

State Transportation Plan Update

MPO/RPA Quarterly Meeting
September 21, 2016



1

Status Update

- Six Internal Steering Committee meetings
- Six Action Plan Focus Group meetings
- Commission presentations in January, May, August, September
- Ongoing development of base document chapters
 - Chapters 1 and 2 will be posted/distributed for review
- Ongoing technical analysis for action plan
- Public input survey – open through 9/30
 - <http://www.iowadot.gov/iowainmotion/index.html>

2

Defining strategies and improvements

- Reviewed existing planning documents to identify relevant strategies
- Additional strategies are being identified through planning discussions
- Aviation, bicycle/pedestrian, public transit, and rail strategies are being drafted
- Ongoing analysis related to highway improvement identification

3

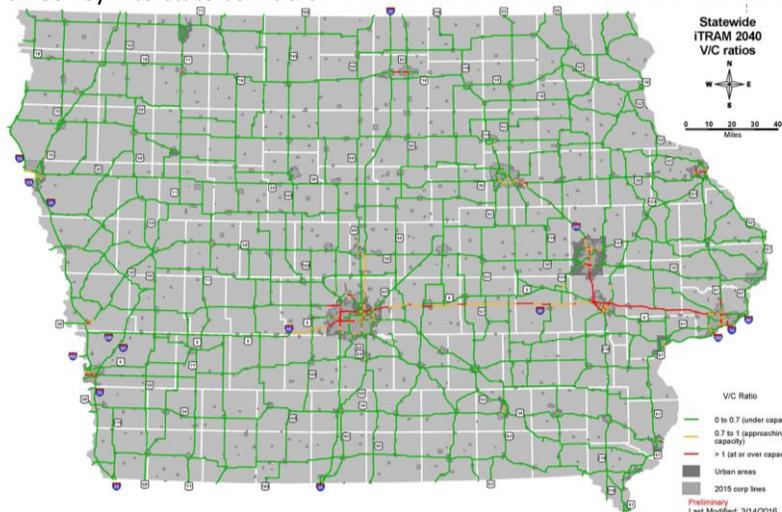
Defining strategies and improvements

- Ongoing analysis related to highway improvement identification
 - Capacity – statewide analysis discussed at 6/30 quarterly meeting
 - Urban capacity
 - Mobility and safety – discussed at 6/30 quarterly meeting
 - Freight
 - Condition
 - Operations
 - Bridges
- Analysis identifies **corridor-level needs** for most categories; freight and bridges are the only specific locations
- Analysis does not define types of treatments to be implemented to address needs or identify specific projects or alternatives
- Analysis helps provide corridor-level perspective as individual projects are developed, and ensure identified needs are taken into account during design

4

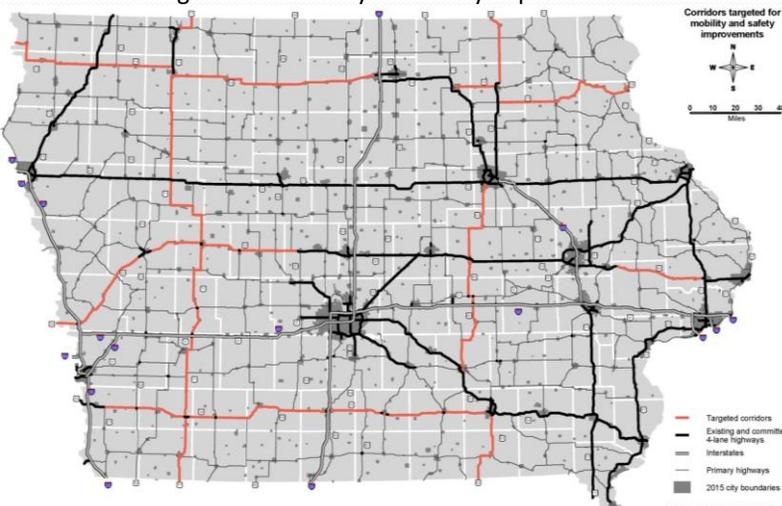
Future statewide capacity needs analysis

