

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



\$1 Million Grant Amount/Background

January 2012

- Submitted application requesting **\$1,813,594** for truck parking

August 2013

- Work Plan Submitted
- Included:
 - Two rest areas
 - One truck stop
 - All in Juneau County

August 2012

- Notification that FHWA would award **\$1,000,000** of the \$1.8 mil ask
- Previous plan needed to be amended

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

Present

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

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



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

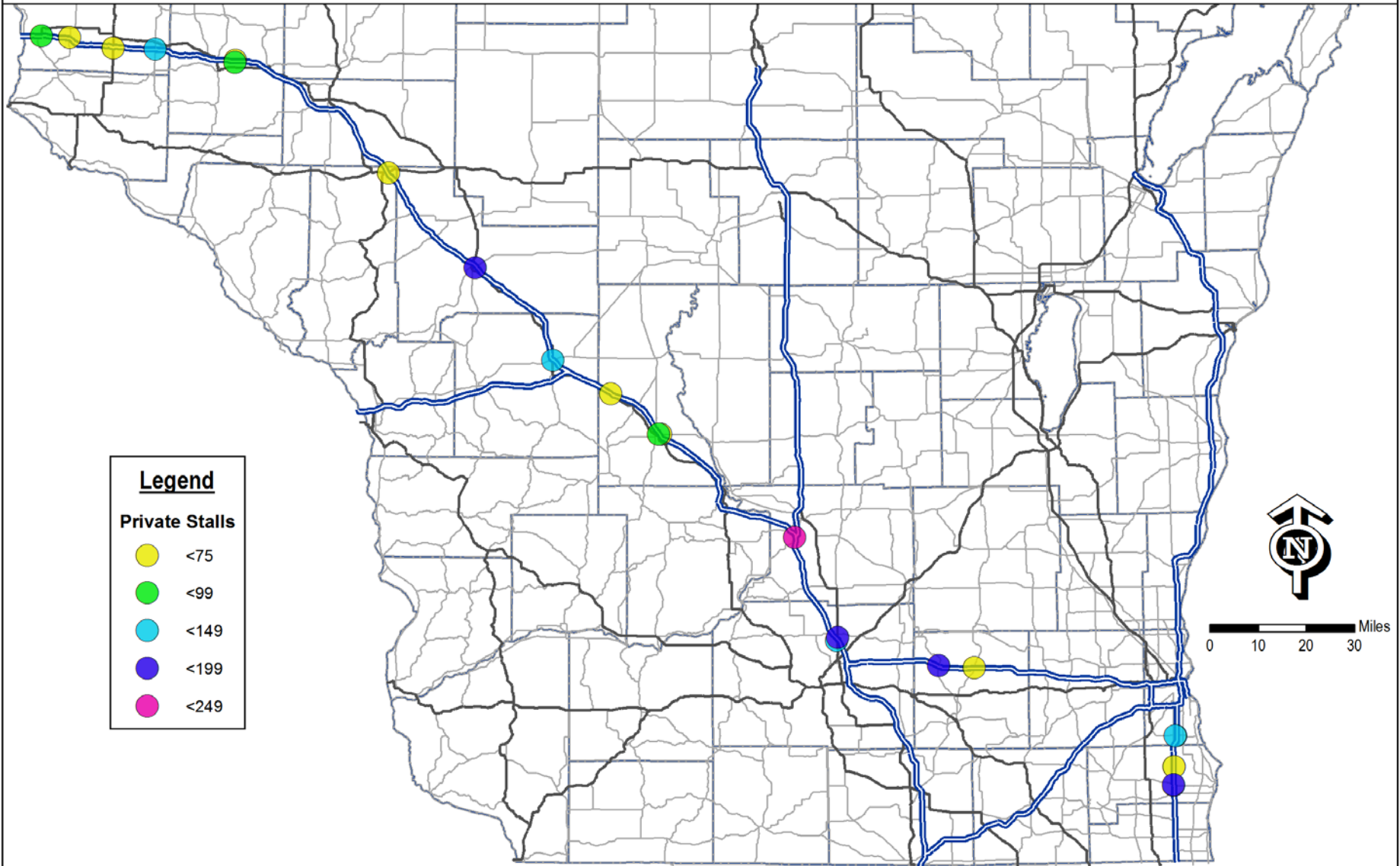
BTO preferred location criteria

- ▶ > 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



WisDOT Truck Parking Private Truck Stop Locations (>50 Stalls)

