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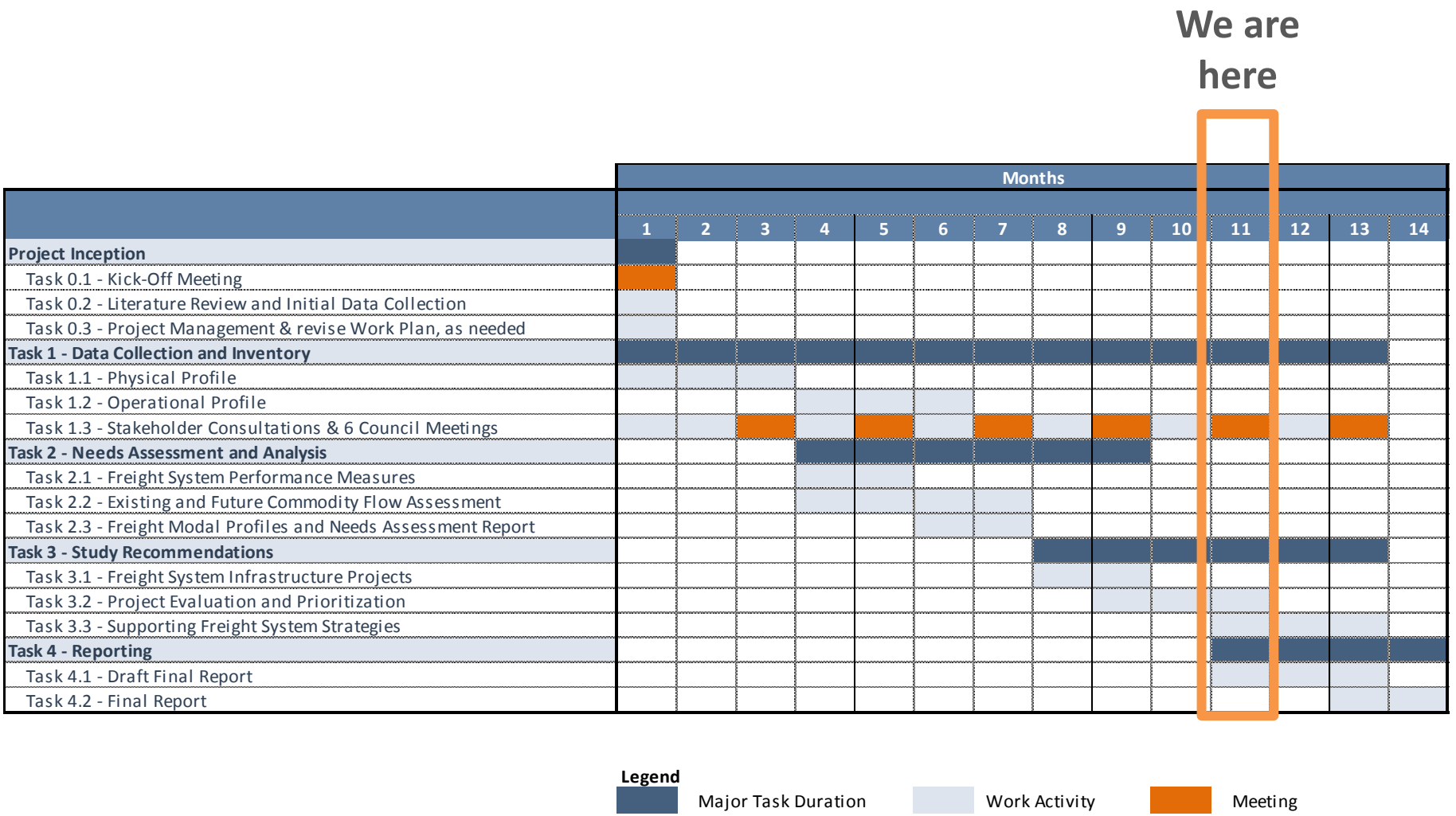
Eight County Freight Plan

East Central Intergovernmental Association &
Blackhawk Hills Regional Council

CPCS Team
November 29, 2017
Turner Hall
Galena, IL

Project Sponsors

Work Plan Overview



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Presentation Map

Why Develop a Freight Plan?

Additional Information for Projects Identification

Process to Evaluate Projects

Questions & Discussion

Project Understanding

- **Project Motivations**
  - Inconsistent data across freight modes
  - Understand link between freight transportation system and local economy
  - Be aware freight system needs and opportunities
  - Incorporate freight in local transportation planning decisions

- **Project Objective**

To develop a better understanding of the multimodal freight system in the bi-state region and to use this information to better inform policy and programming decisions in the region.

Eight County Freight Plan Legacy

Outcomes and tools to advance Regional freight planning

- Turnkey GIS mapping (ECIA platform)
- Freight modal profiles
- Freight commodity flow analysis tool
- Freight system performance measures
- Prioritized projects
- Plug-and-play information to support grant applications (INFRA, TIGER, etc.)

+ Stakeholder Buy-In = Long-Term Success

Example Modal Profile: Multimodal

The Eight County Region

Multiple Ways to Connect You to the Nation and World

86
Million people within an 8 hour drive

31
Intermodal transfer facilities

4
Class 1 Railroads

1
Unique Region.

Roadways: Reliable Access

- 427 miles of Interstate and National Highways
- 5 Mississippi River Bridges
- Low Traffic Congestion

Railroads: Multiple Choices

- Intermodal
- 1 Short Line railroad
- Easy access to Chicago, Minneapolis, Omaha

Waterways: International Links

- 19 Barge Terminals
- Connections to Midwest, South international markets.

Air Cargo: Easy Access to Regional Hubs

Nearby Cargo Airports:
- Cedar Rapids (CID)
- Rockford (RFD)
- Moline (MLI)

System Usage:

Each year, the freight system carries:

67.3 million tons

worth

$50.4 billion

Major Industries and Commodities

The Region's transportation system is well-equipped to handle a variety of bulk goods and manufactured products.

Agriculture
- Grain
- Fertilizer

Manufacturing
- Machinery

Natural Resources
- Sand and Gravel

What makes the Eight County Region the Best Place to Do Business?

The Region's wide variety of excellent transportation options, combined with a central location in the United States make it an excellent area for freight-reliant businesses.

Major Companies:

ADM · John Deere · WAHL · TITAN

Strengths from WP1:
- Stable Population
- Diverse industrial base
- Diverse manufacturing sector
- High quality of life

- Can EDAs provide supporting data? Like relative cost of doing business, or wages?

Quotes / Testimonials

A Regional Partnership for Transportation and Economic Development

What we're doing to ensure the transportation system works for business.

Key freight plan recommendations will be summarized here once complete.

Regional Partners:

bhrc · Business Growth Inc. · Clinton County Development Association · DeWitt Chamber & Development Company · Delaware County · ECIA · Greater Dubuque Development Corp · Illinois Farmers Union · Illinois Soybean Association · Jackson County Economic Alliance · JCE · Jo Daviess County Illinois · Riverport Railroad, LLC · TCEDA Tri-County Economic Development Alliance · Elizabeth The Heart of Jo Daviess County

More Information:
Contact info here.

Example Modal Profile: Road

The Eight County Region: Roads

Reliable Roads and Highways to Support your Business

86
Million people within an 8 hour drive

5
Mississippi River Crossings

427
Miles of Interstate and National Highways

1
Unique Region.

System Usage:

Each year, the highway system carries:

19.4 million tons

worth

$41.2 billion

Major road commodities include:
- Cereal Grains
- Gravel
- Fertilizers
- Machinery
- Motorized Vehicles

Regional Highway System Advantages:

Low congestion: short and consistent travel time on major roads

Easy access to major interstate corridors and other Midwestern cities

A Regional Partnership for Transportation and Economic Development

What we're doing to ensure the (road) transportation system works for business.
Road-specific freight plan recommendations will be summarized here once complete.