- Segments approaching/over capacity in 2040 limited to urban areas and three key interstate corridors



Mobility and safety analysis

- Network represents corridors that do not need 4-lane capacity expansion, but could be targeted for mobility and safety improvements



Freight and condition analysis

- Next step in iterative highway improvement identification process, following capacity analysis and mobility/safety analysis
 - Freight improvements – utilizing locations identified in State Freight Plan
 - Condition improvements – methodology based on Infrastructure Condition Evaluation (ICE) tool

7

Freight analysis – VCAP

- Value, Condition, and Performance (VCAP) matrix
 1. **Freight Mobility Issue Survey**
 - Populate initial improvement list
 2. **Value - Iowa Travel Analysis Model (iTRAM)**
 - Complete analysis and then rank each location
 3. **Condition - Infrastructure Condition Evaluation (ICE) tool**
 - Complete analysis and then rank each location
 4. **Performance - INRIX Bottleneck Ranking tool**
 - Complete analysis and then rank each location
 5. **Average the three rankings**
 6. **Truck traffic counts**
 - Tiebreaker if necessary

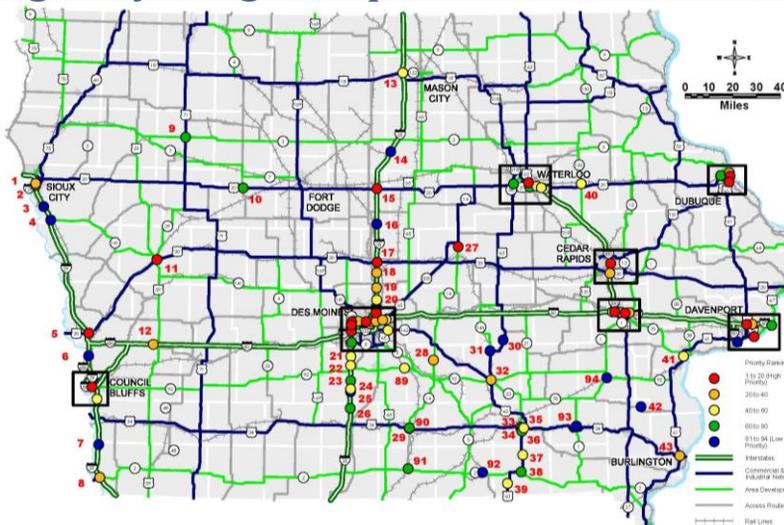
		②		③		④		⑤		⑥	
		VALUE		CONDITION		PERFORMANCE		TIEBREAK			
MAP ID	LOCATION	iTRAM	"V" RANK	ICE	"C" RANK	INRIX	"P" RANK	AVERAGE RANKING	TRUCK VOLUME	PRIORITY RANK	
1											1
2											2
3											3
4											4
5											5