Updated: June 8, 2015



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



Private Truck Stop

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)



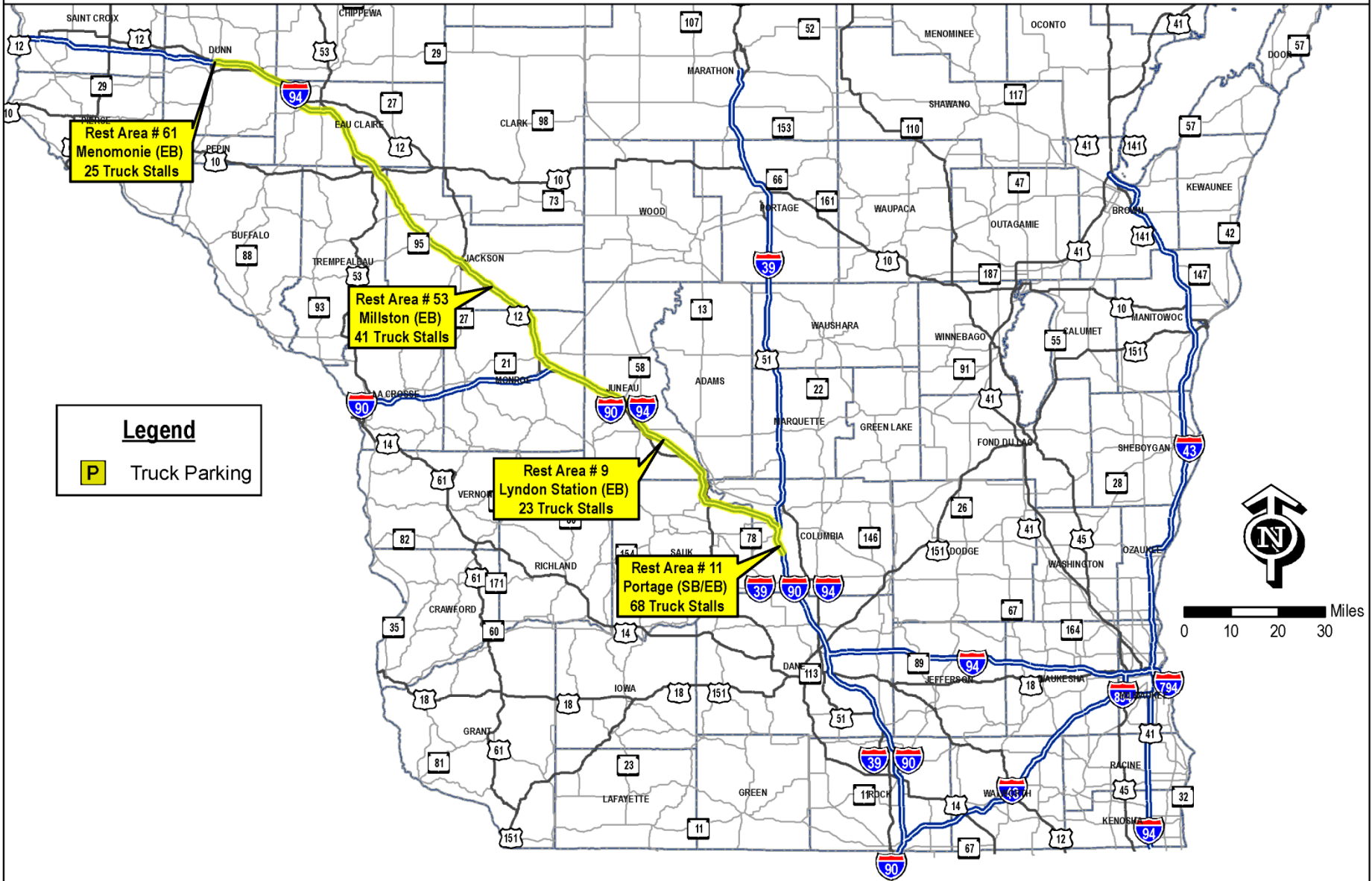
Rest Area #11, Columbia County (68 stalls)