The Eight County Region: Roads

Your Roadmap to Success

Road Distances and Travel Times to Midwestern Freight Facilities:

Key Regional Transportation Facilities	Dubuque		Clinton		Freeport	
	Distance (miles)	Time (hours)	Distance (miles)	Time (hours)	Distance (miles)	Time (hours)
Davenport (I-80, air cargo)	71	1.25	41	0.75	100	2.00
Cedar Rapids (air cargo)	73	1.25	84	1.50	137	2.50
Rochelle (intermodal terminal)	123	2.25	67	1.25	60	1.00
Rockford (air cargo)	95	1.75	75	1.50	30	0.50
Chicago Area	175	3.25	144	2.50	144	2.00

Example Modal Profile: Rail

The Eight County Region: Rails

A Wealth of Rail Choices

4
Class 1 Railroads

1
Short Line Railroad

580
Miles of mainline track

1
Unique Region.

System Usage:

Each year, the region's railroad system carries:

15.5 million tons

worth

$3.4 billion

Class 1 Railroads:
Burlington Northern Santa Fe
Canadian National
Canadian Pacific
Union Pacific

Regional Rail System Advantages:

Rail-served land is readily available.

Ideal service for bulk commodities.

Multiple container terminals nearby.

A Regional Partnership for Transportation and Economic Development

What we're doing to ensure the rail transportation system works for business.
Rail-specific freight plan recommendations will be summarized here once complete.

The Eight County Region: Rails

Extensive Rail Links to the Nation

Rail Distances and Travel Times to Midwestern Freight Facilities:

Intermodal Facility - Railroad	Dubuque		Clinton		Freeport	
	Miles	Time	Miles	Time	Miles	Time
Global III (Rochelle) - UP	123	2.25	67	1.25	60	1.00
Cedar Rapids - CRANDIC	73	1.25	84	1.50	137	2.50
Bedford Park (Chicago) - CSX	188	3.50	142	2.50	5	2.25
Joliet - UP, CN, BNSF	202	3.50	150	2.25	140	2.25

Example Modal Profile: Water

The Eight County Region: Rivers

Easy Access to the Mississippi River and International Markets

93	21	3	1
Miles of Navigable River	Barge Terminals	Locks and Dams	Unique Region

System Usage:

Each year, the region's river system carries:

700,000 tons worth $700 million

Barges are well-suited for lower-value and heavy commodities:

- Grain
- Gravel
- Fertilizer

Regional River System Advantages:

Ideal service for bulk commodities to select locations and export.

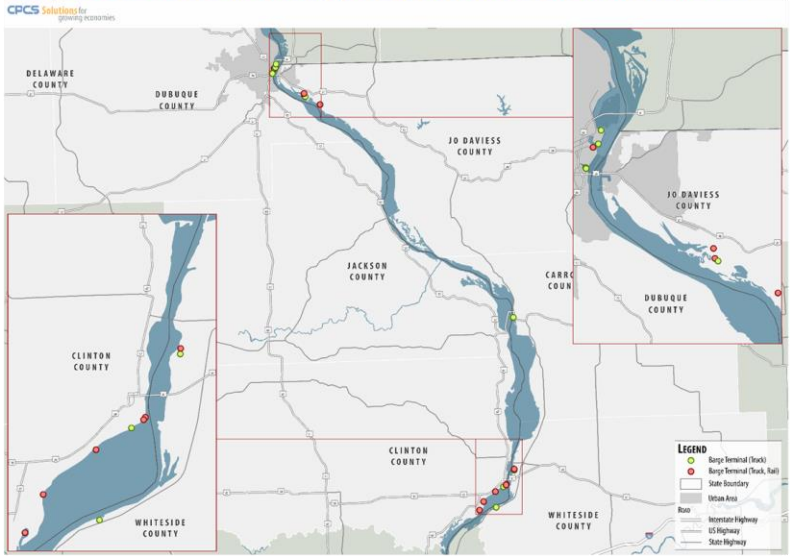
The Region has extensive barge terminals with road and rail connections.

A Regional Partnership for Transportation and Economic Development

Water- specific freight plan recommendations will be summarized here once complete.

The Eight County Region: Rivers

Easy Access to the Mississippi River and International Markets



Include Modal Comparison Information here?

Data Products

Goal: Equip regional stakeholders to understand current conditions, anticipate future conditions, and support continuing freight planning and investment

Data analysis and tools

- Freight Analysis Framework (FAF), ATRI (truck), STB (rail), USACE (water)
- Tableau viewer package (no license needed)

Tableau viewer

- Previously demonstrated FAF workbook
- New live demos of ATRI, STB, USACE workbooks

Implementation support

- Market demand / Benefit-Cost Analysis

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Discussion on tools you can use

Open Discussion

- Are there tools that you are interested in/ expecting that we have not yet identified?

Presentation Map

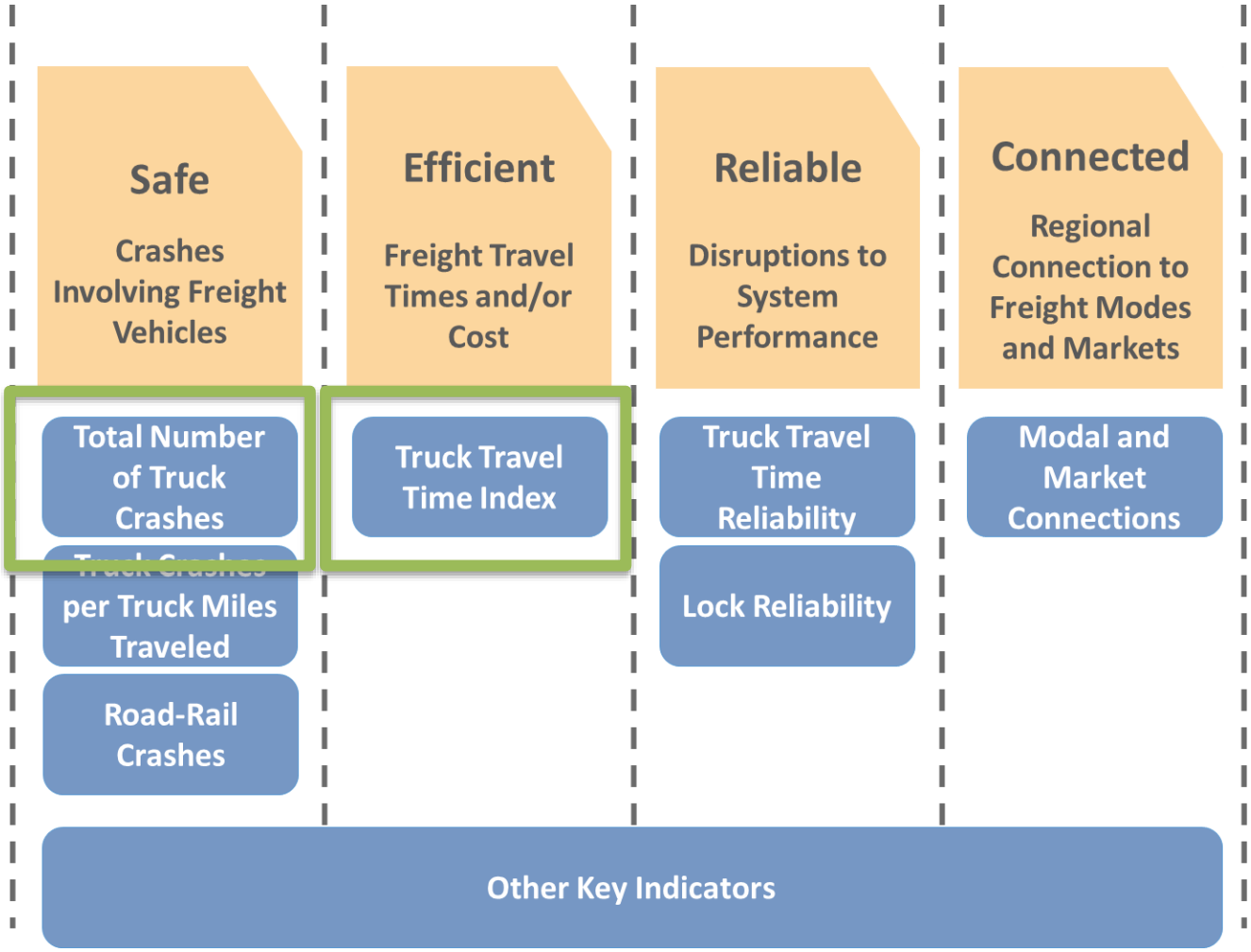
Why Develop a Freight Plan?

