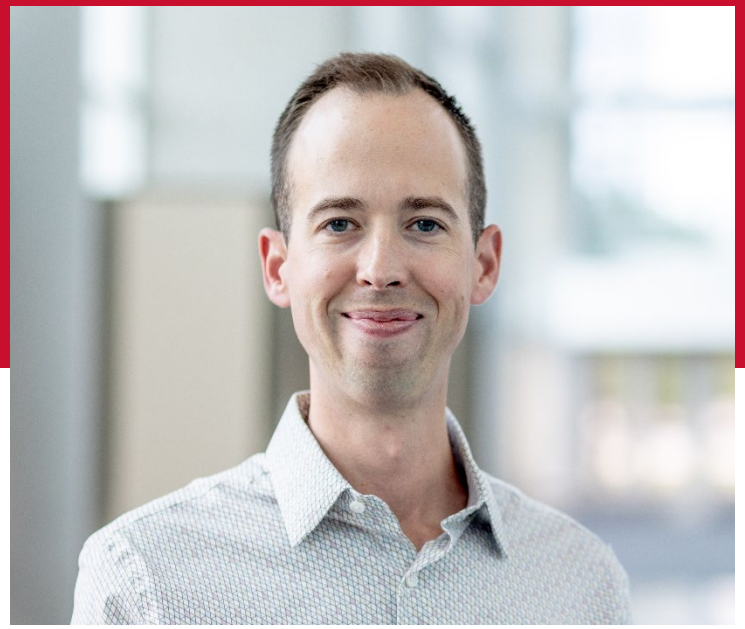
Enhancing Rural Connectivity through Strategic ITS & Broadband Deployment

