

Illinois Department  
of Transportation

# Statewide Rest Area Study Illinois State Freight Advisory Council Meeting

01/24/19



01 **Introductions**

02 **Existing System**

03 **Rest Area Needs**

04 **Rest Area Evaluation**

05 **Rest Area Programming**

06 **Questions & Answers**

# 01 - Introductions

- *Jim Roth, PE – Hurst-Rosche*
- *Jeremy Connor, PE – Hurst-Rosche*



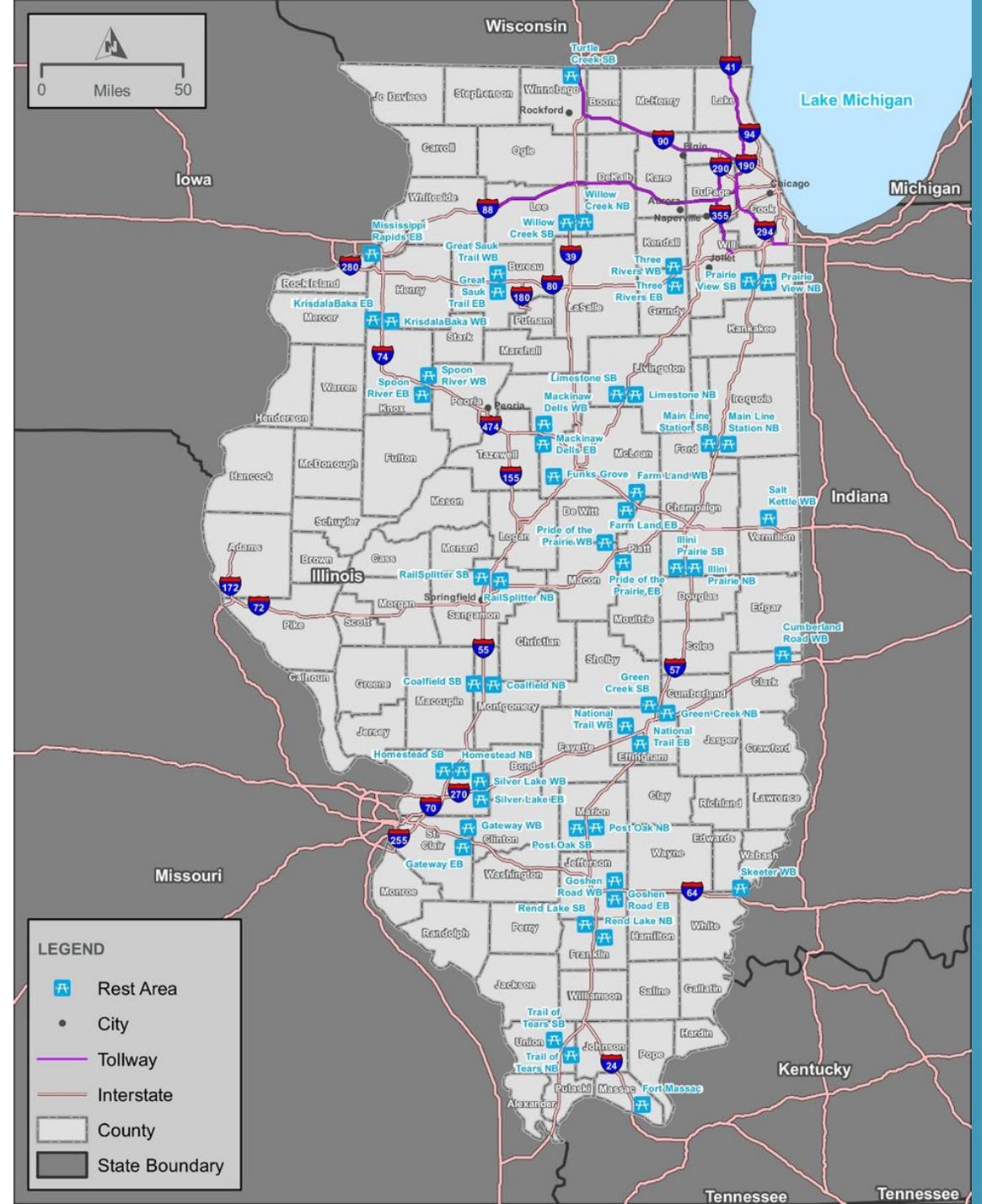
## 02 – Existing System

- *Rest Areas*
- *Alternative Service Location (ASLs)*
- *Truck Parking @ Non-Rest Area Locations*
- *Fatigue Related Crashes*
- *Rest Area User Survey*



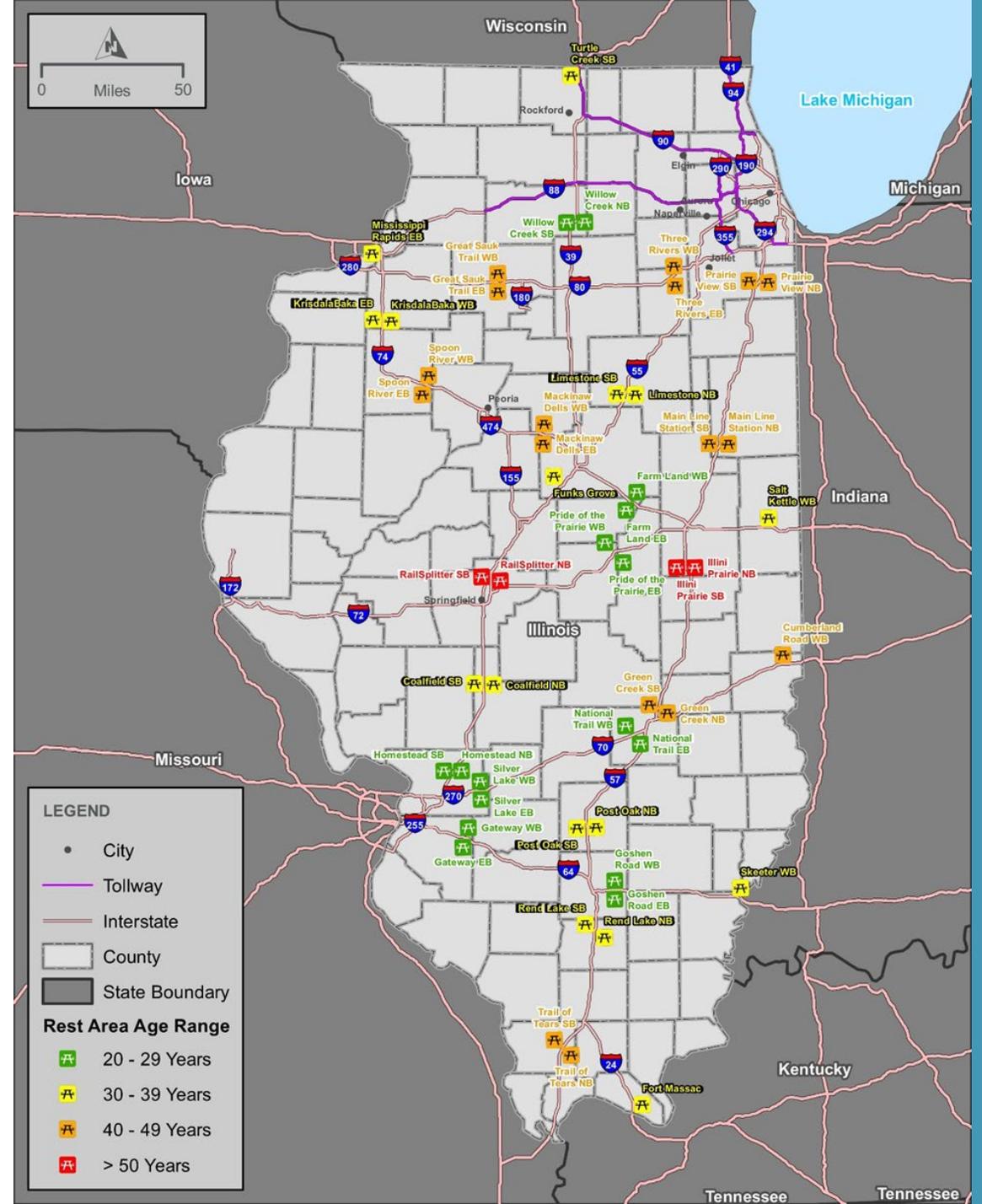
# Rest Areas

- 53 Rest Areas Statewide
  - 51 Directional Rest Areas
  - 2 Single-Point Rest Areas
- Standard Services
  - Rest Rooms
  - Parking
  - Drinking Water
  - Traveler Information
  - Picnic Areas
- Other Services
  - Family Assist Restrooms
  - Payphones with Teletypewriter
  - Vending Machines
  - Weather Information
  - Playground Equipment
  - Pet Areas