Additional Information for Projects Identification

Process to Evaluate Projects

Questions & Discussion

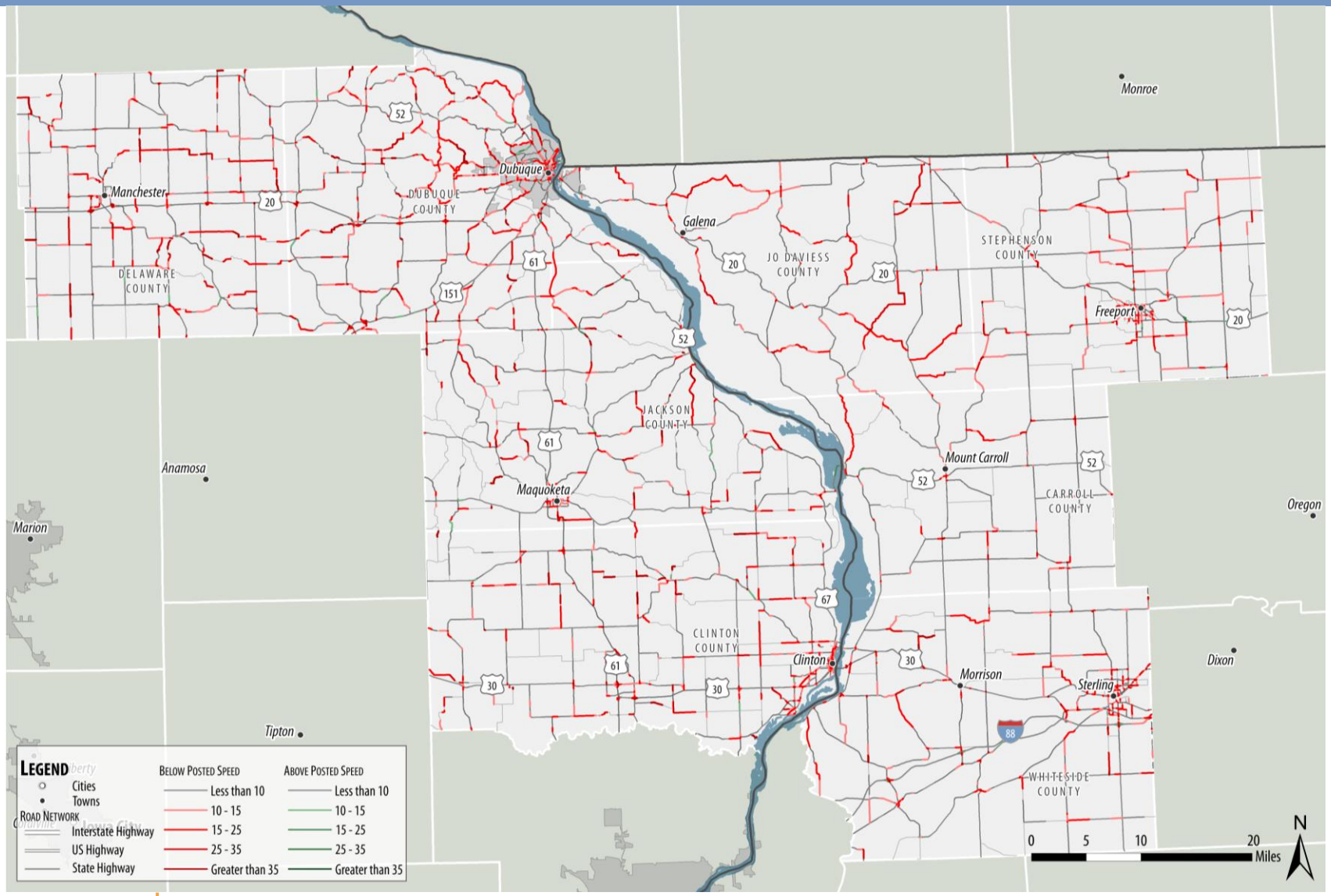
Freight System Needs Assessment



Efficiency: Truck Travel Time Index

- Truck Travel Time Index (TTTI) is calculated to compare average truck travel times at peak hours (at 6:00-9:00 AM and 4:00-7:00 PM) against free-flow traffic times
  - **The Region's TTTI value = 1.11**
  - A truck trip that takes 1 hour in free-flow conditions takes an additional 6.6 minutes at peak times.
- The US overall Travel Time Index = 1.22 (in 2014)