Highway freight improvement locations

MAP ID	LOCATION	VALUE		CONDITION		PERFORMANCE		TIE		
		I/TRAM	"V" RANK	ICE	"C" RANK	INRIX	"P" RANK	AVERAGE RANKING	TRUCK VOLUME	PRIORITY RANK
48	I-80/29 N/S THROUGH COUNCIL BLUFFS	60.79	32	52.82	2	374	16	16.67	13579	1
47	US-151 N/S @ MAQUOKETA DR	53.29	38	57.36	6	1040	6	16.67	2115	2
87	I-74 @ MISSISSIPPI RIVER	90.95	23	65.53	23	706	9	18.33	2908	3
57	I-35/80 N/S, E/W @ IA-141	49.26	43	61.17	13	2036	2	19.33	12761	4
76	I-380 N/S THROUGH CEDAR RAPIDS	76.37	26	55.34	4	123	33	21.00	7226	5
5	US-30 E/W THROUGH MISSOURI VALLEY	21.80	58	54.31	3	1563	4	21.67	993	6
79	I-380 N/S @ I-80/EXIT D & I-80 E/W @ I-380/EXIT 239	146.63	10	73.35	47	250	24	27.00	11161	7
15	I-35 N/S @ US-20/EXIT 142 & US-20 E/W @ I-35/EXIT 153	114.43	17	73.91	51	420	14	27.33	5559	8
55	I-35/80 N/S @ DOUGLAS AVE	52.83	41	59.84	11	116	34	28.67	12884	9
66	IA 160 E/W @ I-35 & I-35 N/S @ IA-160/ EXIT 90	108.67	18	69.29	36	114	35	29.67	8331	10
11	US 30 E/W @ US-59/IA-141	60.33	33	70.81	41	387	15	29.67	1377	11
84	US-61 N/S @ I-80/EXIT 123 & I-80 E @ US-61/BRADY ST/EXIT 295	53.65	36	69.57	37	368	17	30.00	11230	12
51	I-80/I-35/I-235 N/S, E/W @ SW MIX MASTER	92.24	22	73.83	50	365	18	30.00	6870	13

9

Highway freight improvement locations



10

Condition analysis – ICE

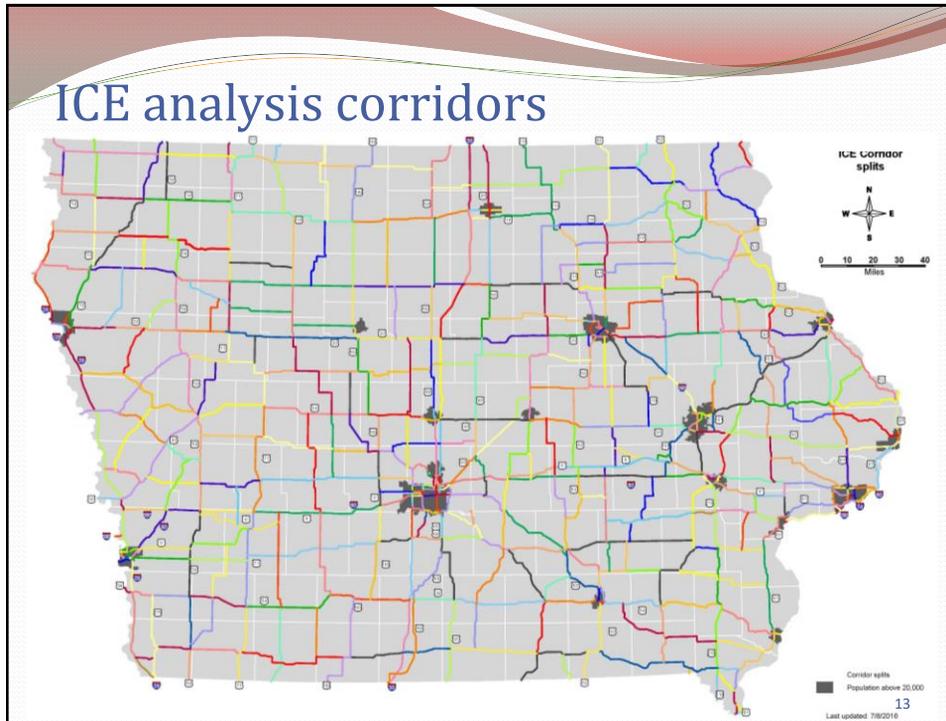
- Utilized ICE tool
- Seven criteria normalized and weighted for composite score
 - Pavement Condition Index (PCI) rating
 - International Roughness Index (IRI) value
 - Structure Inventory and Appraisal (SIA) sufficiency rating
 - Annual average daily traffic (AADT), combination truck count
 - AADT, single-unit truck count
 - AADT, passenger count
 - Congestion Index value
- 65% of weight on infrastructure condition, 35% on use