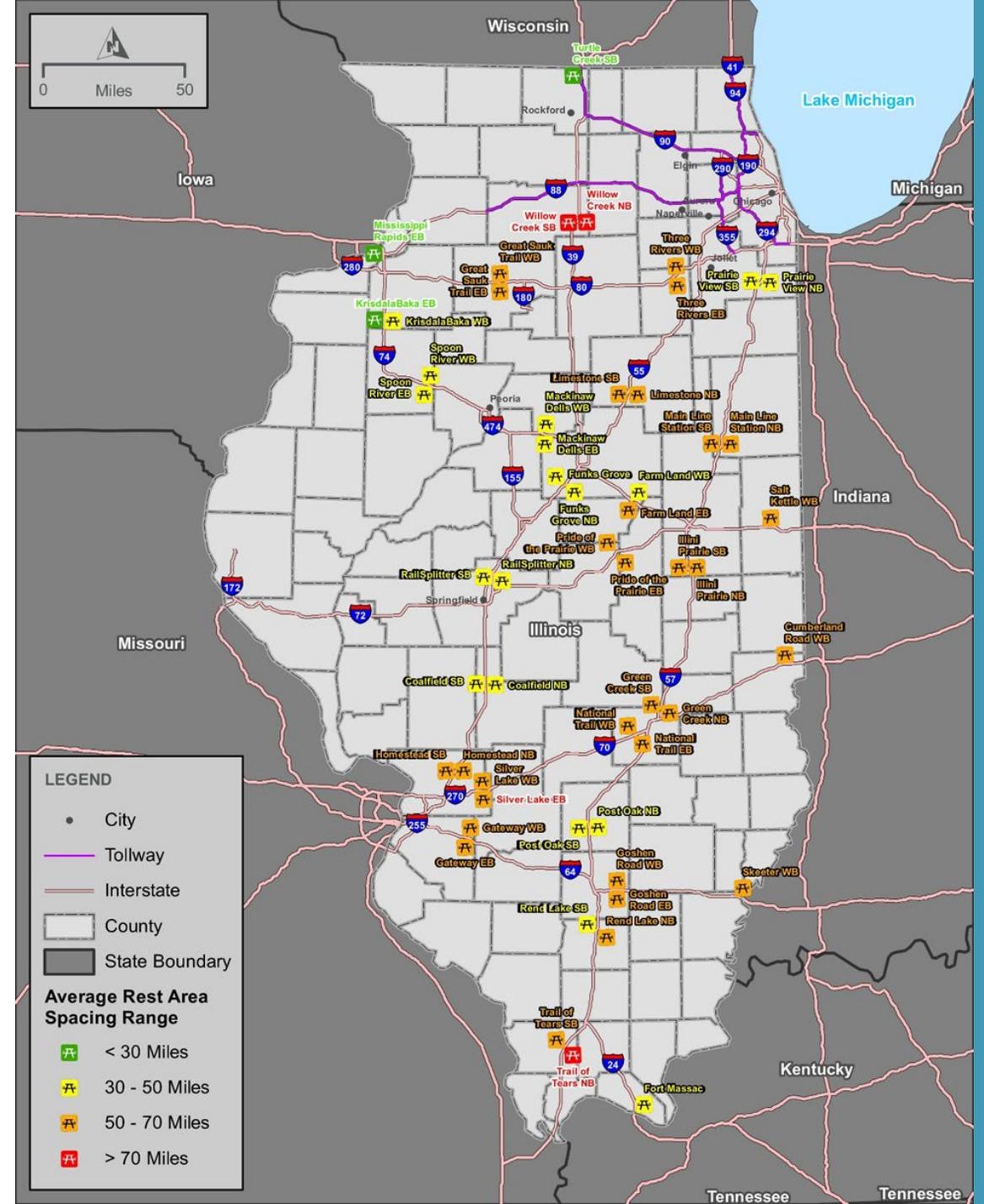
# Rest Area Age

- Average Age – 35 Year Old
- Newest Rest Areas – 20 Years Old
- Oldest Rest Areas – 55 Years Old
- Calculated Adjusted Rest Area Age



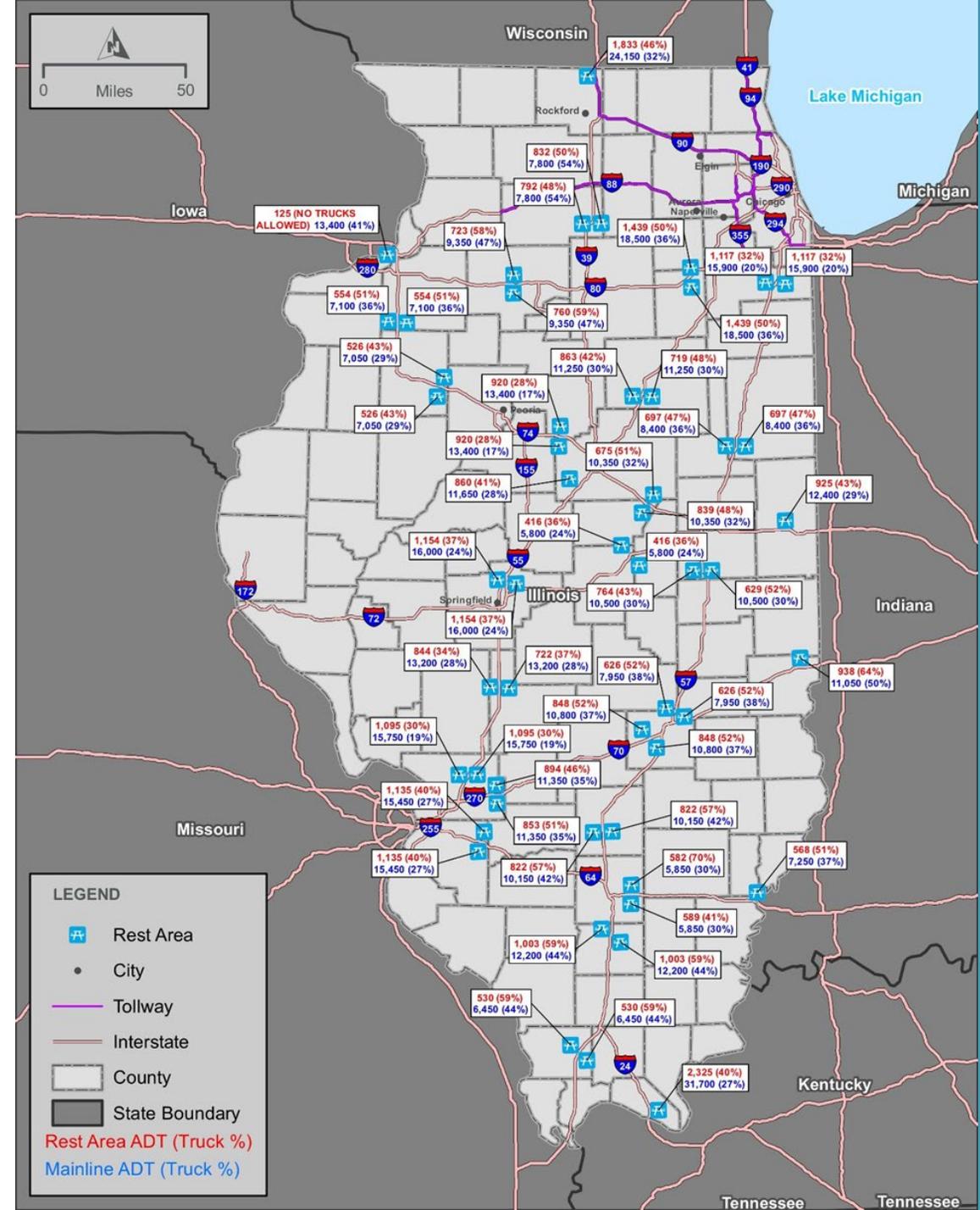
# Rest Area Spacing

- AASHTO Recommendation ~ 1 Hour Drive Time
- Average Distance ~ 52 Miles
- Shortest Distance – 8 Miles
- Longest Distance – 127 Miles