Average Annual Speed vs. Posted Speed



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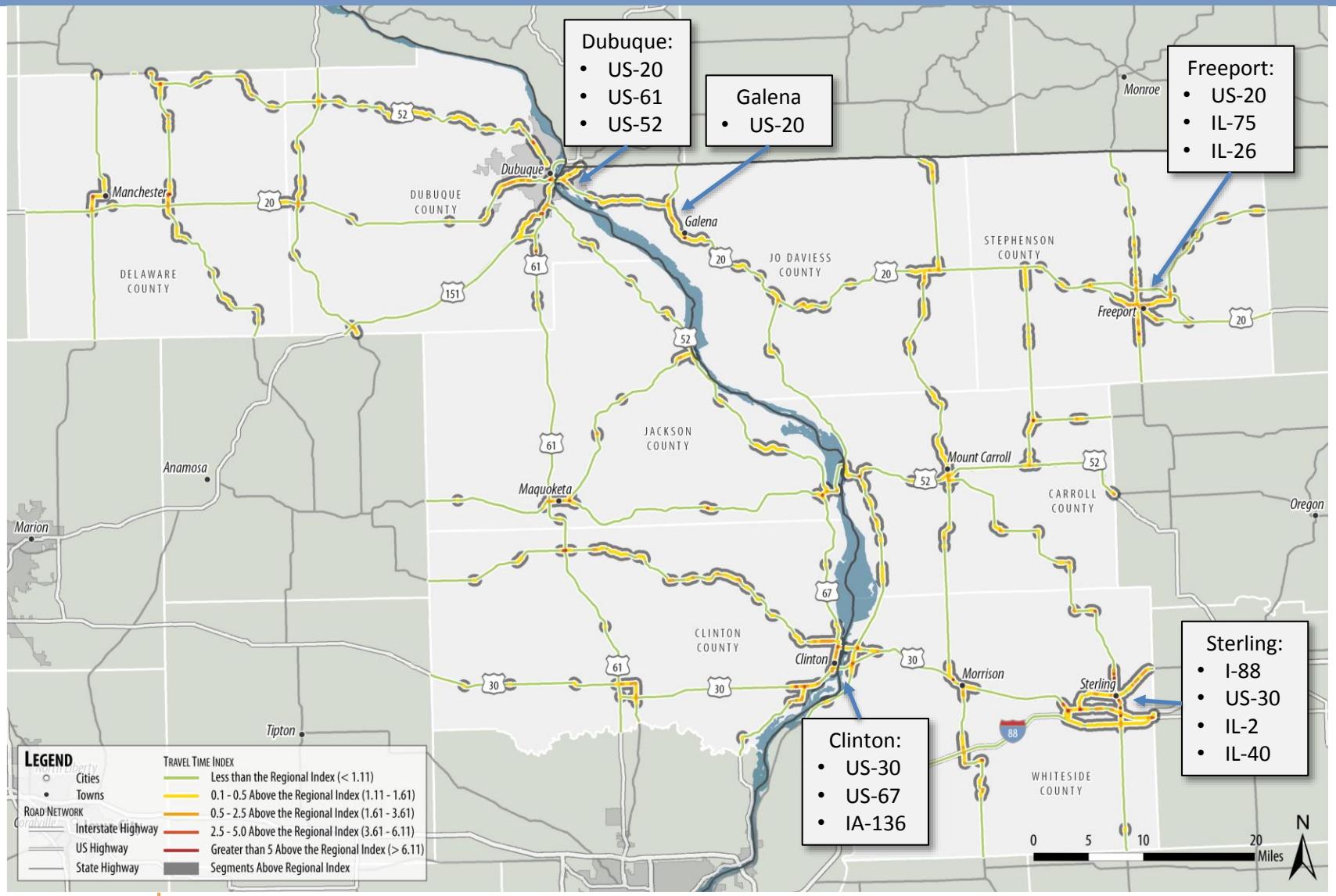
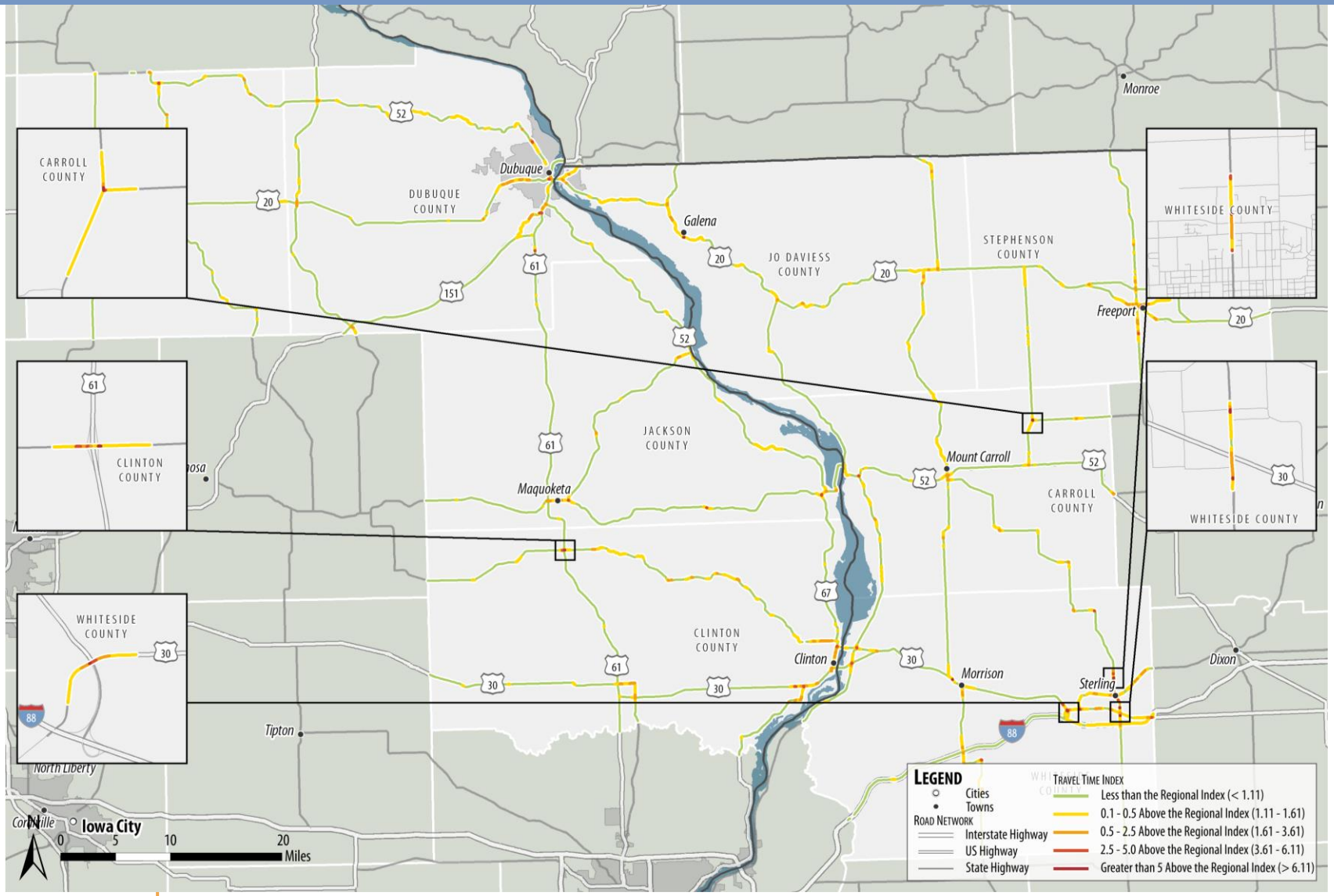
Sources: ATRI FPM Program, American Transportation Research Institute, 2016; National Transportation Atlas Database, Bureau of Transportation Statistics, 2015

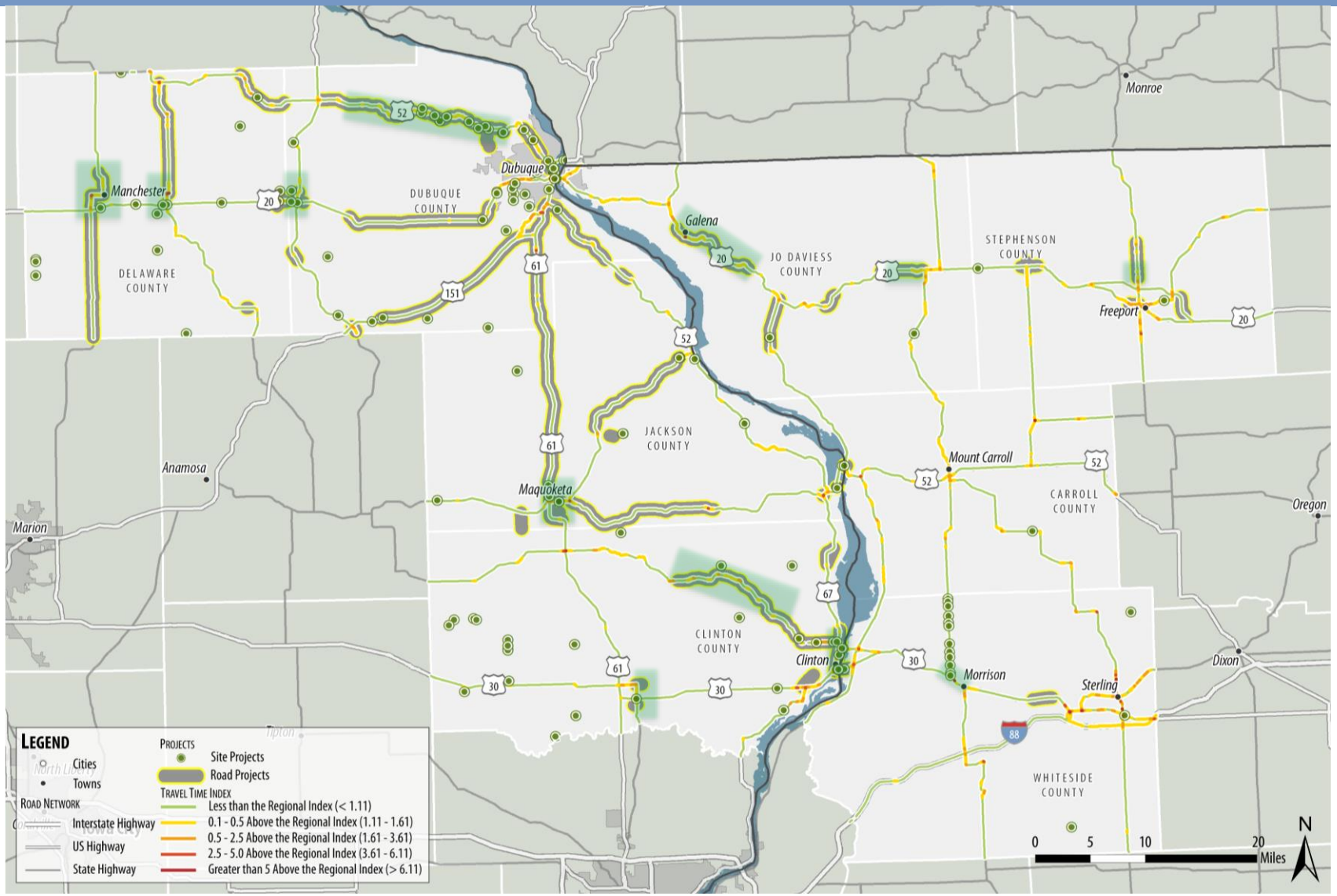
Congestion: Problems Concentrated in Urban Areas