WisDOT Truck Parking Location Map (172 miles, 157 truck stalls)



Updated: April 21, 2015



Legend

P Truck Parking

0 10 20 30 Miles

Rest Area # 61
Menomonie (EB)
25 Truck Stalls

Rest Area # 53
Millston (EB)
41 Truck Stalls

Rest Area # 9
Lyndon Station (EB)
23 Truck Stalls

Rest Area # 11
Portage (SB/EB)
68 Truck Stalls

Interstate System

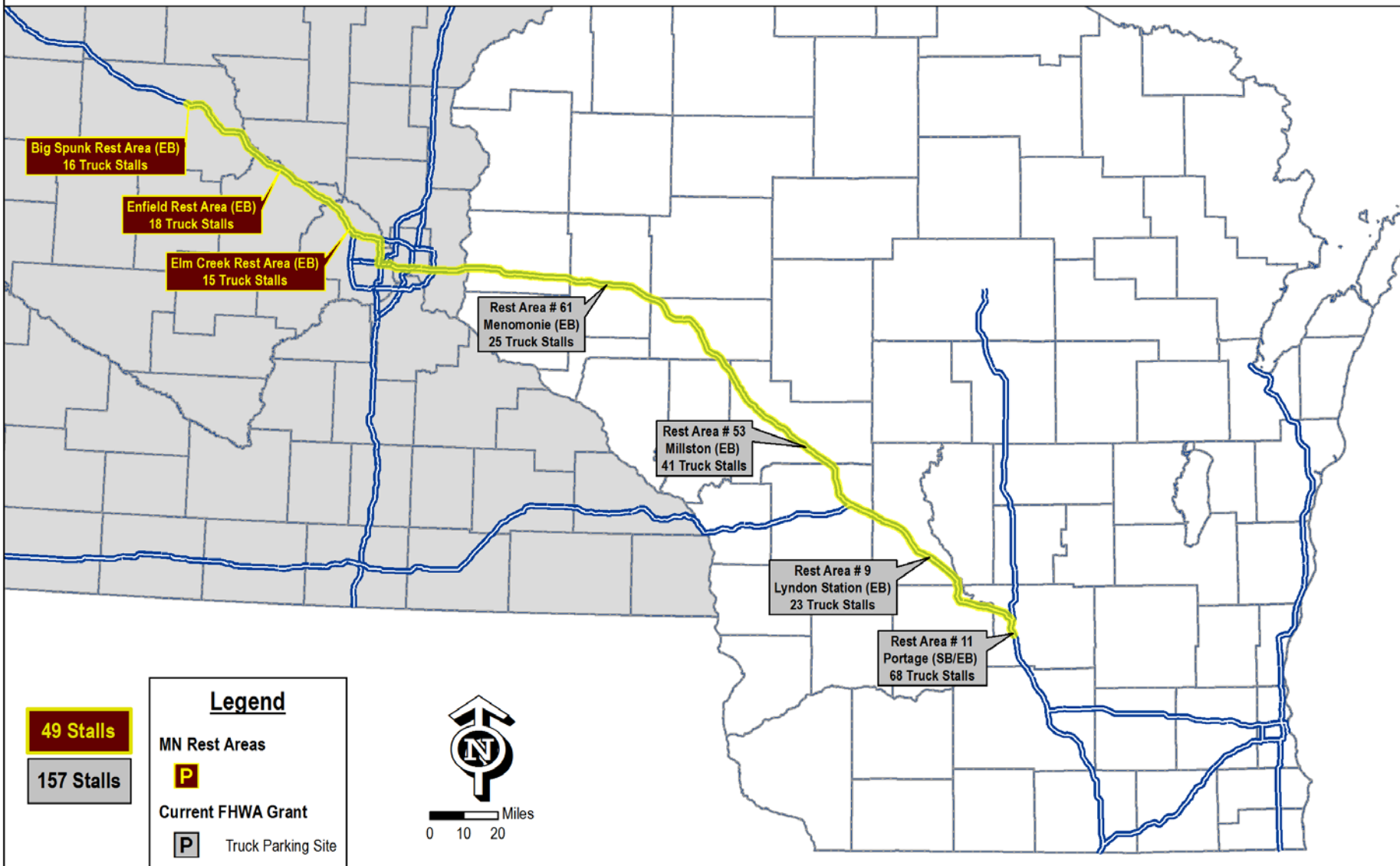
- ▶ System will bridge MN and WI
- ▶ Minnesota will show Dunn Co. availability
- ▶ Will connect with Minnesota's truck parking notification system
 - MN system includes three sites north of MSP
 - Eastbound I-94
 - Elm Creek
 - Big Spunk
 - Enfield