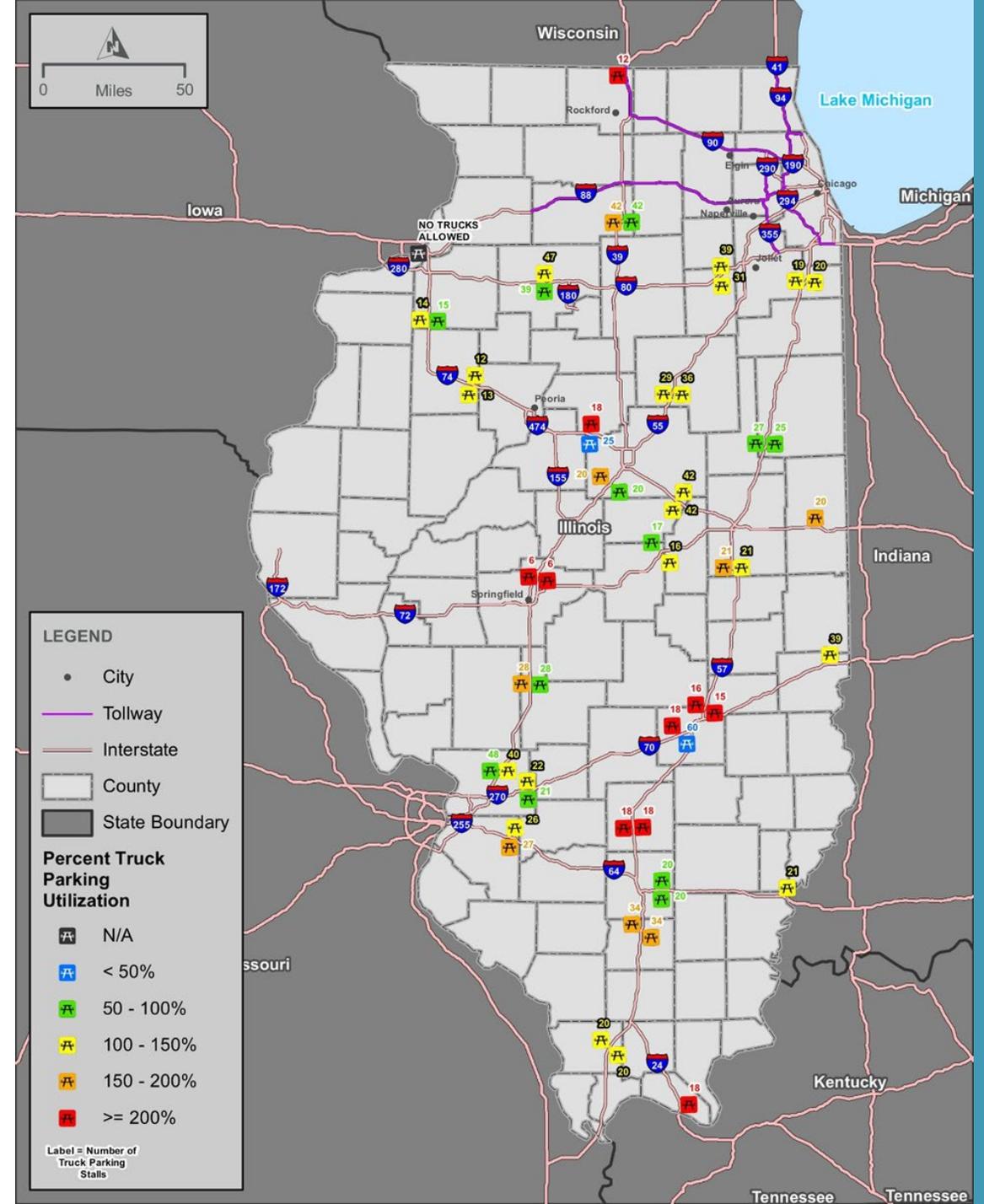
# Rest Area Traffic Volumes

- Typical Range – 500 to 1,500 vpd
- Lowest – 125 vpd (Mississippi Rapids EB)
- Highest – 2,335 vpd (Fort Massac)
- General 7% to 10% of Mainline Traffic
- Mainline % Truck Range – 17% to 54%
- Rest Area % Truck Range – 28% to 70%



# Rest Area Truck Parking

- Number of Stalls Range – 6 to 60
- Utilization Collected at 39 Rest Areas
- Utilization Range – 67% to 533%
- 27 of 39 Locations Over-Capacity
- Calculated Parking Requirements Based on Illinois DOT Design Manual



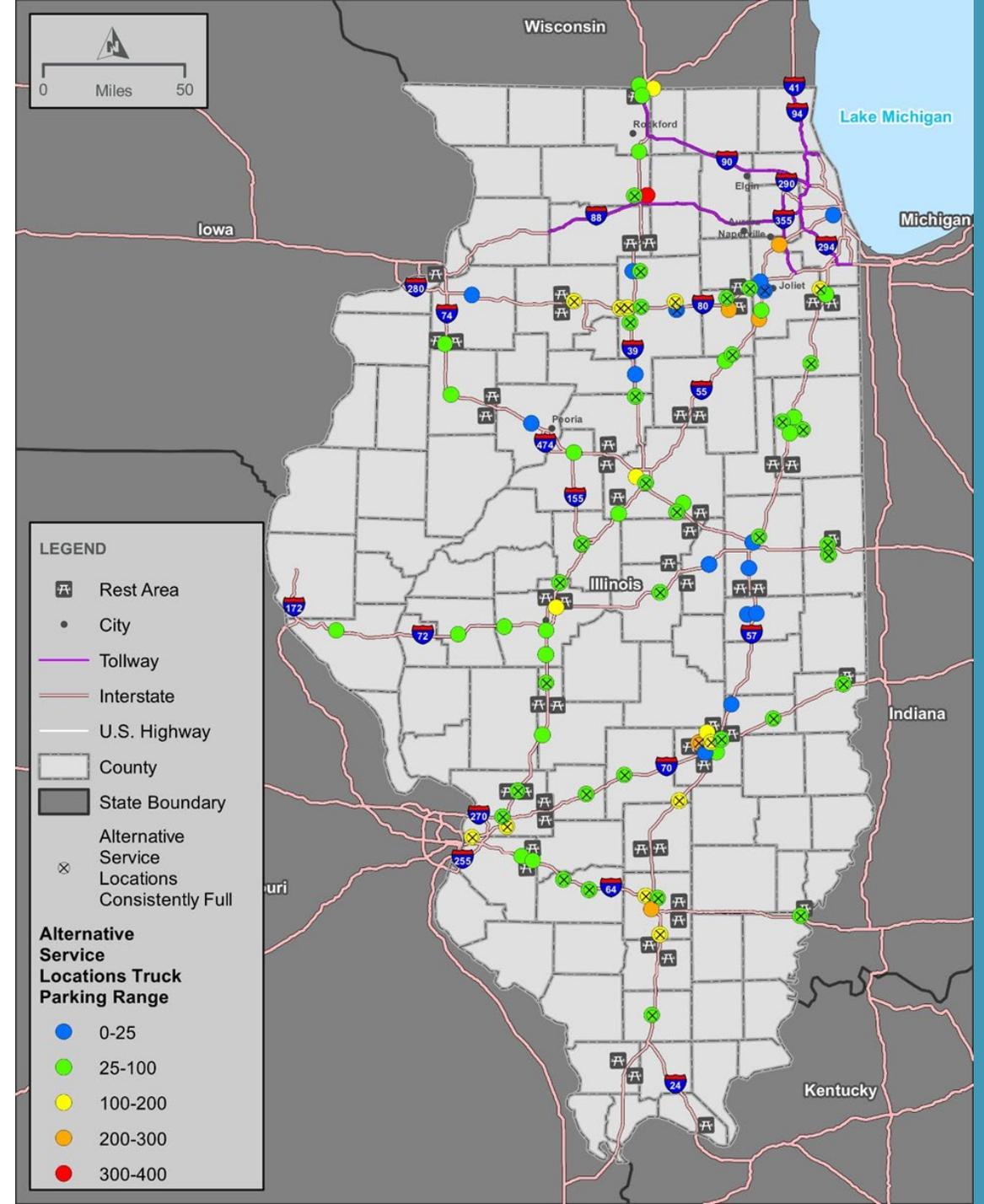
# Comparison to Adjacent States

Metric	Illinois	Adjacent States					
		Indiana	Iowa	Michigan <sup>1</sup>	Missouri	Wisconsin	Average
Number of Rest Areas	53	30	37	78	22	29	39
Average Rest Area Spacing	52	57	44	40	85	62	68
# of Rest Areas per 100 miles of Interstate	2.43	2.33	4.74	3.87	1.59	3.91	3.15
Average Rest Area Age	35	32	31	24	-	30	29
<b>Average Truck Parking Stalls</b>	<b>25</b>	<b>43</b>	<b>18</b>	<b>20</b>	<b>31</b>	<b>26</b>	<b>28</b>
Average Car Parking Stalls	36	56	43	57	59	64	56
% with Family Assist Restrooms	28 %	30%	46%	46%	32%	45%	40%
% with Weather	94%	-	92%	14%	-	86%	64%
% with TTY	64%	-	95%	69%	77%	83%	81%

<sup>1</sup> 48 rest areas located on the Interstate System. 30 rest areas located on US or other State highways. Michigan rest area statistics based on all 78 rest areas.