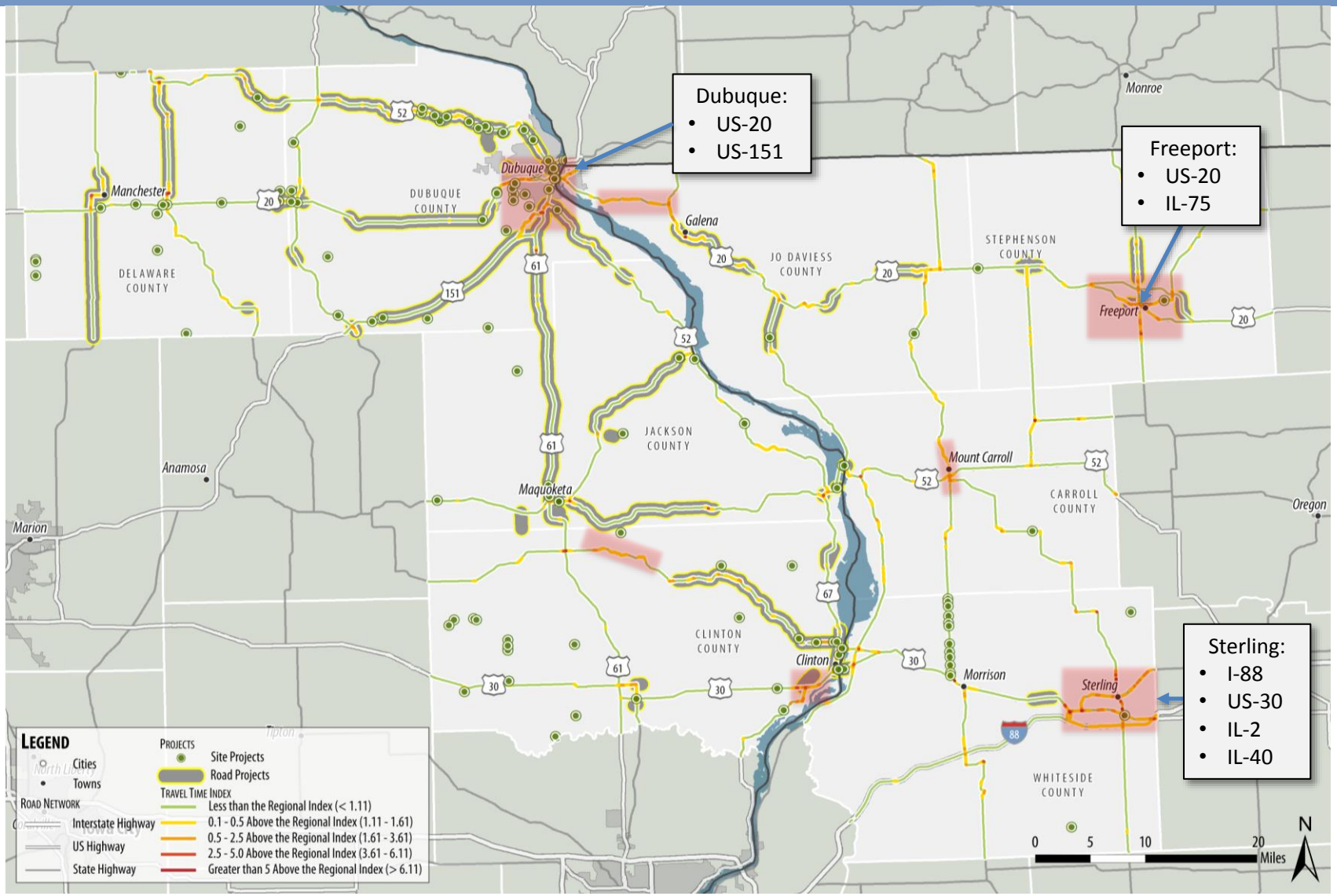
Overall Congestion – Not a Major Problem



Congestion: Overlap with Previously ID'd Projects



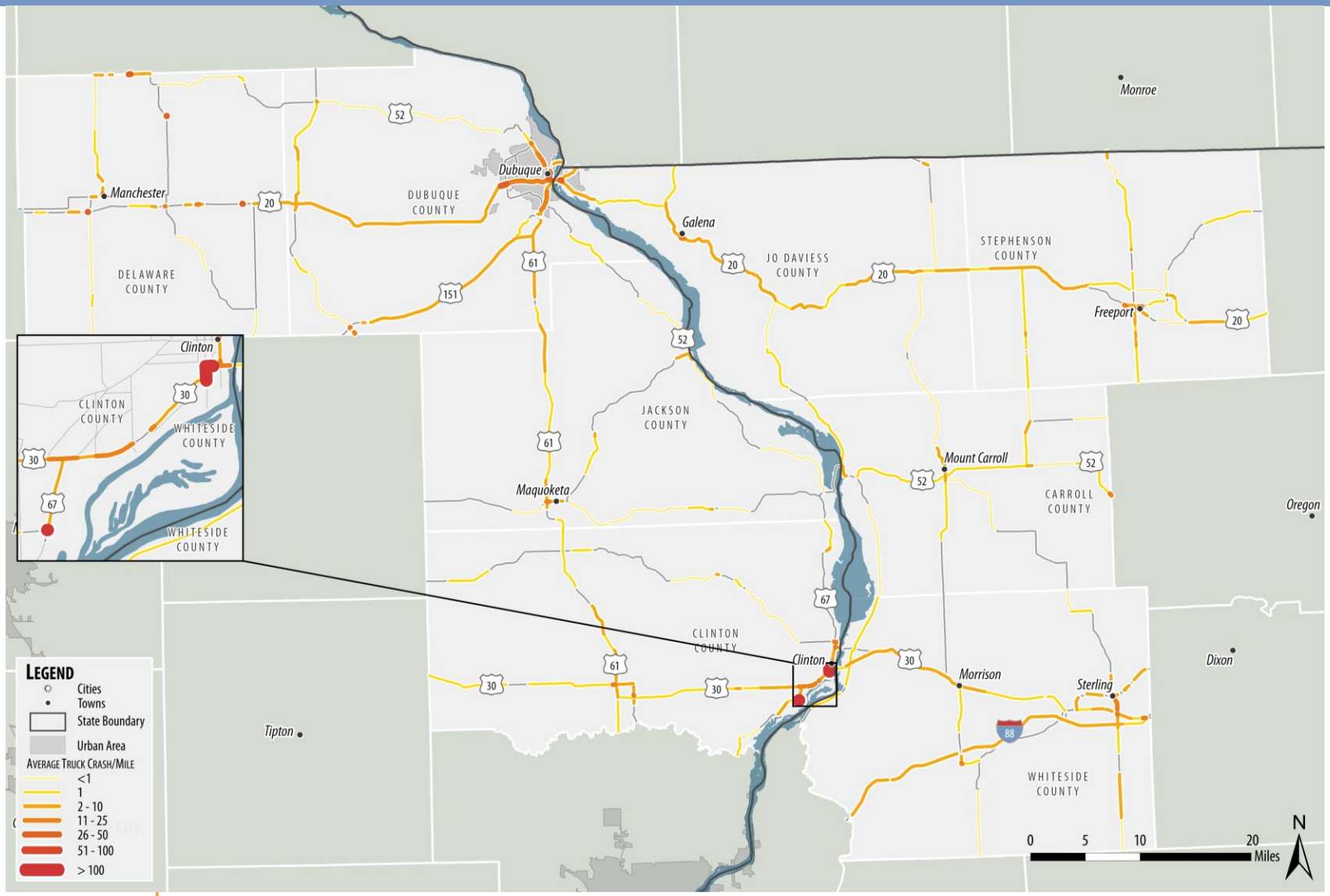
Congestion: Major Gaps in Projects



Gap Areas for Congestion / Potential Project Locations

Highway	Area from Maps	Location Specifically Mentioned in Outreach?
US-20	Dubuque to IL-84	No (US-20 mentioned as a need)
US-20	Western Dubuque	No (US-20 mentioned as a need)
US-20	Freeport	Yes (US-20 mentioned as a need)
US-30	Clinton	Yes (US-30 mentioned as a need)
US-20	Sterling	Yes (US-30mentioned as a need)
US-151/61	US-52 Junction, south of Dubuque	No
IA-136	Between Charlotte and Delmar	No
IL-78	North and South of Mount Carroll	No
I-88	Between Lincoln Road and Whiteside County Line	No
IL-40	Sterling	No
IL-2	Sterling	No

