MDOT I-94 Truck Parking Information and Management System

TPIMS
The Challenge

- Up to 30% of traffic along I-94 in Southwest Michigan is commercial traffic
- Commercial vehicles routinely parked on ramps and along the interstate creating safety issues
- Significant percentage of trucks stop spaces are empty or under utilized
- ~40% of drivers spend over 1 hour finding parking during mandatory rest period
- Driver distraction major concern
The Solution

Project Goal
- Deliver reliable, real-time parking availability information to truck drivers to make well informed decisions benefiting safety and efficiency

Details
- Use speech to text to minimize driver distraction
- Provide information via multiple platforms
  - Roadside signs
  - Websites
  - Smartphone applications
  - Connected Vehicle
  - Ultimately 3rd party hardware/applications
Corridor Overview

- 5 Rest Stops
- 7 Private Truck Stops
- 5 Variable Message Signs
- 5 Connected Vehicle Beacons

TPIMS
System Design

- IN-CAB DSRC RECEIVER
- DSRC BEACONS

- MILE MARKER 0
  - NEW BUFFALO REST AREA
  - CCTV

- MILE MARKER 42
  - WATERVLIET REST AREA
  - CCTV

- MILE MARKER 85
  - GALESBURG REST AREA
  - CCTV

- MILE MARKER 96
  - BATTLE CREEK REST AREA
  - CCTV

- MILE MARKER 113
  - MARSHALL REST AREA
  - CCTV

TPMS “HEAD END”

- MDOT ATMS SERVER
- PRIVATE AVAILABILITY DATA
- PUBLIC AVAILABILITY DATA
- PUBLIC INTERNET

PRIVATE TRUCK STOP - VEHICLE DETECTION AND VERIFICATION

- DMS
- EXIT 1
- EXIT 12
- EXIT 29
- EXIT 30
- EXIT 56
- EXIT 92
- EXIT 104
- EXIT 110
- EXIT 112
- EXIT 115

PUBLIC WEBSITE

SMART PHONE APP

Parking Carma

Smart Truck Parking.com

NO SCALE

DESIGNER: SHEADING

DESIGNER: SHEADING

ENGINEER: SHEDD

ENGINEER: SHEDD

FILE: Carma Plan Diagram

TPMS COMMUNICATIONS BLOCK DIAGRAM
Data Collection

All lots use in/out counting

Private Lots

• Integration via external data feed
• Utilize video detection

Rest Areas

• Direct integration
• Utilize in-ground detection
Integration

Data Collected – per lot
- Total Spaces
- Actual Occupancy
- Low Threshold
- Filling/Clearing

Device Associations
- Which counting devices are associated with which lots
- Which cameras are associated with which lots
- Which Lots are associated with which signs
Data Collection

- **MiDRIVE**
  - MDOT driver information website
  - Available to all at [https://mdotnetpublic.state.mi.us/drive/](https://mdotnetpublic.state.mi.us/drive/)

- **Variable Message Signs**
  - Five placed at strategic sites on I-94

- **DSRC Connected Vehicle**
  - Interface to tablet with text to speech capabilities
  - Placed when enter I-94 corridor where program is supported also at intersections of I-94 and several strategic highways

- **Truck Smart Parking Services (TSPS)**
  - Smartphone Application for Android and Apple
  - Also Website
Dynamic Message Signs
Connected Vehicles /DSRC

- Tablet based user interface
- Trending ↑↓ based upon 30 min
Truck Smart Parking Services (TSPS)

http://www.onlineparkingnetwork.net/map
http://www.trucksmartparkingservices.com/
Current Status

- Indiana, deploying system by 2018
- Other states deploying are Kansas, Kentucky, Iowa, Minnesota, Ohio, Wisconsin and Michigan is expanding
- Florida deploying along I-4 and I-95 corridors
- Travel Centers of America offering TruckSmart Mobile Application
- Talking with AVL/EBOR companies about integrating into their products