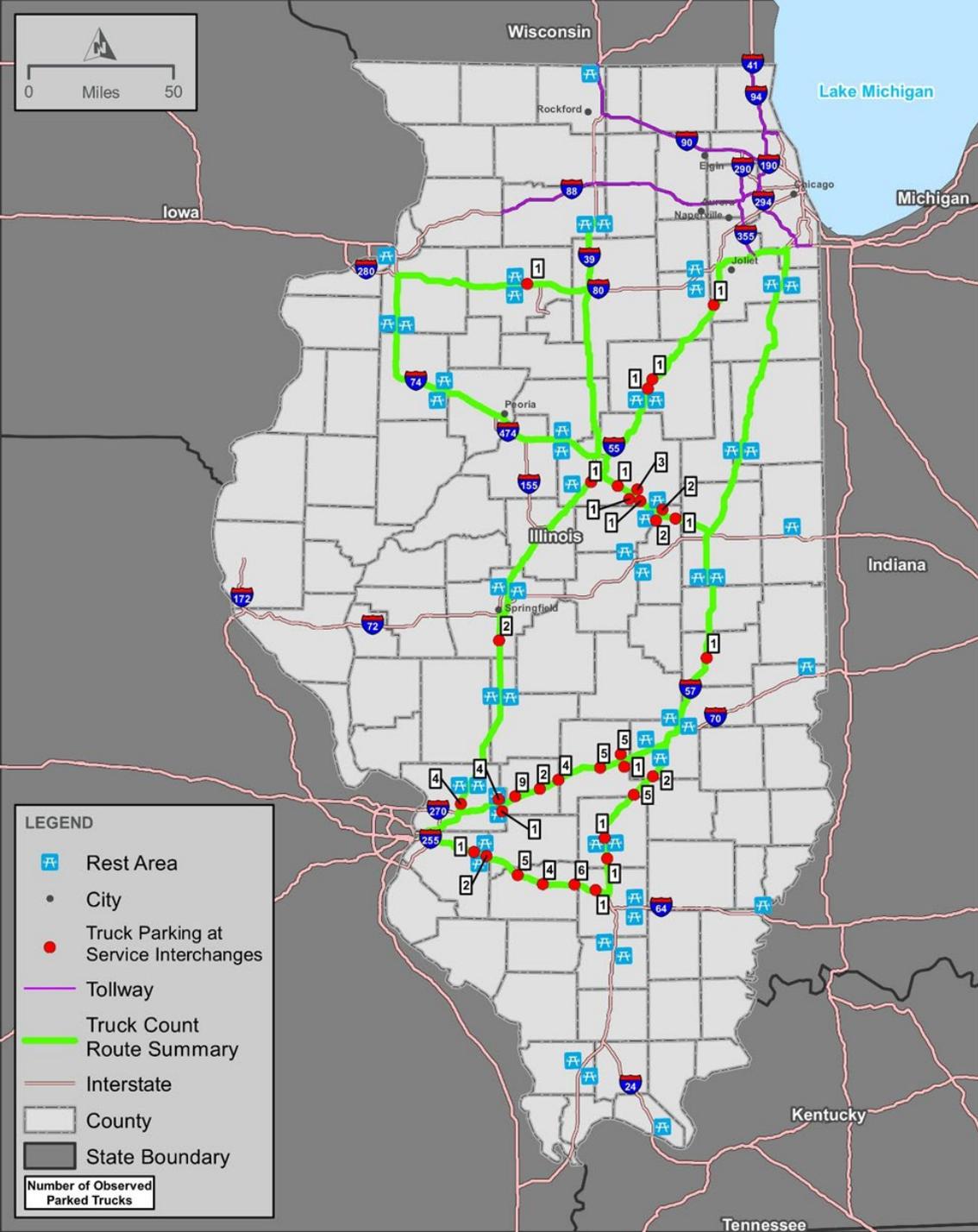
# Alternative Service Locations (ASLs)

- Non-Rest Area Locations w/ Similar Services
- Typically Truck Stops & Travel Plazas
- Within ¼ Mile of Interchanges
- 91 ASLs Identified
- ~7,900 Truck Parking Stalls at ASLs
- ~50% Reported Truck Parking Consistently Full
- ~80% Reported Truck Parking Consistently Full along I-70 and I-80



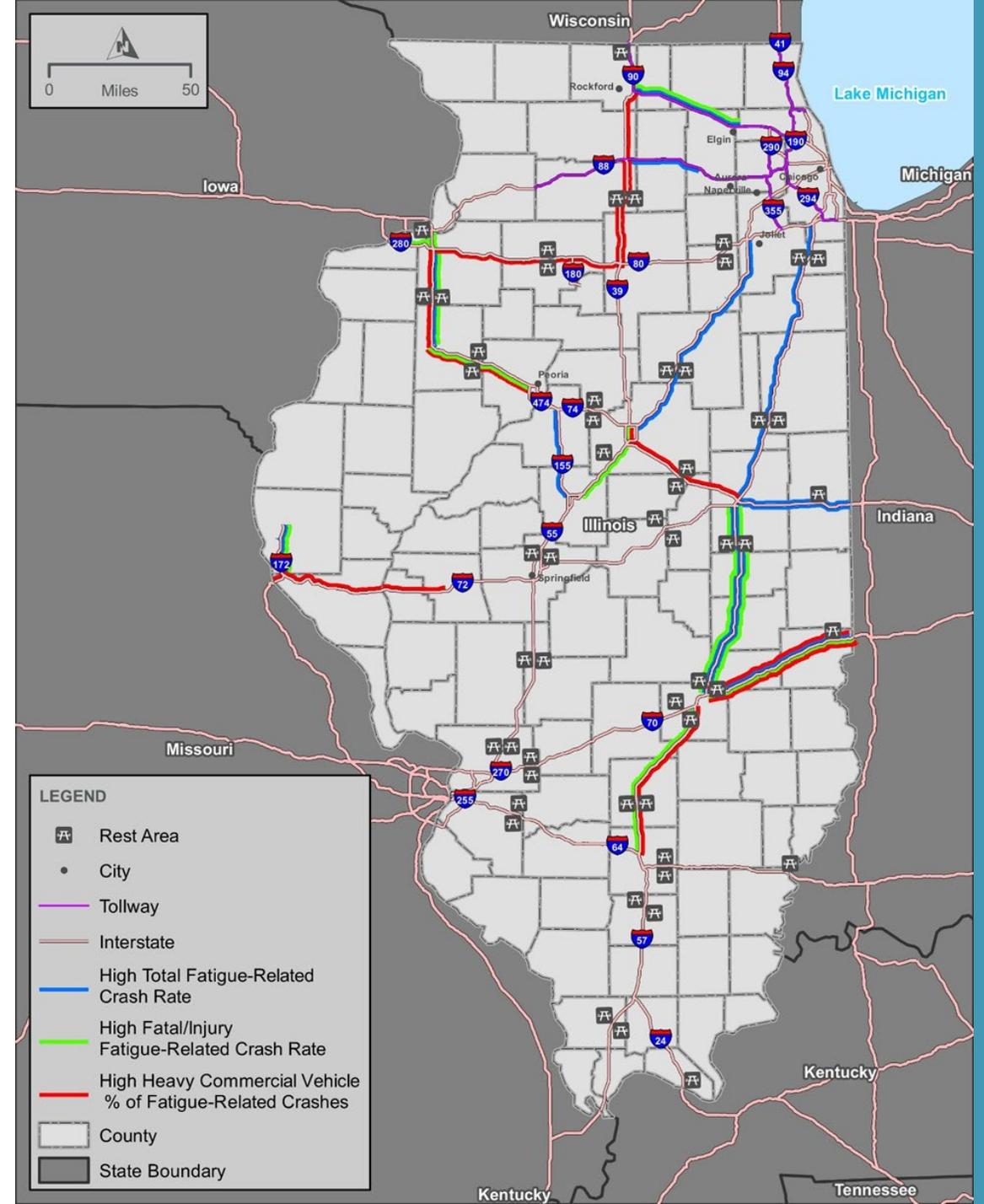
# Trucks Parked Along Interchanges

- Observations Collected Along Interchanges (~60% of Interstate System)
- I-70 had Highest Amount of Trucks Parked Along Interchanges
- One Interchange had 9 Trucks Parked



# Fatigue Related Crashes

- Five Year Crash Analysis (2011-2015)
- 950 Fatigue Related Crashes Reported
- 90 Interstate Segments Analyzed
- Identified Segment in the Top 15%
  - Total Fatigue-Related Crash Rate
  - Fatal/Injury Fatigue-Related Crash Rate
  - % of Fatigue-Related Crashes Involving a Heavy Commercial Vehicle



# Rest Area Survey

- 6,958 Surveys Were Received (33 Mail, 6,458 On-Line, 467 In-Person)
- Majority primarily stop to use the restroom (88%), stretching/walking their secondary reason (33%).
- Weather, road and traffic condition information was very important to respondents (58%).
- Other important services: vending machines (49%) and family assisted restrooms (48%).
- Playground equipment and free Wi-Fi considered not very important by 57% and 45% of respondents, respectively.

## Rest Area Survey (Continued)

- 66% prefer using rest areas to commercial facilities.
- 67% prefer rest areas to be spaced less than 60 minutes of driving away from other rest areas or commercial facilities.
- 91% considered accessibility from vehicles to the facility “good”, “very good” or “excellent”
- 77% felt that safety and security at the rest area was “good”, “very good” or “excellent”.
- 68% felt that Illinois rest areas were “good”, “very good” or “excellent” when compared to rest areas in other states.
- 80% overall satisfaction with the rest area was either “satisfied” or “very satisfied”.