Safety: Truck Crashes per Mile



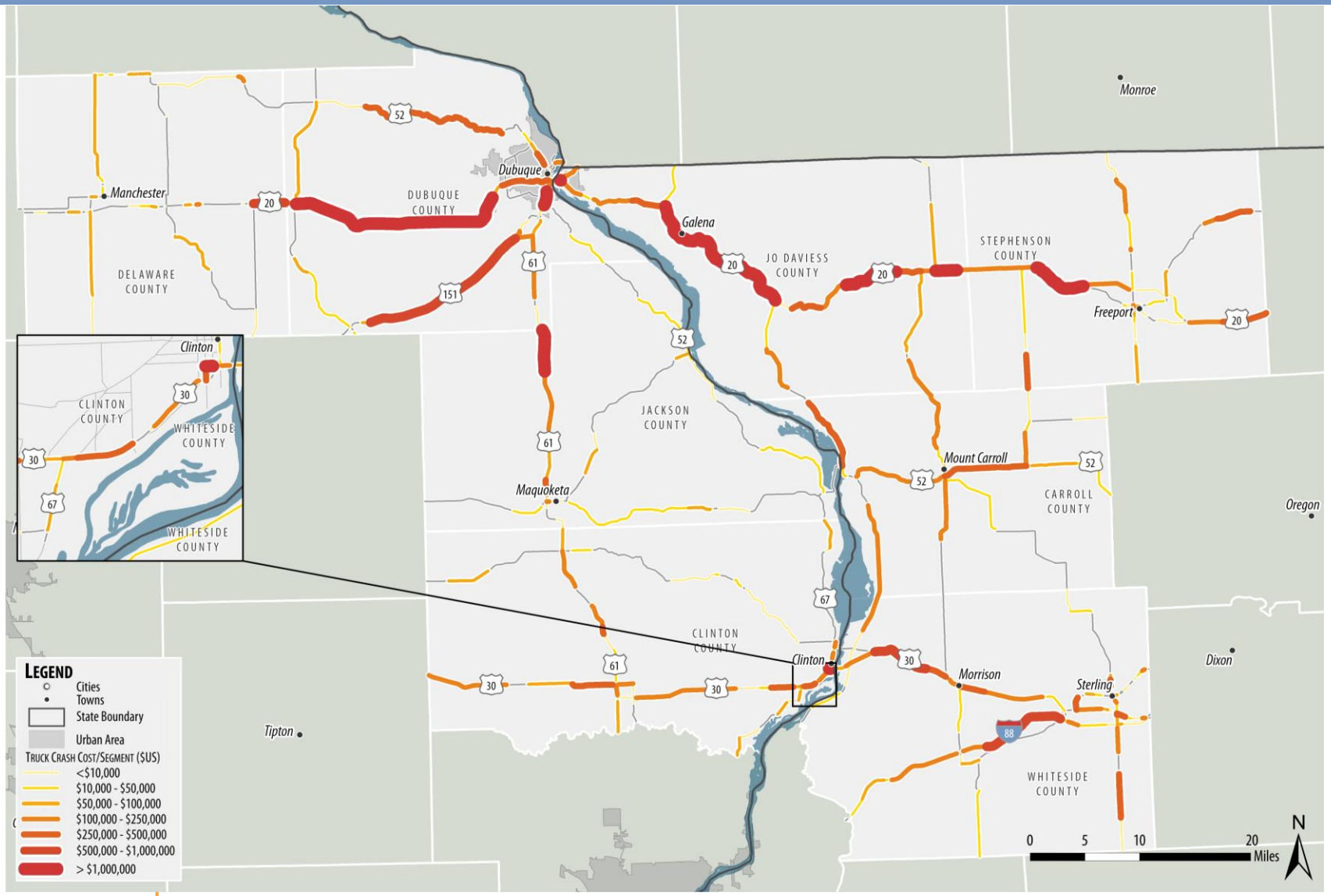
Safety: The Cost of Crashes in the Region

KABCO codes are assigned to crashes based on maximum level of injury.

Code	Definition	Associated Cost
K	Fatality	$4,008,900
A	Disabling Injury – Hospitalization required	$216,000
B	Evident Injury – Scrapes and bruises, no hospitalization required. “Can walk away.”	$79,000
C	Possible Injury – No visible injury, but complaints of pain	$44,900
O	Property Damage Only	$7,400

Source: Highway Safety Manual, First Edition, Draft 3.1. April 2009.

Safety: Areas of Greatest Truck Crash Cost/Severity



Note: Map shows crashes per segment, not per mile

Safety: Overlap with Previously ID'd Projects

Note: Segments with $500,000, or more, in costs are highlighted.

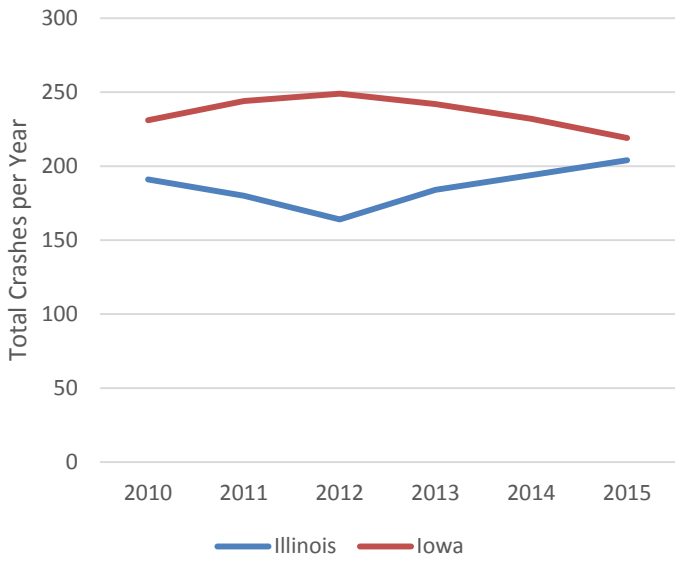
Safety: Gaps in Projects

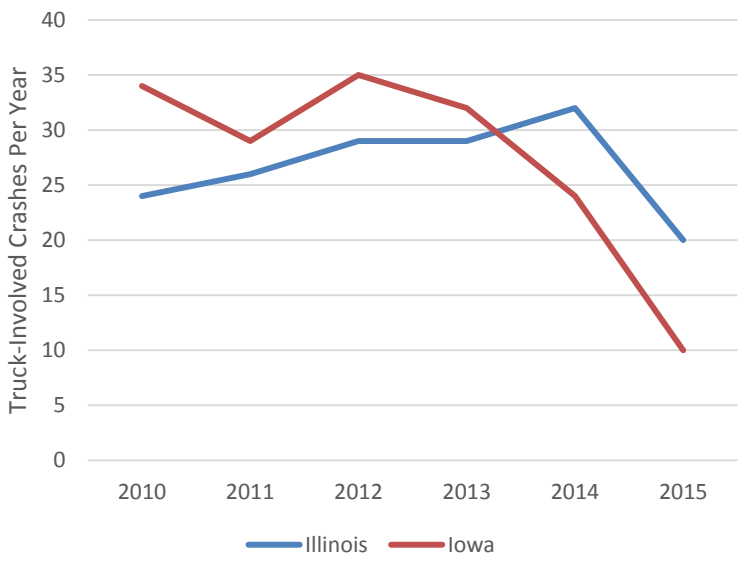
Note: Segments with $500,000, or more, in costs are highlighted.