Wisconsin & Minnesota Truck Parking Locations (321 miles, 206 truck stalls)



Updated: May 15, 2015



Technologies

- ▶ Two detection technologies will be used:
 - Video pattern recognition
 - Rest Area # 61
 - Microwave detection
 - Rest Areas # 53, 9 & 11

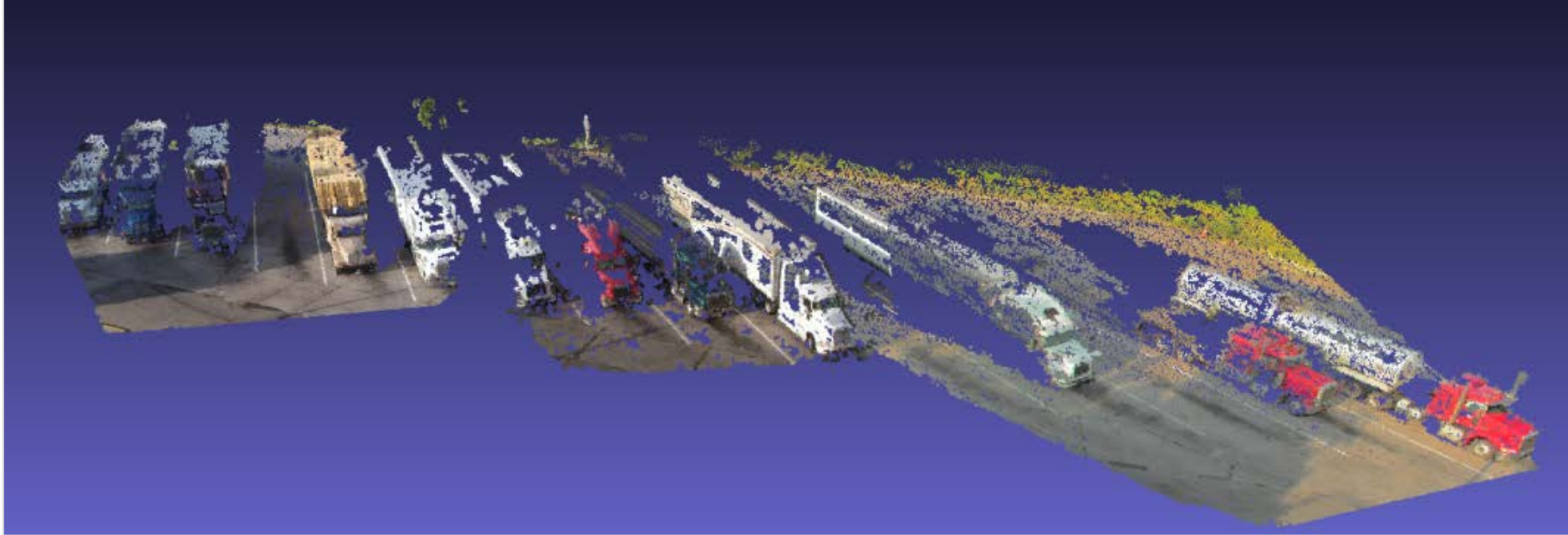


Video Pattern Recognition

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