11/21/2025

Presenters



Kyle Halligan, PE
HDR Engineering

Jose Madrid Jr, PE
TxDOT El Paso

Suchismita Behuria, PE
HDR Engineering

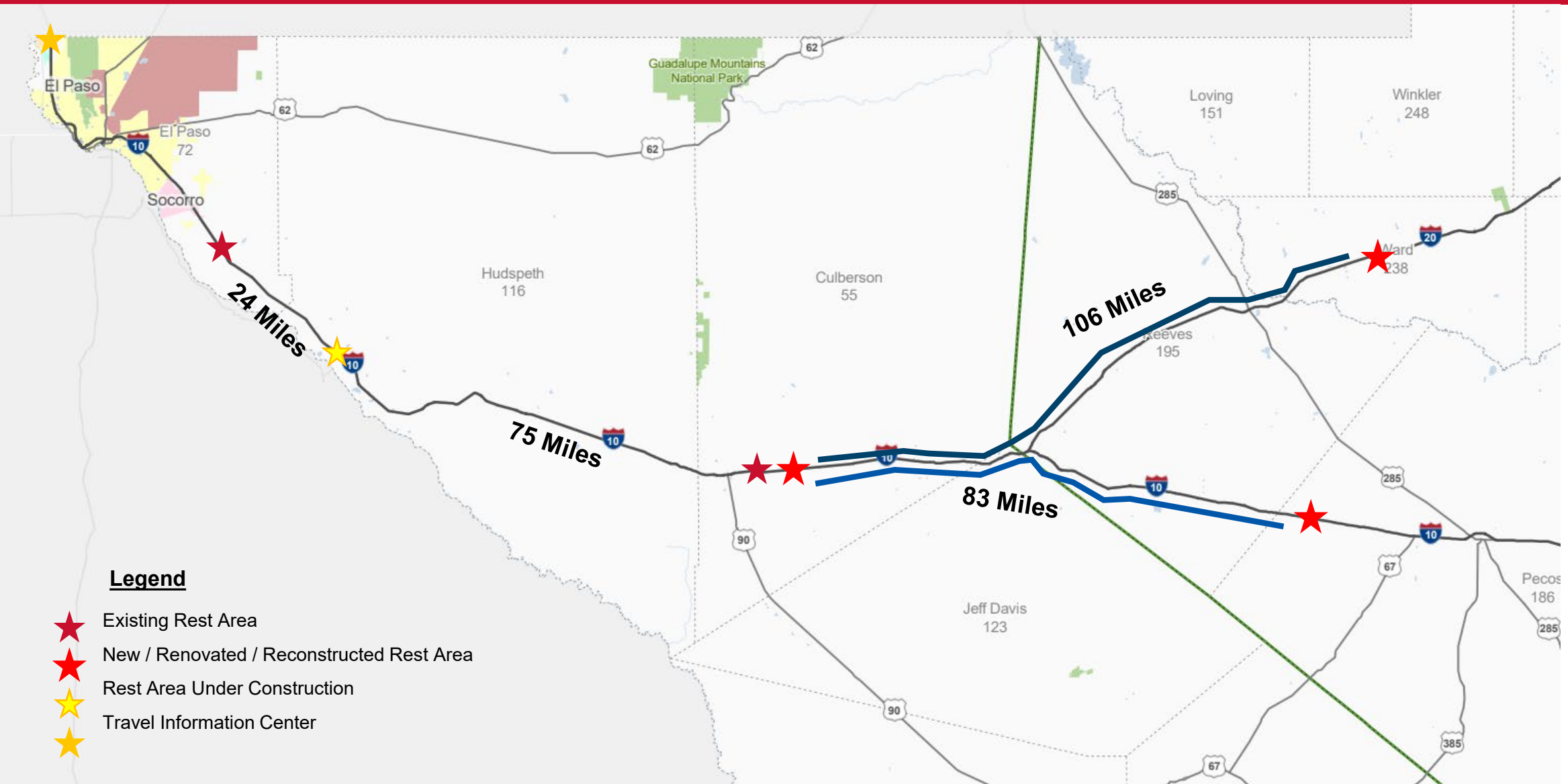
Stakeholders Involved

- TxDOT El Paso District
- TxDOT Information Technology Division (ITD)
- TxDOT Maintenance Division