## 03 – Rest Area Needs

- *Rest Area Services Needs*
- *Aging Rest Area Infrastructure Needs*
- *Rest Area Spacing Needs*
- ***Truck Parking Needs***



# Rest Area Service Needs

- Weather Information & Family Assist Restrooms Important to Travelers
- 3 Rest Areas Do Not Provide Weather Information
- 38 Rest Areas Do Not Provide Family Assist Restrooms

Route / Direction	Mile Post	Rest Area
<b>Rest Areas without Weather Information</b>		
I-55 NB	102	RailSplitter NB
I-55 SB	104	RailSplitter SB
I-64 WB	130	Skeeter WB
<b>Rest Areas without Family Assist Restrooms</b>		
I-24	37	Fort Massac
I-55 NB	65	Coalfield NB
I-55 SB	65	Coalfield SB
I-55 NB	102	RailSplitter NB
I-55 SB	104	RailSplitter SB
I-55 NB	194	Limestone NB
I-55 SB	194	Limestone SB
I-57 NB	32	Trail of Tears NB
I-57 SB	32	Trail of Tears SB
I-57 NB	74	Rend Lake NB
I-57 SB	79	Rend Lake SB
I-57 NB	114	Post Oak NB
I-57 SB	114	Post Oak SB
I-57 NB	167	Green Creek NB
I-57 SB	167	Green Creek SB
I-57 NB	222	Illini Prairie NB <sup>1</sup>
I-57 SB	222	Illini Prairie SB <sup>1</sup>
I-57 NB	269	Main Line Station NB
I-57 SB	269	Main Line Station SB
I-57 NB	333	Prairie View NB

Route / Direction	Mile Post	Rest Area
<b>Rest Areas without Family Assist Restrooms</b>		
I-57 SB	333	Prairie View SB
I-64 EB	25	Gateway EB
I-64 WB	25	Gateway WB
I-64 WB	130	Skeeter WB
I-70 EB	26	Silver Lake EB
I-70 WB	27	Silver Lake WB
I-70 EB	86	National Trail EB
I-70 WB	86	National Trail WB
I-70 WB	149	Cumberland Road WB
I-72 EB	152	Pride of the Prairie EB <sup>1</sup>
I-72 WB	152	Pride of the Prairie WB <sup>1</sup>
I-74 EB	28	KrisdalaBaka EB
I-74 WB	30	KrisdalaBaka WB
I-74 EB	62	Spoon River EB
I-74 WB	62	Spoon River WB
I-74 EB	114	Mackinaw Dells EB
I-74 WB	114	Mackinaw Dells WB
I-74 WB	208	Salt Kettle WB <sup>1</sup>
I-80 EB	1	Mississippi Rapids EB
I-80 EB	51	Great Sauk Trail EB
I-80 WB	51	Great Sauk Trail WB
I-80 EB	117	Three Rivers EB
I-80 WB	118	Three Rivers WB



Route	From Rest Area	To Rest Area	Distance (Miles)
<i>I-24</i>	<i>Rend Lake SB (I-57)</i>	<i>Fort Massac (I-24)</i>	<i>71</i>
<i>I-39</i>	<i>Funks Grove (I-55)</i>	<i>Willow Creek NB (I-39)</i>	<i>100</i>
<i>I-39</i>	<i>Farm Land WB (I-74)</i>	<i>Willow Creek NB (I-39)</i>	<i>115</i>
<i>I-39</i>	<i>Willow Creek SB (I-39)</i>	<i>Funks Grove (I-55)</i>	<i>100</i>
<i>I-39</i>	<i>Willow Creek SB (I-39)</i>	<i>Farm Land EB (I-74)</i>	<i>115</i>
I-55	Wright City EB (I-70 MO)	Homestead NB (I-55)	73
I-55	St. Clair EB (I-44 MO)	Homestead NB (I-55)	84
I-55	Bloomsdale NB (I-55 MO)	Homestead NB (I-55)	78
I-55	Homestead SB (I-55)	Wright City WB (I-70 MO)	73
I-55	Homestead SB (I-55)	St. Clair WB (I-44 MO)	84
I-55	Homestead SB (I-55)	Fruitland SB (I-55 MO)	127
I-57	Hayti NB (I-55 MO)	Trail of Tears NB (I-57)	100
I-57	Trail of Tears SB (I-57)	Marston SB (I-55 MO)	78
I-64	Wright City EB (I-70 MO)	Gateway EB (I-64)	76
I-64	St. Clair EB (I-44 MO)	Gateway EB (I-64)	81
I-64	Gateway WB (I-64)	Wright City WB (I-70 MO)	76
I-64	Gateway WB (I-64)	St. Clair WB (I-44 MO)	81
I-70	Wright City EB (I-70 MO)	Silver Lake EB (I-70)	76
I-70	St. Clair EB (I-44 MO)	Silver Lake EB (I-70)	88
I-70	Silver Lake WB (I-70)	Wright City WB (I-70 MO)	76
I-70	Silver Lake WB (I-70)	St. Clair WB (I-44 MO)	88
I-70	Plainfield WB (I-70 IN)	Cumberland Road WB (I-70)	72
I-72	Pride of the Prairie EB (I-72)	Spring Creek EB (I-74 IN)	74

# Interstate Section without a Rest Area

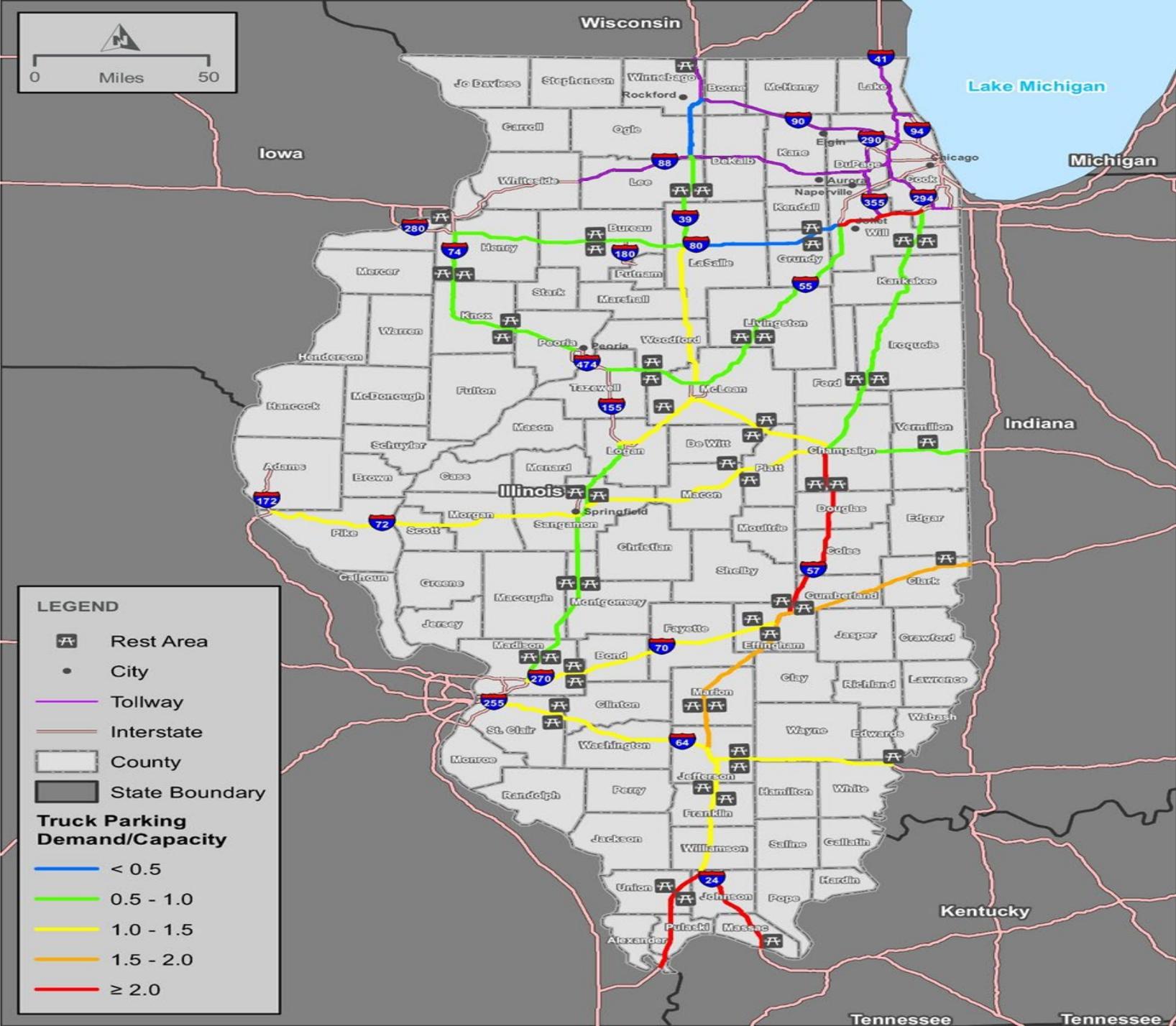
## I-72 Spacing without a Rest Area

From	To	Distance (Miles)
Missouri State Line	RailSplitter (I-55)	108
Missouri State Line	Coalfield (I-55)	126
Missouri State Line	Pride of the Prairie (I-72)	152

Source: HDR, May 2018.