Video Pattern Recognition

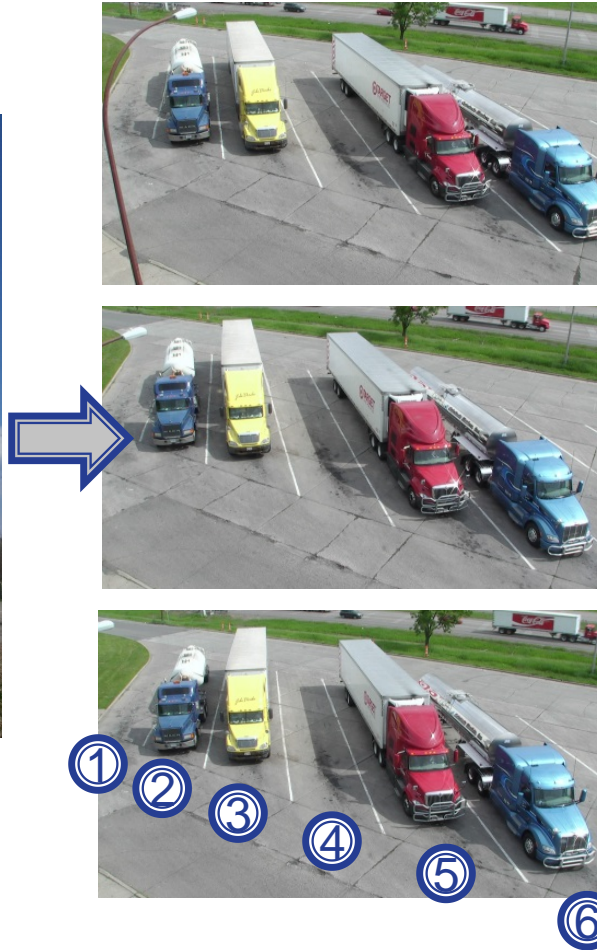


**Image courtesy of UMN

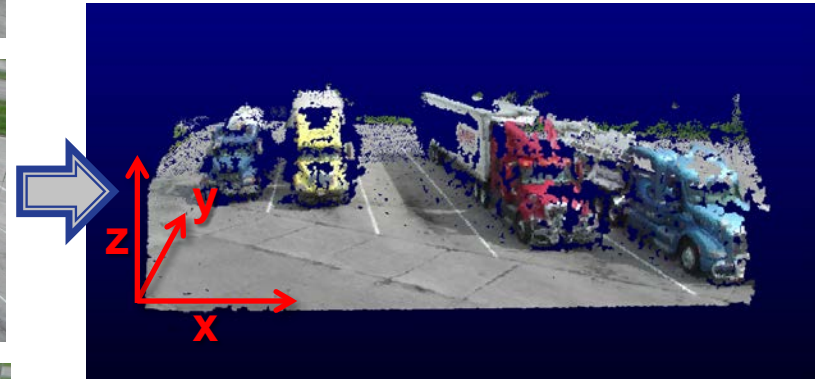


Camera-Vision module implementation

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

194 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:
of stalls available =
Total # of stalls - (Vehicles Out – 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