- Texas Broadband Development Office (BDO)
- AT&T
  - HPE Aruba
  - Internet Service Provider
- HDR Team

Goals

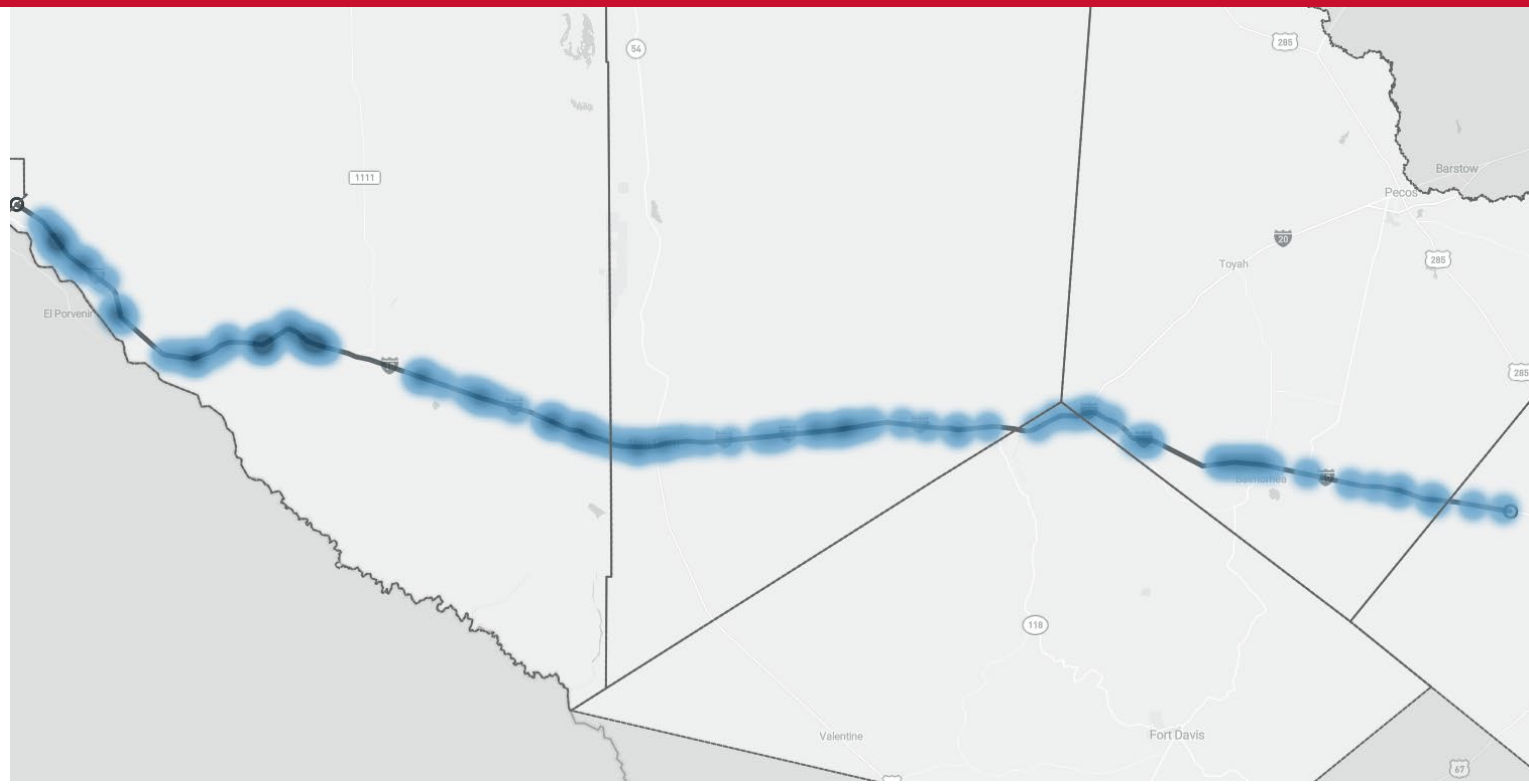
- Provide public wifi for travelers and local community
- Build fiber infrastructure for possible future ITS Expansion for ELP