# Truck Parking Needs

- 57% of Interstate Has Truck Parking Demand Greater Than Capacity
- 20% of Interstate Has Demand to Capacity Greater Than 1.5



# Interstate Truck Parking Demand and Capacity

Route	Segment Limits		ADT <sup>1</sup>	Truck % <sup>1</sup>	Length (Miles)	Peak Truck Parking Demand <sup>2</sup>	Truck Parking Capacity			Truck Parking Demand/Capacity
	From	To					Rest Area Truck Parking	ASL Truck Parking	Total	
I-24	I-57	Kentucky State Line	22,100	35%	38	172	18	0	18	9.54
I-39	I-55	I-80	18,700	33%	59	210	0	201	201	1.05
I-39	I-80	I-88	20,000	38%	38	170	84	97	181	0.94
I-39	I-88	I-90	28,500	42%	25	174	0	513	513	0.34
I-55	I-270	I-55/72 South Junction	32,700	27%	73	371	144	254	398	0.93
I-55	I-55/72 North Junction	I-155	33,500	30%	29	172	12	322	334	0.52
I-55	I-155	I-55/74 South Junction	23,400	34%	30	137	40	75	115	1.19
I-55	I-39	I-80	28,700	24%	86	344	65	487	552	0.62
I-55	I-80	I-355	108,600	13%	19	159	0	250	250	0.63
I-57	Missouri State Line	I-24	13,400	47%	44	161	40	0	40	4.02
I-57	I-24	I-57/64 South Junction	34,900	36%	48	348	68	187	255	1.36
I-57	I-57/64 North Junction	I-57/70 South Junction	20,300	43%	61	309	36	120	156	1.98
I-57	I-57/70 North Junction	I-72	22,000	31%	71	285	73	52	125	2.28
I-57	I-74	I-80	26,100	28%	108	465	91	720	811	0.57
I-64	I-255	I-57/67 North Junction	40,400	20%	66	304	53	232	285	1.07
I-64	I-57/64 South Junction	Indiana State Line	10,500	41%	52	131	61	65	126	1.04
I-70	I-55	I-57/64 South Junction	22,100	42%	77	413	121	164	285	1.45
I-70	I-57/70 North Junction	Indiana State Line	22,700	47%	57	354	39	162	201	1.76
I-72	I-172	I-55/72 South Junction	11,400	29%	93	180	0	145	145	1.24
I-72	I-55/72 North Junction	I-57	14,900	20%	78	137	33	83	116	1.18
I-74	I-80	I-74/474 North Junction	17,700	29%	73	217	54	182	236	0.92
I-74	I-155	I-55/74 North Junction	27,200	19%	26	78	43	38	81	0.96
I-74	I-55/74 South Junction	I-57	24,400	31%	45	197	84	112	196	1.01
I-74	I-57	Indiana State Line	35,300	22%	41	185	20	174	194	0.95
I-80	I-74	I-39	21,800	41%	68	351	86	422	508	0.69
I-80	I-39	I-55	42,200	30%	48	351	70	692	762	0.46
I-80	I-55	I-57	101,000	25%	25	364	0	0	0	10.00 <sup>3</sup>

Source: HDR, May 2018.

- <sup>1</sup> Average over the segment limits.
- <sup>2</sup> Peak hour of parking overnight. Calculated using equation from the FHWA *Study of Adequacy of Commercial Truck Parking Facilities Technical Report* (Report #FHWA-RD-01-158, March 2002).
- <sup>3</sup> Truck parking demand/capacity capped at 10.00; no truck parking capacity is provided for this segment via rest area and ASL.

# Interstate Segments - Greatest Need for Additional Truck Parking

The truck parking demand-to-capacity evaluation and segments ranking high for fatigue-related crashes, the following Interstate segments are identified as those with the greatest need for additional truck parking

- I-24 – I-57 to Kentucky State Line
- I-39 – I-80 to I-88
- I-55 – I-155 to I-55/74 South Junction
- I-57 – I-24 to I-57/64 South Junction
- I-57 – I-57/64 North Junction to I-57/70 South Junction
- I-57 – I-57/70 North Junction to I-72
- I-64 – I-255 to I-57/64 North Junction
- I-70 – I-55 to I-57/70 South Junction
- I-70 – I-57/70 North Junction to Indiana State Line
- I-74 – I-57 to Indiana State Line

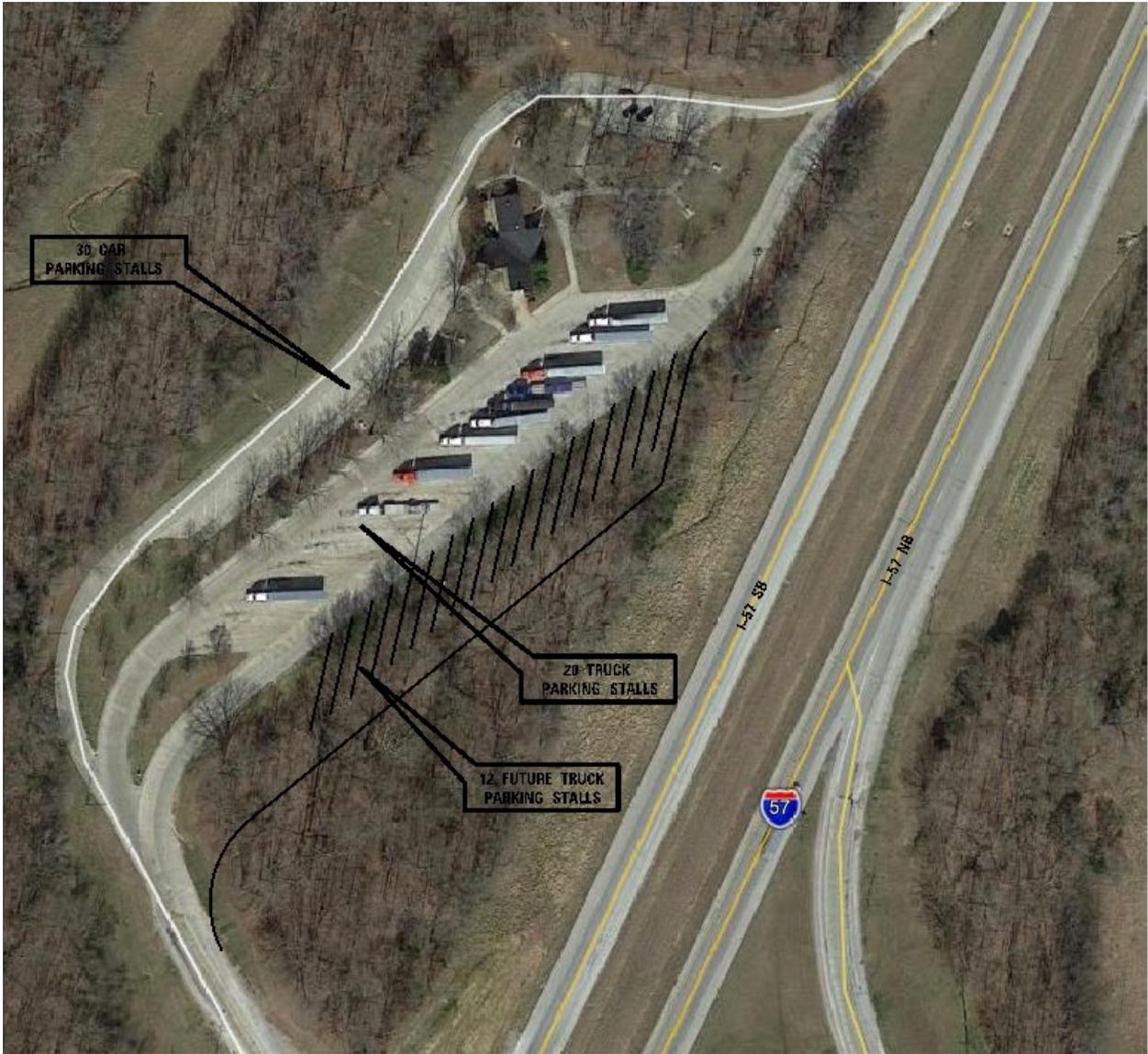
# Truck Parking Upgrades

Funks Grove - \$1,800,000 (Illinois Competitive Freight Program)



# Truck Parking Upgrades

Trail of Tears - \$2,000,000 (Illinois Competitive Freight Program)