11

Condition analysis – ICE

- ICE composite ratings for every segment of the primary system (27,141 segments)
- Segments aggregated to 467 analysis corridors
- Composite scores for the corridors developed by calculating a weighted average of the individual segments' scores
- NOTE: Corridors are made up of many segments, meaning that there may be small segments in good condition within a corridor that scores poorly overall, and vice versa

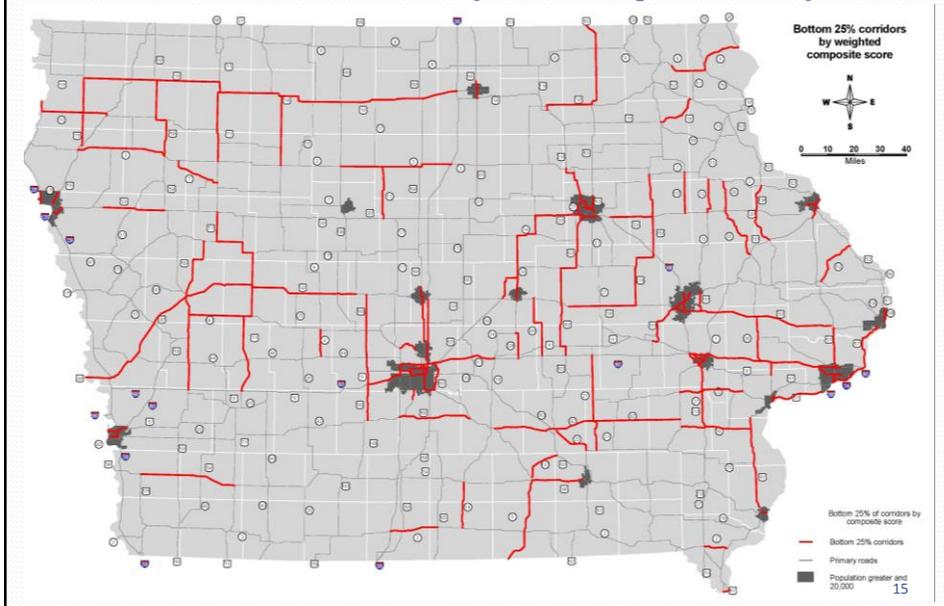
12



Condition analysis – SLRTP corridor identification assumptions

- Design life of pavement assumed to be 20-40 years
- Using a conservative basis of 20 years, approximately five percent of the system would need to be improved each year to keep up with deterioration
- The SLRTP is updated every five years, making identification of the bottom 25% of corridors most critical for this document

Bottom 25% of corridors by ICE Composite analysis



Remaining highway analysis layers

- Urban capacity
- Operations
- Bridges

Future capacity needs analysis – urban areas

- All nine metropolitan planning organizations (MPO) have their own travel demand models
- MPO models were preferred for analyzing forecast congestion in urban areas rather than iTRAM
 - More granular socioeconomic data and road networks
 - MPOs develop their own socioeconomic forecasts for their plans, which may vary from the estimates developed from the statewide perspective of iTRAM

17

Future capacity needs analysis – urban areas

- Developed process to standardize review across MPO models
 - Year of analysis
 - Calculation of level of service measures
 - Capacities of roadway types
- Forecast model network components
 - Current roadway networks
 - Projects currently programmed in the Iowa DOT Five-Year Program for primary routes
 - Each MPO's committed and planned projects included in their LRTP for non-primary routes

18

Future capacity needs analysis – urban areas

- Using same congestion index as statewide analysis
 - Volume-to-capacity (V/C) ratio
 - < 0.7 = under capacity
 - 0.7 – 1.0 = approaching capacity
 - > 1.0 = at or over capacity
- Comparison to MPO LRTPs
- Delineating corridors that have a V/C ratio largely > 0.7 (spot locations of high V/C (generally less than 0.5 mile) not considered corridors)
- Going through internal review with Action Plan Focus Group and District staff

