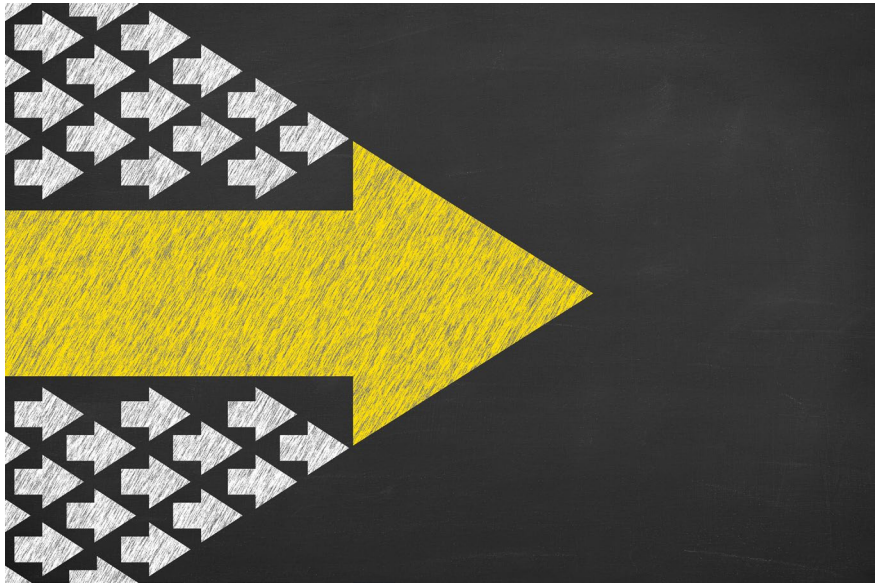
- Nevada's diverse landscape
- Construction funding let date
  - (FY27 & FY28)
- Video and communication configuration



- Test bed at live site
- Portable trailer setup

Next Steps

- Path Forward
  - Complete Phase 2 (Test Bed)
    - Apply lessons learned to Final Design
  - Coordinate vendor API integration with ATMS
  - Complete Phase 3 (Final Design)
  - Complete Phase 4 (Post-Design)
  - Further coordination and sharing across state lines for seamless interstate data sharing



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thank you

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