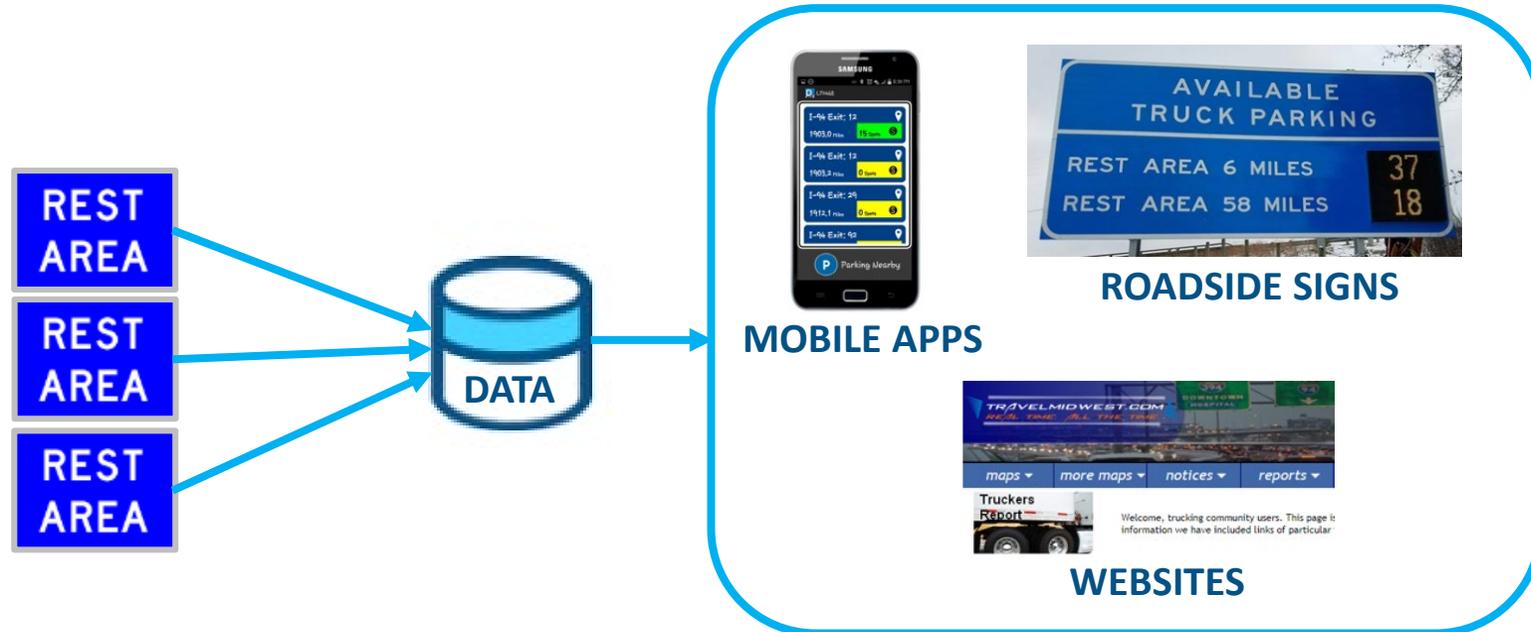
# Truck Parking Technology

- Why Implement Truck Parking Information Management Systems?
  - The demand for truck parking is high on interstate freight corridors
  - Drivers need better information to find available parking spots
  - Less federal hours of service rule violations
  - Safe locations to park are important to drivers
  - Better utilization of existing parking resources (both public and private)
  - Reduces time a driver searches for parking

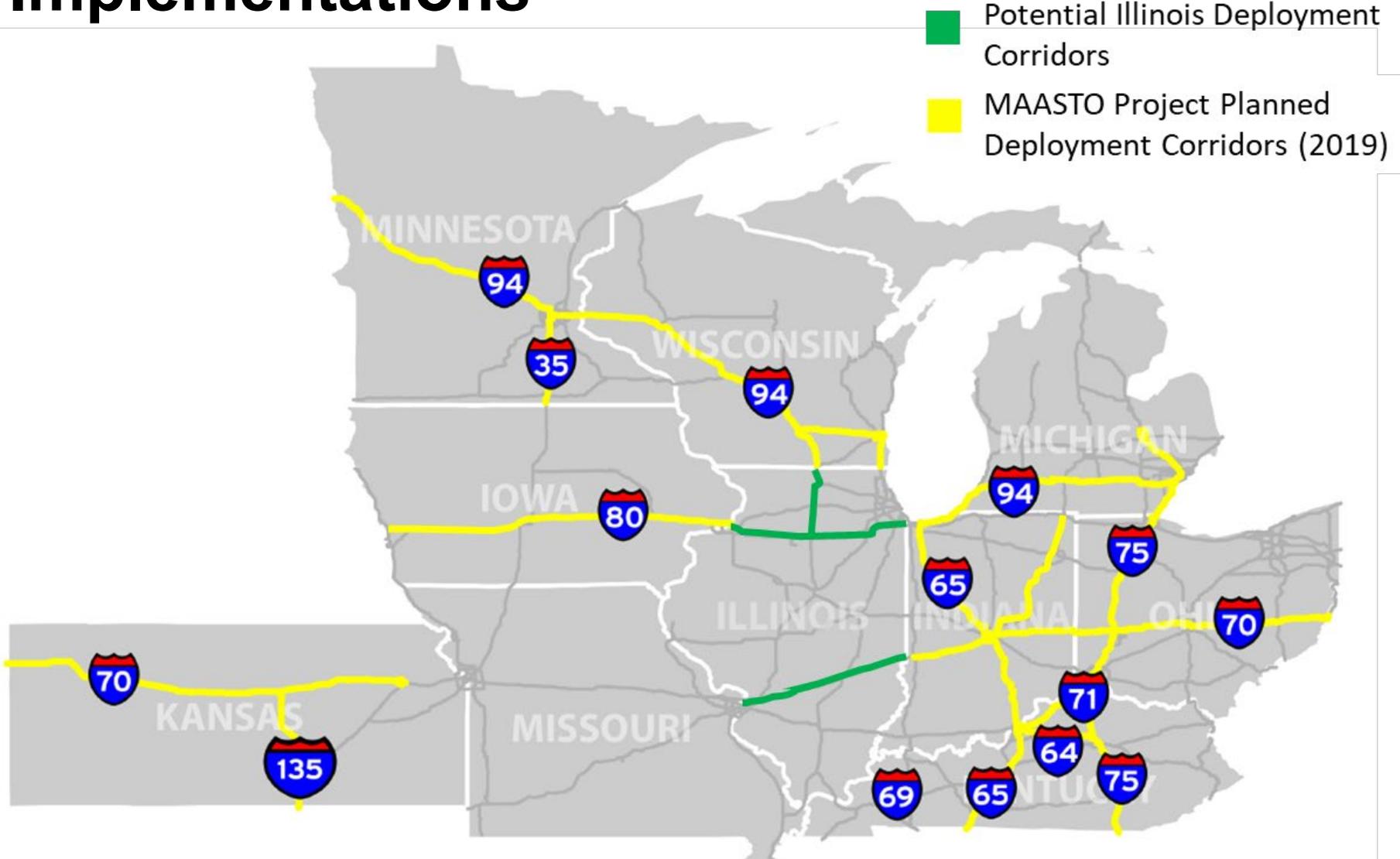


# How Truck Parking Systems Work

- Vehicle detection systems are implemented in Rest Areas
- Data from the detection systems is sent to a data hub
- Data is processed and shared to provide parking availability information to truck drivers



# State Implementations



# Implementation Costs

- Vehicle Detection System(Ingress/Egress Sensors): \*\$135, 000 average cost per rest area
- Roadside Sign: \*\$55,000 average cost per sign
- # Rest Areas = 54 (\$7.29 Million)
- # Roadside Signs = 54 (\$2.97 Million)
- Total: \$10.26 Million

\*Average costs based on 2017 construction bid prices from Indiana and Wisconsin for equivalent truck parking system components. Actual implementation costs per rest area should be evaluated individually for each rest area.