19

Addressing operations needs

- Proposed to be addressed by different approaches for interstates and non-interstates
- Interstates – ICE-OPS
 - Parallel tool to ICE with similar structure, but with operations focus
 - Information was initially summarized to 21 corridors defined in Interstate Corridor Plan (2013); will update to the 54 corridors included in the current ICE tool
 - Data will be updated where applicable
- More info on ICE-OPS available in Transportation Systems Management and Operations (TSMO) Program Plan: <http://www.iowadot.gov/TSMO/TSMO-Program-Plan.pdf>

20

Addressing operations needs

- Non-interstates –programmatic-level discussion (e.g., use of operational strategies to address urban primary congestion)
 - Lack of quality data to expand ICE-OPS beyond interstates
 - Prefer not to develop an additional specialized analysis structure
- Approach is supported by the “TSMO Roadway Facility Hierarchy” included in the TSMO plan, which notes that interstate highways are the most important facilities to actively manage
- The action plan would still include system-level TSMO strategies derived from the TSMO plan, but would focus on the interstate for the corridor-level discussions

21

Addressing bridge needs

- High priority bridge needs
 - High dollar projects (over \$5 million)
 - Border bridges
- High priority bridges will be incorporated into highway improvement matrix
- Strategies for addressing bridge needs
- Condition analysis of bridges, similar to condition analysis conducted for highways (e.g., bottom X% of bridges by condition index)

22

Highway improvement matrix concept

- Intend to show a matrix of various types of improvements identified through analysis
 - Capacity
 - Mobility/safety
 - Freight (individual locations and number within corridors referenced)
 - Condition based on ICE Tool
- Eventual additions
 - Urban capacity
 - Operations
 - Bridge

Highway improvement matrix concept

Route	Corridor	Counties	Miles	Capacity	Mobility/Safety	Freight	Condition	Operations	Bridge
Interstates I-80	Nebraska border to jct of I-29 <i>Freight improvement at location ID 48</i>	Pottawattamie	3.5			1			
	jct of US 6 to jct of US 59 <i>Freight improvement at location ID 12</i>	Pottawattamie	31.5			1			
	jct of US 169 to west Mixmaster <i>Freight improvement at location ID 51</i>	Dallas, Polk	12.3			1			
	E Mixmaster to jct of IA 14 <i>Freight improvement at location IDs 62, 63, 64, 65</i>	Polk, Jasper	28.5			4			
	jct of IA 14 to jct of US 63	Jasper, Poweshiek	27.6						
	jct of US 63 to jct of US 151	Iowa, Poweshiek	32.8						
	jct of US 151 to jct of I-380 <i>Freight improvement at location IDs 78, 79</i>	Johnson, Iowa	19.7			2			
	jct of I-380/US 218 to jct of IA 1 <i>Freight improvement at location IDs 79, 80, 81, 82, 83</i>	Johnson	7.1			5			
	jct of IA 1 to jct of US 6	Cedar, Johnson	24.6						
	jct of US 6 to jct of I-280	Scott, Cedar	18.7						
	jct of I-280 to jct of I-74 <i>Freight improvement at location IDs 84, 85</i>	Scott	7.8			2			
	jct of I-74 to Illinois border <i>Freight improvement at location IDs 85, 88</i>	Scott	8.9			2			
	remainder of route	Pottawattamie, Cass, Madison, Dallas, Adair	74.8			Stewardship			

Next steps

- Continue analysis for urban capacity, operations, and bridges
- Build out improvements matrix and highway strategies
- Continue work on modal strategies and improvements
- Continue work on financial section of the plan
- Analyze public input survey results and integrate into action plan and document development
- Complete additional draft chapters for review and comment
- Anticipating largely complete draft document by late 2016/early 2017; targeting May 2017 adoption

25