Wisconsin Truck Parking Project

Presented 2015 ITS Forum
September 23, 2015
Truck Parking Project

Two Different Projects

- $1,000,000 FHWA Grant
- Prospective $3,000,000 MAASTO TIGER Grant
  - Expect announcement of winning projects in October
January 2012
• Submitted application requesting $1,813,594 for truck parking

August 2012
• Notification that FHWA would award $1,000,000 of the $1.8 mil ask
• Previous plan needed to be amended

August 2013
• Work Plan Submitted
• Included:
  • Two rest areas
  • One truck stop
  • All in Juneau County

2014
• Work plan updated
• Additional sites
• Patents
• Team members
• Advances in technology
$1 Million Grant Amount/Background

December 2014
- New work plan approved by FHWA
- Includes 4-5 rest areas WB on I-94
- 0-1 truck stop

2015
- Minor work plan tweaks
- Elimination of truck stop
- 4 rest areas
- EB I-94
- WisDOT installs UMN system
- Data will be shared with all team members

Present
- Contracting with HNTB and MnDOT/UMN
- UW TOPS Lab
- ATRI/PeopleNet (pending)
- DMS
Private Truck Stops

- Importance
- Michigan model
- BTO preferred location criteria
- Map of locations
- # of stalls
- Brands
Private Truck Stops

Importance

- Private truck stops provide an alternative to public rest areas
- Adds value to a truck parking notification system
- Presently truck stop operators don’t see business reason for investing in system
- MI has 10 truck stops – all paid for by FHWA
  - No additional owners have approached MI to install system
  - MDOT paying operational costs
Private Truck Stops

Michigan Model

- Contract is between MDOT consultant and each truck stop
- Infrastructure installed by truck stop owner (poles, power, communications)
  - Consultant leases space for the same amount as infrastructure install cost
- Consultant installs their detection equipment
Private Truck Stops

BTO preferred location criteria

- > 75 stalls
- Limited ingress/egress locations
- Within 20 miles of rest area with truck parking detection
- WisDOT is interested in potentially partnering with one private truck stop
- Private truck partnering process needs further development
Private Truck Stop

- 2,824 known private stalls on I-94
- Based upon list found at www.uspilotcars.com
- Additional sites located via corridor search on Google Maps
Private Truck Stop

- Major Brands
  - Road Ranger
  - Kwik Trip
  - Pilot/Flying J
  - TA/Petro
  - Love’s
  - BP
Wisconsin Truck Stop Inclusion

- No budget as part of $1,000,000 FHWA Grant
- May be included if MAASTO TIGER Grant is successful
- Big issue is deciding which sites would potentially receive funding using public money
- One national operator may install a system in Wisconsin as part of a pilot project
Rest Area Locations

I-94 Eastbound
- Dunn County to Columbia County
- 172 mile corridor
- 157 stalls
- 882 private stalls in corridor
- Four Rest Areas
Rest Area #61, Dunn County (25 stalls)
Rest Area #53, Jackson County (41 stalls)
Rest Area #9, Juneau County (23 stalls)
Rest Area #11, Columbia County (68 stalls)
Interstate System

- System will bridge MN and WI
- Minnesota will show Dunn Co. availability
- Will connect with Minnesota’s truck parking notification system
  - MN system includes three sites north of MSP
  - Eastbound I-94
    - Elm Creek
    - Big Spunk
    - Enfield
Two detection technologies will be used:

- Video pattern recognition
  - Rest Area # 61
- Microwave detection
  - Rest Areas # 53, 9 & 11
Video Pattern Recognition

- Pioneered by University of Minnesota (UMN)
- Uses an array of three cameras to reconstruct parking area
- Updated every minute
Video Pattern Recognition

**Image courtesy of UMN**
Camera-Vision module implementation

HD Res IP cameras

3D Registration & alignment with Parking lot surface

**Slide courtesy of UMN/MnDOT**
Video Pattern Recognition

- UMN website: http://reststop.cs.umn.edu/

Elm Creek EB
I-94 mile post 215.0

11 of 15 spaces available

Last Report
Wednesday, April 22nd 2015, 10:44:10 am -05:00

04/22/2015 10:44:10 am -05:00
Microwave Detection

- Microwave detection is used extensively around Wisconsin
- Counts and classifies vehicles
- Will count in/out of rest area
- Formula used:
  
  \[
  \text{# of stalls available} = \text{Total # of stalls} - (\text{Vehicles Out} - \text{Vehicles In})
  \]
Microwave Detection

- Uses detector and camera for verification
Operating costs

Sites with count in/out detection
- # of vehicles counted in/out is sent real time to consultant
- Consultant software calculates the # of stalls available
- # of stalls available is sent via XML feed to WisDOT
- Eliminates the need for WisDOT to build software to calculate availability
  - MDOT spent ~$400,000 to develop counting software
Operating costs

Cost to monitor rest areas #10, #12, & #54

- $237,000/18 month project life
  - $158,000 per year
  - ~$4,400 per site/month

- Economies of scale (reduced operating costs) expected as # of sites increase
Dissemination

- Minnesota
  - UMN website
  - ATRI smartpark4trucks.com website
  - PeopleNet
  - Roadside PCMS
Dissemination

- Michigan
  - MDOT “Mi Drive” website
  - TSPS website & mobile app
  - Hybrid signs
Dissemination

- Wisconsin
  - 511 WI
  - DMS signs*
  - XML feed
    - UMN website
    - ATRI & PeopleNET**
    - TSPS website & mobile app
System Diagram

DMS

TRUCK PARKING
REST AREA 61: 15
REST AREA 53: 23

Identical Data Feed

Rest Areas #9, #11, #53

WisDOT ATMS

Public & Private Data Providers

Mobile Apps

Websites

PeopleNET

WisDOT XML Feed
Partners

- MnDOT/UMN
  - Rest area # 61
- HNTB
  - Rest areas # 53, 9, 11
- University of Wisconsin TOPS Lab
  - Evaluation of both systems
- American Transportation Research Institute (ATRI)
  - Industry outreach
- WisDOT Bureau of Highway Maintenance
### Draft Timeline

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- Timeline is subject to change
  - Contracts are in approval pipeline
    - Final timeline will be known after execution
  - May use regional electrical contracts for installation
    - May have to adjust to their schedule
Regional Truck Parking Information and Management System (TPIMS)

CONTACT INFORMATION

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Grant Request: $36.6 million
Grant Type: Rural Application
MAASTO TIGER Grant

- TIGER = Transportation Investment Generating Economic Recovery
- Eight of ten MAASTO states jointly applied for a TIGER grant to further develop interstate truck parking.
- Requires states to match 10%
- WisDOT pays design costs
- Total grant request $37.2
- WisDOT seeking $3 million
- Application submitted June 5, 2015
- If successful, funds to be spent 2017-2022
- 29x more funds were requested than are available
  - VERY COMPETITIVE
Of the eight MAASTO states, three have experience with truck parking.

Currently there are two dissemination methods/models.

WisDOTs plan is to leverage the best of each as a model for other states.

How the MAASTO states will disseminate information may be influenced by the success/failure of WisDOTs project.
WisDOT Plan

Priority of construction

1. Complete I-94 EB from Lake Mills to Kenosha
2. I-94 WB from IL State Line to MN State Line
Conclusion

Truck parking is a relatively new field

- Many exciting prospects on the horizon
- Rapidly evolving technology through development and trial and error
- Data dissemination is challenging
- Many competing interests
- Needs private sector buy-in to alleviate truck parking shortage
Contact Information

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