Truck Parking Availability System

Craig Toth on behalf of Paul Clark
Presentation Overview

- Truck Parking Availability System (TPAS)
- Research Projects
- Federal Grants
- TPAS Deployment Locations
- Deployment Mechanisms
- Project Schedule
- TPAS Documents
- TPAS Architecture
- Data Dissemination
Truck Parking Availability System (TPAS)

TPAS Supports

• Federal Motor Carrier Safety Administration (FMCSA) Hours-of-Service regulation
• Safe and convenient parking options
• Just-in-time delivery
• Advance planning for freight operation
• Reduced truck parking violations
• Electronic monitoring and dissemination of information
Florida International University (FIU) Research

Part 1: Identify current supply and demand of public parking
- Identified needs to “balance” parking use
- Developed key requirements for TPAS
Florida International University (FIU) Research

Part 2: Assess technology to improve parking management
• Leon County Pilot Project with in-pavement sensors

FIU Research Report
FDOT Pilot Project

• Location: I-95, St. Johns County, FDOT district 2
• Project used MVDS sensors to count trucks at ingress/egress of truck parking lot
• Provide advanced notification of truck parking availability

Pilot TPAS Sign on I-95 in St. Johns County
University of Florida (UF) Research

Evaluation of in-ground sensors to examine their capabilities

- Tested four different vendors

Ground-truth data through video logs

Three products listed on Innovative Products List (IPL)

Video Camera Mounting Details
University of Florida (UF) Research

Performance Accuracy Requirements

- Turnover Accuracy – 90%
- Occupancy Accuracy – 95%
- Detection system test conducted over two 15 hour (6:00 pm to 9:00 am) sessions

Developmental Specification 660

**VEHICLE DETECTION SYSTEM.**

(REV 12-20-16)

ARTICLE 660-2 is expanded by the following:

**660-2.5 Truck Parking Detection System:** Furnish and install a truck parking detection system in accordance with the details shown in the Plans. The detection system must be capable
Three-stage approach to statewide comprehensive truck parking solution

**STAGE 1**
Implementation of technology to accurately assess and disseminate the availability of truck parking

**STAGE 2**
Development of predictive analysis for future parking availability
Stage 2 will follow once sufficient

**STAGE 3**
Incorporation of private parking locations for systemwide resource utilization
Federal Grants

FDOT Received two (2) federal grants

- Federal AID: $1 Million
- FASTLANE: ~ $11 Million
TPAS Locations

- 45 rest areas
- 20 weigh stations
- 3 welcome centers

<table>
<thead>
<tr>
<th>Number of Truck Parking Spaces Monitored</th>
<th>2,352</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wireless Detection System (WDS)</td>
<td>1,875</td>
</tr>
<tr>
<td>Microwave Vehicle Detection System (MVDS)</td>
<td>477</td>
</tr>
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## Deployment Mechanism

<table>
<thead>
<tr>
<th>Funding</th>
<th>Corridor</th>
<th>Sites</th>
<th>Vendor</th>
<th>Winning Bid Price</th>
<th>Procurement</th>
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</thead>
<tbody>
<tr>
<td>FDOT District 5 (Phase I)</td>
<td>I-4, I-95</td>
<td>5 Rest Areas, 2 Weigh Stations</td>
<td>SENSIT</td>
<td>$1,828,183.00</td>
<td>Adjusted Score Design Build</td>
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<tr>
<td>FDOT District 3</td>
<td>I-10</td>
<td>1 Welcome Center, 12 Rest Areas, 4 Weigh Stations</td>
<td>CivicSmart</td>
<td>$4,412,092.00</td>
<td>Low Bid Design Build</td>
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<tr>
<td>FDOT District 4</td>
<td>I-95, I-75</td>
<td>5 Rest Areas, 2 Weigh Stations</td>
<td>Sensys</td>
<td>$2,285,285.00</td>
<td>Adjusted Score Design Build</td>
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<td>FDOT District 7</td>
<td>I-4, I-75</td>
<td>3 Rest Areas, 2 Weigh Stations</td>
<td>SENSIT</td>
<td>$1,947,000.00</td>
<td>Adjusted Score Design Build</td>
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<td>FDOT District 5 (Phase II)</td>
<td>I-75</td>
<td>4 Rest Areas, 2 Weigh Stations</td>
<td>Sensys</td>
<td>$1,614,614.00</td>
<td>Low Bid Design Build</td>
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<tr>
<td>FDOT District 2</td>
<td>I-10, I-75, I-95</td>
<td>2 Welcome Centers, 12 Rest Areas, 6 Weigh Stations</td>
<td>CivicSmart</td>
<td>$3,698,384.00</td>
<td>Low Bid Design Build</td>
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<tr>
<td>FDOT District 1</td>
<td>I-4, I-75</td>
<td>4 Rest Areas, 2 Weigh Stations</td>
<td>CivicSmart</td>
<td>$1,441,170.64</td>
<td>Adjusted Score Design Build</td>
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</tbody>
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# Project Schedule

![Project Schedule Table](image_url)
TPAS Integration

TPAS device communication integration with existing ITS communication network

- Minimal interruption to existing ITS infrastructure and RTMC operations
- No fiber splices allowed to existing ITS fiber network
- Connect to available ports in existing MFES Switch in ITS cabinet
- Existing fiber network is untouched

TPAS Device Power

- Reduce additional utility bills
  - Use of Existing ITS service drops where feasible
  - Connect to existing ITS cabinet to draw power for TPAS sign
- NO UPS and/or solar power provided to the TPAS cabinets
TPAS System Engineering Documents

Deployment TPAS System
- Project Systems Engineering Management Plan (PSEMP)
- Concept of Operations
- Truck Parking ConOps Companion
- Requirement Verification Traceability Matrix (RTVM)
- TPAS Guidelines for RTMC Standard Operating Procedures (SOPs)
TPAS Concept Plans and Guide Sign

- Concept Plans Development
  - For each Design Build Project
  - Identified TPAS Sign location
  - TPAS system integration details

- Guide Sign Worksheets
  - Rest Area, Welcome Center and Weigh Station TPAS Signs
  - TPAS Sign Placed Inside Rest Area to Guide Trucks Towards Available Parking Rows
TPAS Certification Documents

Certification Documents

- Environmental Evaluation Report
- Environmental Certification
- Utility Certification
- Rail Certification
- Right of Way certification
TPAS Sponsorship Sign

TPAS Supplemental Sponsorship Sign

- 6’ X 4’ Size of the Supplemental Sponsorship Sign
- Supplemental Sign located right justified below TPAS Sign
- FDOT received FHWA Approval
TPAS Architecture

Data collection
• In-ground sensors
• Ingress and egress sensors

Data communications
• Existing ITS network

Data collection, processing, and storage
• RTMC using SunGuide® system

Data dissemination
• Embedded roadside Dynamic Message Sign (DMS)
• Connected Vehicle and Dedicated Short Range Communications (DSRC) - Future
• Florida 511
• Data Integration and Video Aggregation System (DIVAS)
Information Dissemination - Signs

Criteria used for roadside signs

- Two to three miles upstream of the parking facility preferably prior to an upstream exit ramp for better decision-making
- Manual of Uniform Traffic Control Devices (MUTCD) compliant
- Near existing ITS communication and power source
- Near an existing CCTV for message verification
Information Dissemination - 511

FL511 Website Truck Parking Facility Map View

FL511 Mobile App Truck Parking Facilities List View
Future Enhancements – Statewide Freight Network
Future Enhancements – Freight Database
Questions?

Thank you!

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Statewide Scales Manager
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