Gap Areas for Safety / Potential Project Locations

Highway	Area from Maps	Location Specifically Mentioned in Outreach?
US-20	Farley to Dyersville	No (US-20 mentioned as a need)
US-20	Mississippi River to N Cascade Road	No (US-20 mentioned as a need)
US-20	Menominee Road to E. Galena	No (US-20 mentioned as a need)
US-20	Tapley Woods east to IL-84 Junction	No (US-20 mentioned as a need)
US-20	Woodbine to Canyon Park Road	No (US-20 mentioned as a need)
US-20	County Hwy 6 to Business 20 Junction	No (US-20 mentioned as a need)
US-20	West of Freeport	No (US-20 mentioned as a need)
US-30	Grand Mound to US-61	No (US-30 mentioned as a need)
US-30	IL-136 to IL-78	No (US-30mentioned as a need)
US-30/US-67	Clinton	Yes (US-30mentioned as a need)
IL-84	Rush Road to Savanna	No
US-52	Mount Carroll to Lanark	No
I-88	IL-78 to Lincoln Road	No
IL-75	Dakota to Rock City	No

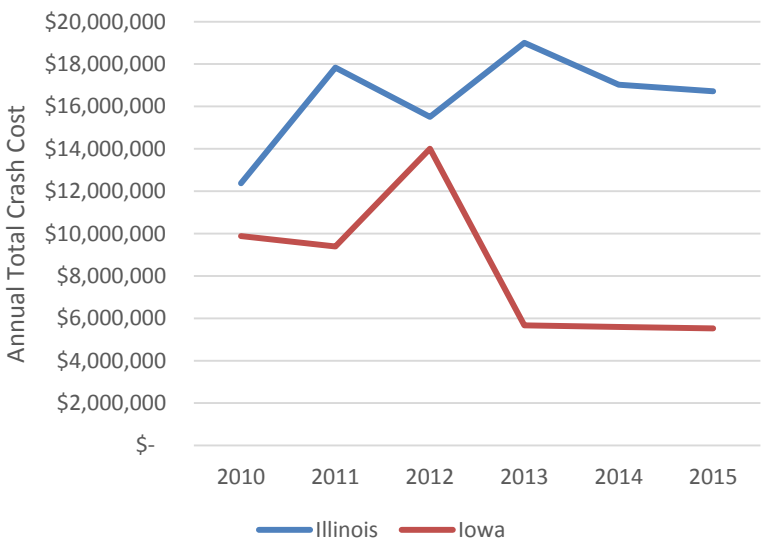
Count of US-20 Crashes

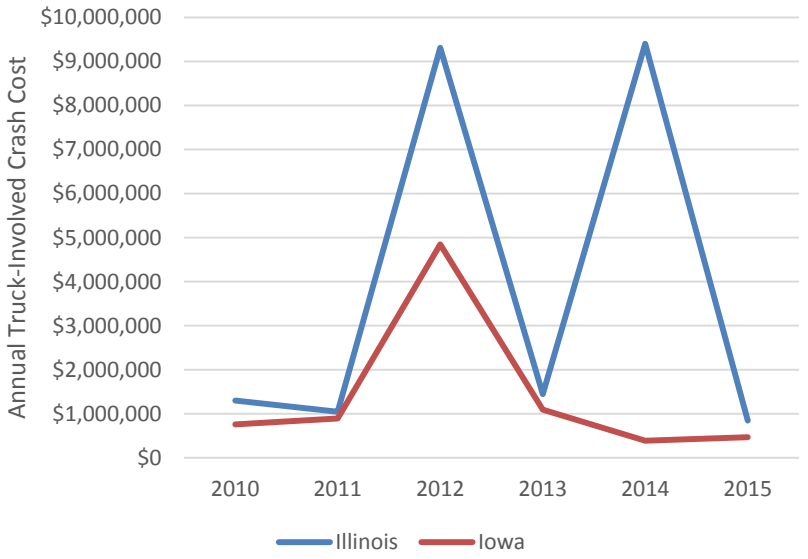




- Between 2010 and 2015:
  - US-20 had 2,534 crashes in total. 44% in Illinois, 56% in Iowa.
  - 324 (13%) of these crashes were truck-involved.
  - 160 (49%) of truck-involved crashes occurred in Illinois. 164 in Iowa.

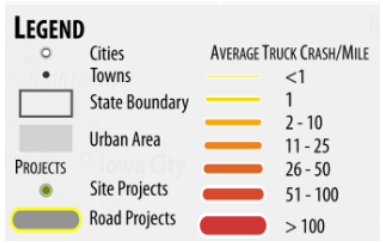
Cost of US-20 Crashes

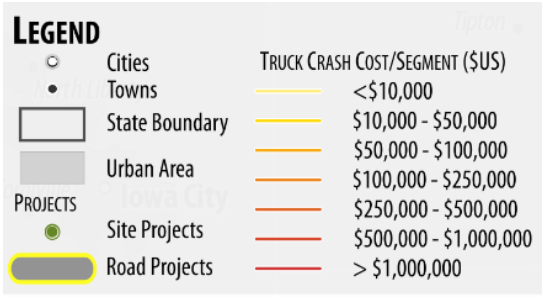




- Between 2010 and 2015:
  - US-20 total crash cost exceeded $148.5 million. 75% in IL, 25% in IA.
  - Truck involved crashes cost $31.8 million (21%).
  - Illinois had 73% of truck crash costs ($23m).