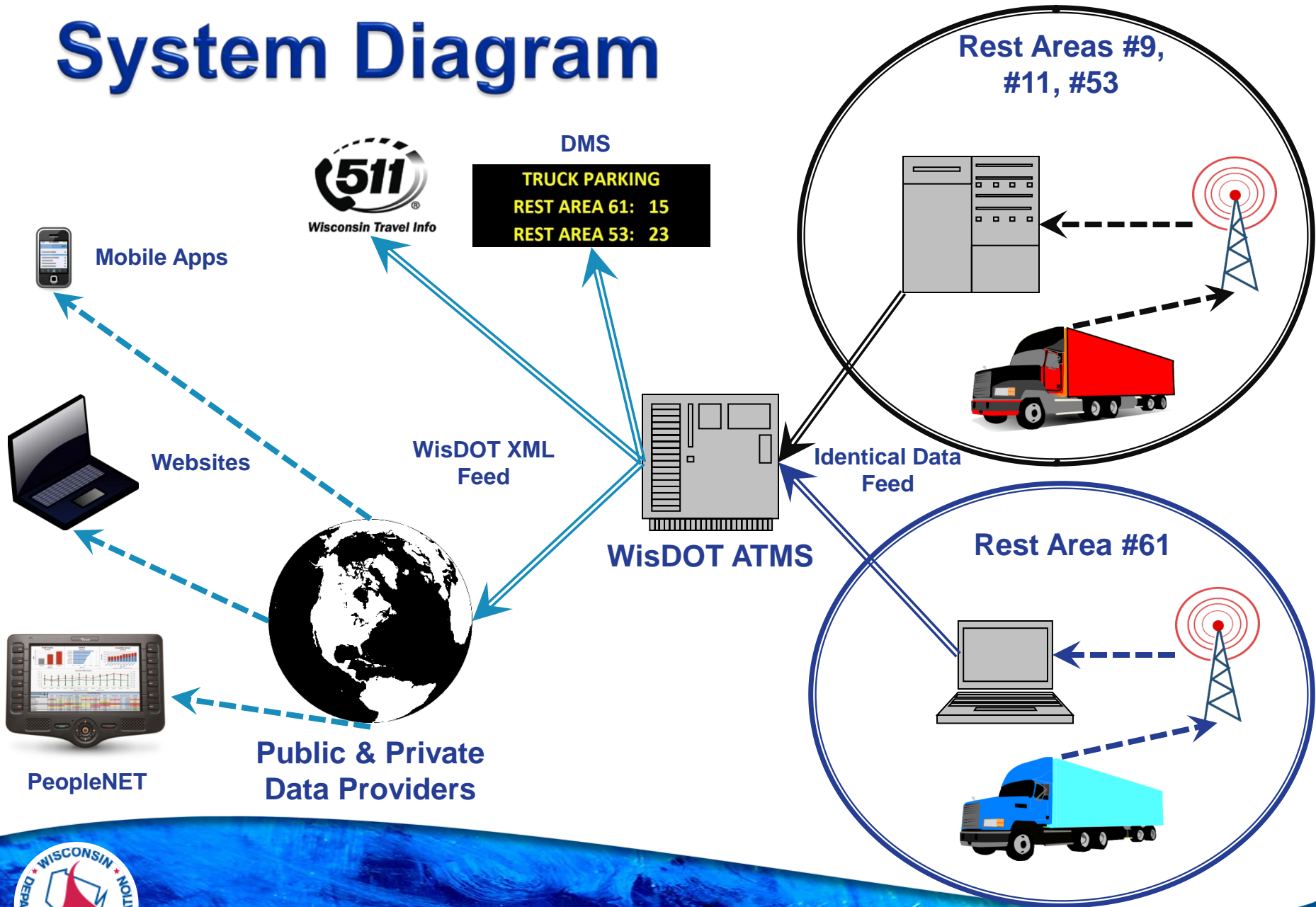


Dissemination

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



System Diagram



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

	2015				2016								
	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
Contracting													
HNTB													
UMN													
UW-TOPS LAB													
Hardware/Software Interface													
Design													
HNTB													
UMN													
Construction													
HNTB													
UMN													
Implementation													
Evaulation													+ 18 Months

▶ 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



TIGER PROPOSAL 2015

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 **G**enerating **E**conomic **R**ecovery
- ▶ 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