Needs


El Paso
El Paso
72
Socorro
Guadalupe Mountains
National Park
Hudspeth
116
Culberson
55
Loving
151
Winkler
248
Ward
238
Reeves
195
Jeff Davis
123
Pecos
186
24 Miles
75 Miles
106 Miles
83 Miles
Legend
Existing Rest Area
New / Renovated / Reconstructed Rest Area
Rest Area Under Construction
Travel Information Center

Safety

- **47% KA Crashes** are CMV Related
- **70% KA Crashes** are One Motor Vehicle – Going Straight
- **10% KA Crashes** listed as fatigued or asleep
- **Over 60%** average 24-hour truck percentage



Fatal (K) and Serious Injury (A) Crashes
Rural IH 10 Concentrations
(From 11-06-2020 to 11-06-2025)

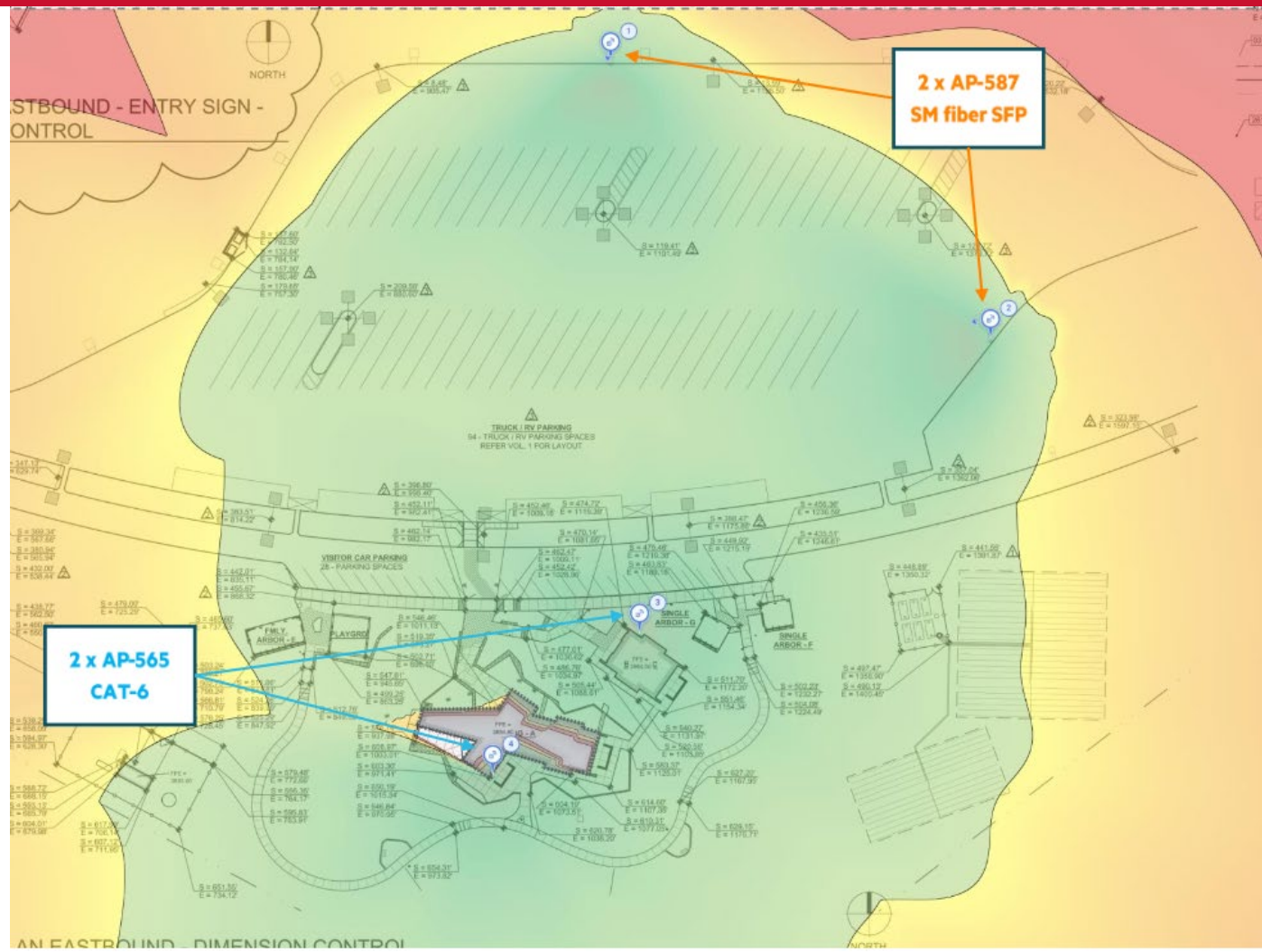
Encourage Use of Safety Rest Areas

Encourage resting by offering various benefits:

- Air conditioned and heated restrooms
- Larger parking areas (Separated areas for cars and commercial vehicles)
- Information areas
- Office Space for Law Enforcement personnel
- Enhanced security, including surveillance cameras
- Tornado shelters
- Walking and interpretive trails
- Play Area for Kids
- **Wireless Internet**

On-Campus Design: Coverage & Constructability

- Continuous coordination with stakeholders
- AP placement guided by heatmaps & field conditions
- Ensured full Wi-Fi coverage across picnic areas, parking & buildings
- Used directional and omnidirectional antennas for optimal signal reach
- Close coordination with AT&T & ISP to identify fiber splice points along I-10
- Conduit paths designed to bring fiber to each rest area
- Spare conduit capacity & defined fiber paths to support future network growth



Aruba heatmaps validated signal coverage

Truck Parking Availability System Advantage

- Evaluated multiple AP mounting options- Light poles rejected due to aesthetics and power limitations
- Reused TPAS poles at Fabens and Van Horn
- New poles added strategically to maximize coverage and ensure efficient network routing
- Saved months of construction and permitting
- Ideal mounting heights and reduced conduit work

Building Entry & Hub Cabinet Solutions

Integrated Facility Design

- Building entry design coordination with TxDOT ITD, MNT and HDR's RCDD-certified engineers

Innovative Hub Cabinet Solution

- Climate controlled hub cabinets installed at Fabens SRA near existing power to minimize long conduit runs

Integrated Facility Design

- Coordination with stakeholders ensured building entry point integration without interfering new construction

Technical Execution & Keys to Success

Stakeholder Collaboration

Multi-agency coordination was essential for clean and efficient project execution

Ensured aesthetic and compliance requirements

Leveraging Existing Infrastructure

Asset reuse helped reduce cost and project complexity

Design Flexibility

Critical for sites undergoing changes and construction

Early ITS Integration

Supports future broadband enhancements and project scalability

System Validation & Testing

Performance testing confirmed coverage and reliability of the AP locations

What Comes Next: Expanding Rural ITS & Connectivity

Real-time Data Integration

Smart Rural Corridors aligned with TxDOT's CAT Strategic Plan

TPAS Expansion & Integration with other Trucking Platforms

Enhanced Rural ITS Devices (DMS, Weather Sensors, Safety Cameras)

Closing & Strategic Outlook

Commitment to Rural Communities

Support rural areas with innovative infrastructure projects that drive development and connectivity

Broadband and ITS Capabilities

Excel in broadband deployment & ITS integration for efficient connectivity

Future Collaboration Invitation

Encourage questions & discussions to explore partnerships that expand project impact & innovation

Leading with Scalable Solutions

Continue leading in delivering scalable, high-quality solutions for rural broadband and ITS innovation

Thank You