# 05 – Rest Area Evaluation Tool

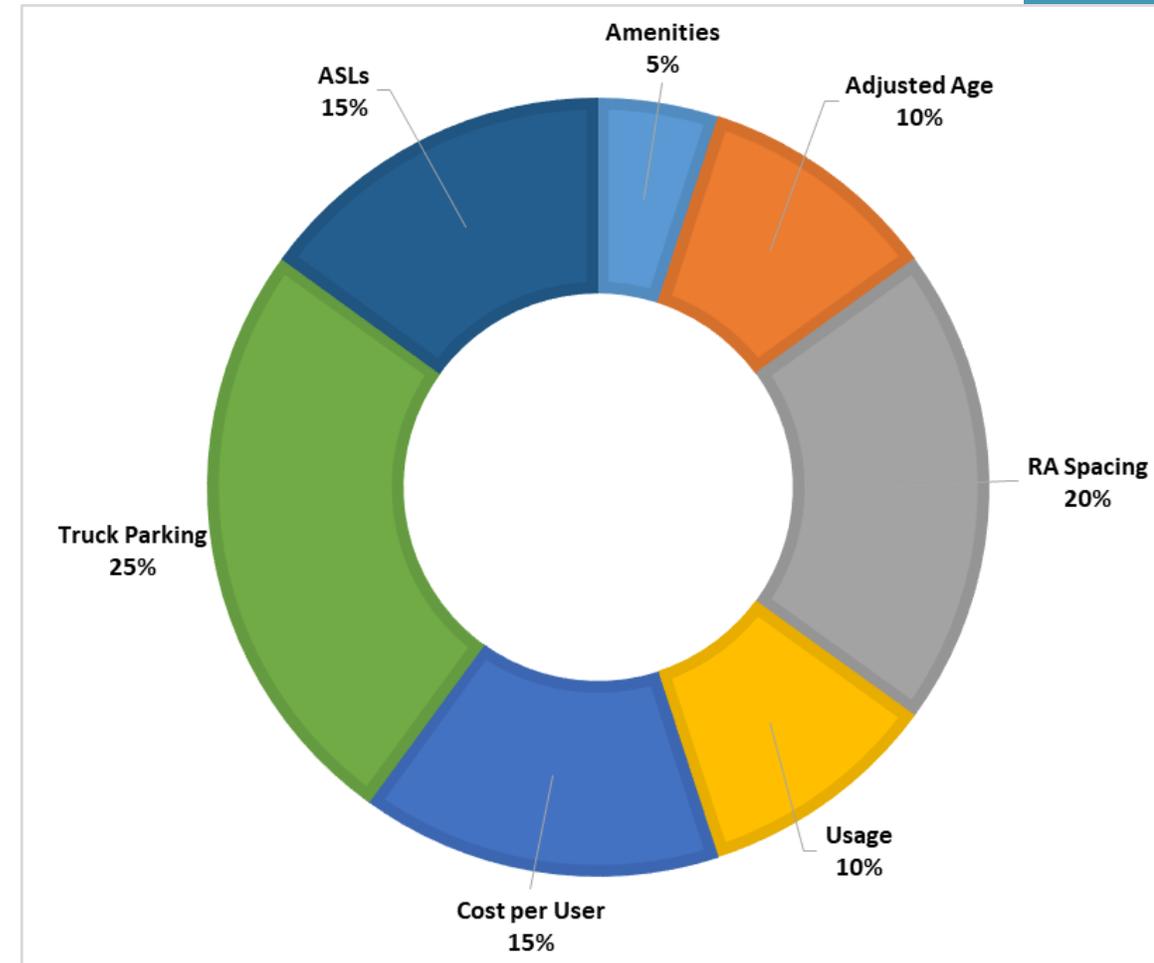
- *Evaluation Criteria*
- *Evaluation Methodology*



# Rest Area Evaluation Tool

- Criteria
  - **Facility Amenities** – The services provided by the rest area
  - **Rest Area Facility Age** – The age of the existing buildings at the rest area
  - **Rest Area Spacing** – The distance to the upstream and downstream rest areas.
  - **Rest Area Usage** – The amount of visitors to the RA regularly
  - **Cost Per User** – The annual operation costs for the rest area, divided by the number of users yearly
  - **Truck Parking** – Combination of availability and demand
    - Truck Parking Availability – The amount of parking spaces are at the location
    - Truck Parking Demand – The amount of trucks parked at the rest area
  - **Alternative Service Locations** – The presence of ASLs within 15 miles and 30 miles and the truck parking that those ASLs within 30 miles upstream and downstream.

## Preliminary Weights





# Truck Parking Evaluation

- The Rest Area Evaluation Tool was also used to identify rest areas for potential truck parking expansion. The Truck Parking criterion was used to identify the top ranked rest areas based on the current number of stalls and the exceeded truck parking demand at that rest area.

The following is the list of rest areas that scored the highest based on the Truck Parking criterion:

Rest Area – Truck Parking Score	Rest Area – Truck Parking Score
Green Creek SB (I-57); Truck Parking Score – <b>100</b>	National Trail WB (I-70); Truck Parking Score – <b>69</b>
Post Oak SB (I-57); Truck Parking Score – <b>76</b>	Coalfield SB (I-55); Truck Parking Score – <b>68</b>
RailSplitter SB (I-55); Truck Parking Score – <b>75</b>	Rend Lake NB (I-57); Truck Parking Score – <b>67</b>
Willow Creek SB (I-39); Truck Parking Score – <b>74</b>	Rend Lake SB (I-57); Truck Parking Score – <b>67</b>
Green Creek NB (I-57); Truck Parking Score – <b>74</b>	Mackinaw Dells WB (I-74); Truck Parking Score – <b>66</b>
Post Oak NB (I-57); Truck Parking Score – <b>72</b>	Homestead NB (I-55); Truck Parking Score – <b>64</b>
Fort Massac EB/WB (I-24); Truck Parking Score – <b>72</b>	Illini Prairie SB (I-57); Truck Parking Score – <b>64</b>

# Truck Parking Evaluation

Name	Corridor	Direction	# of Truck Parking Stalls	Utilization	# of Extra Trucks at RA	# of Stalls, Index	Utilization Index
Green Creek	I-57	SB	16	381%	45	27	100
Funks Grove	I-55	SB	20	160%	12	33	94
Funks Grove	I-55	NB	20	90%	-2	33	94
Post Oak	I-57	SB	18	250%	27	30	76
RailSplitter	I-55	SB	6	533%	26	10	75
Green Creek	I-57	NB	15	267%	25	25	74
Willow Creek	I-39	SB	42	160%	25	70	74
Post Oak	I-57	NB	18	234%	24	30	72
Fort Massac	I-24	EB	18	232%	24	30	72
National Trail	I-70	WB	18	220%	22	30	69
Coalfield	I-55	SB	28	175%	21	47	68
Rend Lake	I-57	NB	34	158%	20	57	67
Rend Lake	I-57	SB	34	158%	20	57	67
Mackinaw Dells	I-74	WB	18	206%	19	30	66
Illini Prairie	I-57	SB	21	186%	18	35	64
Homestead	I-55	NB	40	145%	18	67	64
Limestone	I-55	NB	36	147%	17	60	63
Salt Kettle	I-74	WB	20	179%	16	33	62
Cumberland Road	I-70	WB	39	140%	15	65	61
Farm Land	I-74	WB	42	136%	15	70	61
Gateway	I-64	EB	27	152%	14	45	59
RailSplitter	I-55	NB	6	317%	13	10	58
Three Rivers	I-80	EB	31	139%	12	52	57
Illini Prairie	I-57	NB	21	148%	10	35	54

# 06 – Rest Area Programming

- *Rest Area Programming Tool*
- *10-Year Programming Options*



# Rest Area Programming Tool

- **Construction Phasing Tool** – Allows Users to set rest area programmatic improvements that limit the impact to provision of the rest area services on the system.
- Allows Users to:
  - Program Capital Improvements on a Quarterly Basis
  - Identify Potential Closure Conflicts
    - Adjacent Rest Area on Same Route
    - Adjacent Rest Area on Different Route
    - 2 of 3 Rest Areas on Same Route
    - 2 of 3 Rest Areas on Adjacent Route
  - Calculates the Fiscal Year Costs

First fiscal year for construction phasing:		2019									
Macro to Identify/Clear closure restrictions:		Identify Restrictions	Clear Restrictions								
Rest Area Construction Phasing Tool				Fiscal Year 2019							
Rest Areas				Quarter 1		Quarter 2		Quarter 3		Quarter 4	
25	Main Line Station	I-57	SB	Open		Open		Open		Open	
26	Prairie View	I-57	NB	Open		Open		Open		Open	
27	Prairie View	I-57	SB	Open		Open		Open		Open	
28	Gateway	I-64	EB	Open		Open		Open		Open	
29	Gateway	I-64	WB	Open		Open		Open		Open	
30	Goshen Road	I-64	EB	Open		Open		Open		Open	
31	Goshen Road	I-64	WB	Open		Open		Open		Open	
32	Skeeter	I-64	WB	Closed		Closed		Open		Open	
33	Silver Lake	I-70	EB	Open		Open		Closed		Closed	
34	Silver Lake	I-70	WB	Open		Open		Open		Open	
35	National Trail	I-70	EB	Open		Open		Open		Open	
36	National Trail	I-70	WB	Open		Open		Open		Open	
37	Cumberland Road	I-70	WB	Open		Open		Open		Open	
38	Pride of the Prairie	I-72	EB	Open		Open		Open		Open	
39	Pride of the Prairie	I-72	WB	Open		Open		Open		Open	
40	KrisdalaBaka	I-74	EB	Renovate		Renovate		Renovate		Renovate	
41	KrisdalaBaka	I-74	WB	Renovate		Renovate		Renovate		Renovate	
42	Spoon River	I-74	EB	Open		Open		Open		Open	
43	Spoon River	I-74	WB	Open		Open		Open		Open	
44	Mackinaw Dells	I-74	EB	Open		Open		Open		Open	
45	Mackinaw Dells	I-74	WB	Open		Open		Open		Open	
46	Farm Land	I-74	EB	Open		Open		Open		Open	
47	Farm Land	I-74	WB	Open		Open		Open		Open	
48	Salt Kettle	I-74	WB	Open		Open		Open		Open	
49	Mississippi Rapids	I-80	EB	Open		Open		Open		Open	
50	Great Sauk Trail	I-80	EB	Open		Open		Open		Open	
51	Great Sauk Trail	I-80	WB	Open		Open		Open		Open	
52	Three Rivers	I-80	EB	Open		Open		Open		Open	
53	Three Rivers	I-80	WB	Open		Open		Open		Open	
54	Turtle Creek	I-90	SB	Open		Open		Open		Open	
<b>Quarterly Fiscal Costs:</b>				\$1,526,332		\$1,526,332		\$1,526,332		\$1,526,332	

# 07 – Questions & Answers