MAASTO TIGER Grant

- ▶ 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

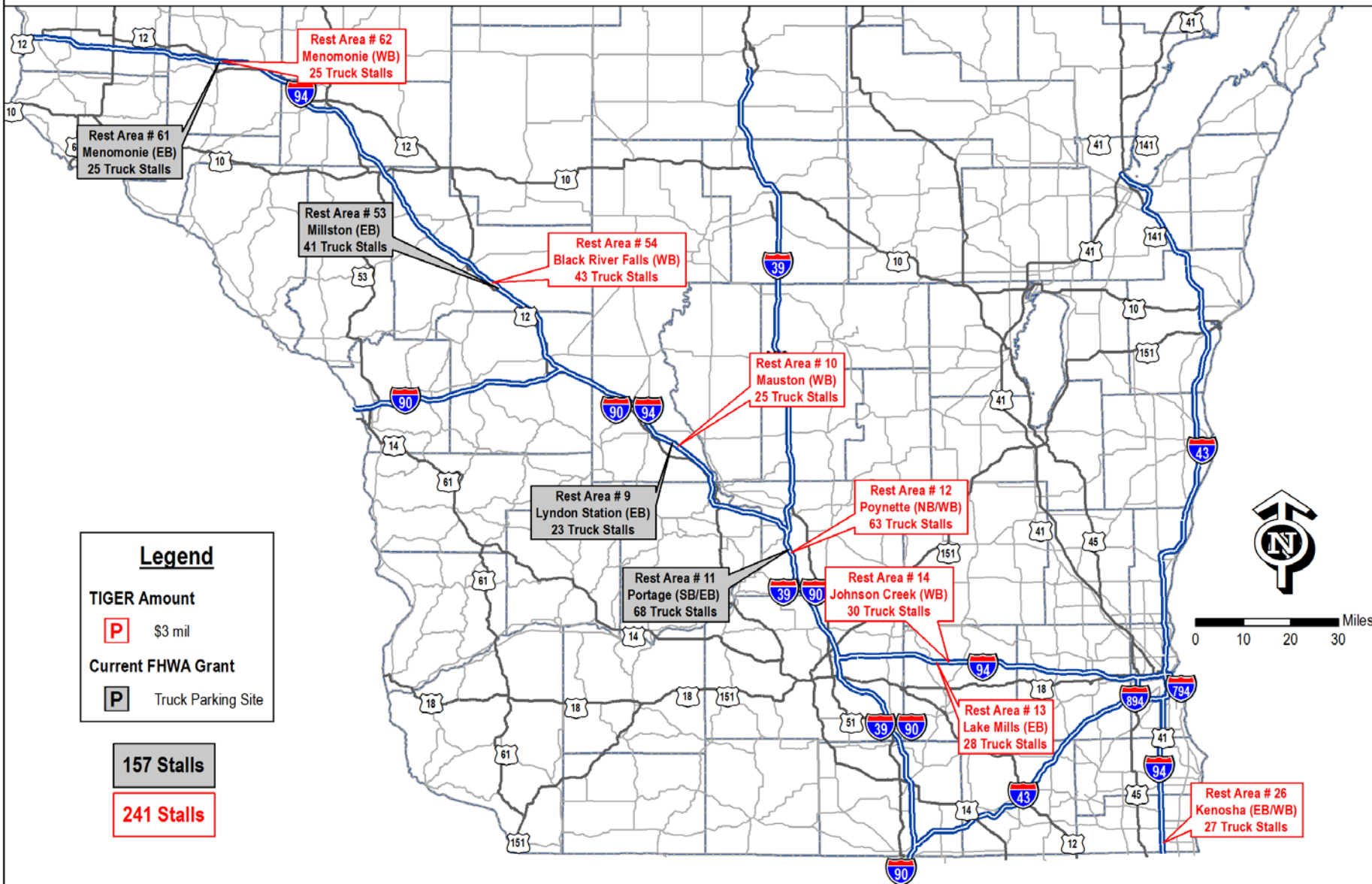
1. Complete I-94 EB from Lake Mills to Kenosha
2. I-94 WB from IL State Line to MN State Line



WisDOT Truck Parking TIGER Grant (\$3 Million Alternative)



Updated: May 11, 2015



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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