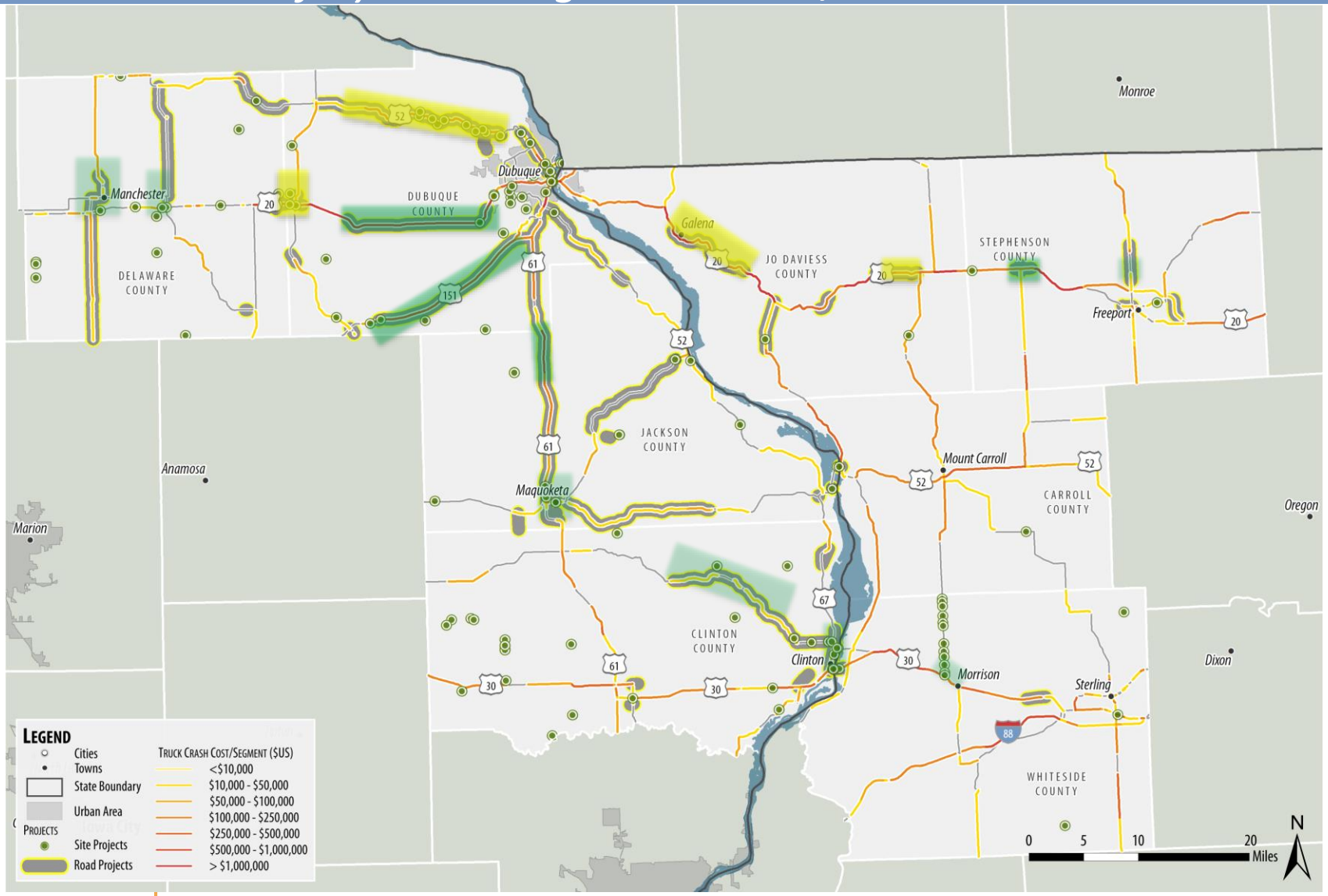
US-20: Comparing Congestion and Safety





Previously Identified Project Overlaps

Shown with Safety and Congestion Data / Needs



Note: Yellow areas indicate overlap of both safety and congestion-relevant projects.

Project Gaps

Shown with Safety and Congestion Data

Note: Black circles show overlap between safety and congestion project gaps.

Discussion on System Evaluation

Open Discussion

- Does this enhanced data evaluation better highlight the regions roadway needs?

Presentation Map

Why Develop a Freight Plan?

Additional Information for Projects Identification

Process to Evaluate Projects

Questions & Discussion

About Benefit-Cost Analysis

What do we learn?

- Benefits of freight improvements
  - Improvements in supply chain performance -- cost, speed, reliability, etc. – compared to without-project conditions
  - Performance and cost data to help define/fine-tune projects
  - Support discretionary grant applications
- Benefit-cost analysis typically does not include economic impact evaluation (jobs, wages, taxes, etc.) or neutral "transfers" of benefits across regions or facilities

Benefit Cost Analysis Guidance

Recent USDOT guidance for INFRA and TIGER

- Costs and monetized benefits calculated annually over long-term (20-30 years) and discounted to present value at 7% and 3%; BCR is the ratio of discounted benefits to discounted costs
- Primary benefit categories
  1. State of good repair (pavement damage, etc.)
  2. Economic competitiveness (transportation cost, land value)
  3. Livability (congestion reduction, etc.)
  4. Sustainability (emissions reduction, etc.)
  5. Safety (crash reduction, etc.)
- New provisions
  - Reduced value for modal diversion projects
  - No recommended federal value for marginal social cost of carbon
  - Increased rigor in modeling congestion and safety improvements

Implementation Support

Primary option (from scope of work)

- Develop Benefit-Cost Analyses for three projects, using WSP BCA model from latest round of TIGER/INFRA grants, and representative project data as available
  - Suggest mix of: truck, rail, water; large, medium, small; conventional and innovative; regional, bi-state, national; near-term and long-range
  - Input to state plans and state/federal grant programs
  - Spreadsheet model for future use (example from NM rail project)

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Implementation Support (cont'd)

Alternative option

- Develop BCA for one project (container on barge) with supporting operational feasibility analysis
  - Would quantify the O-D volumes/commodities that could be served, test different capture rates, determine capture rate(s) necessary for service development and sustained operation
  - Would not determine physical feasibility (requires site analysis) or whether the necessary capture rate can be achieved (requires full market study)

Discussion and Next Steps

- What approach should we use?
- What types of projects should we address?
  - Rail
    - Intermodal terminal, transload terminal
    - Existing line improvement / new line construction
  - Highway
    - Grade crossing or other bottleneck elimination
    - Bypass or performance/capacity enhancement
  - Water
    - Transfer terminal
  - Others?

Presentation Map

Why Develop a Freight Plan?

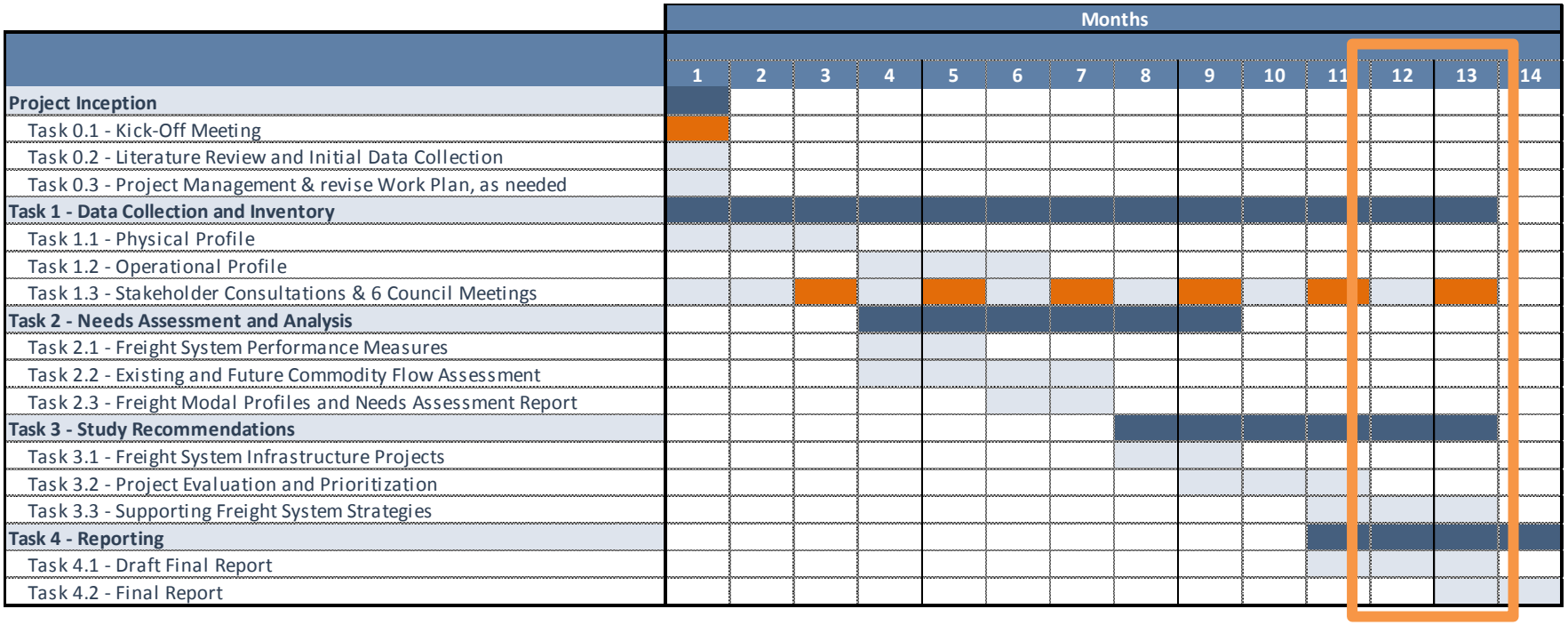
Additional Information for Projects Identification

Process to Evaluate Projects

Questions & Discussion

Our Next Steps…

- Continue stakeholder outreach
- Refine list of freight plan recommendations
- Conduct freight project evaluation



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Thank You

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