MnDOT/Met Council: Freeway System Interchange Study

Metropolitan Council Transportation Committee March 23, 2020





Background

- Investment prioritization study
- System interchanges connect two freeways
- Locations have been evaluated independently
- Interchange Issues:
 - Congestion
 - Crashes



Source: Google

• Systemwide numerous identified needs





Purpose

- Systematically discover and prioritize opportunities across region
- Reduce delay and crashes
- Consider needs of freight and transit
- Right-size investments



Source: SRF Consulting Group





Example of recent investment: I-494/I-35W in Bloomington/Richfield

• North to west directional ramp

- Corridors of Commerce
 Includes directional awarded \$70 million to begin in 2021
 - ramp and bridge braids



Source: City of Bloomington





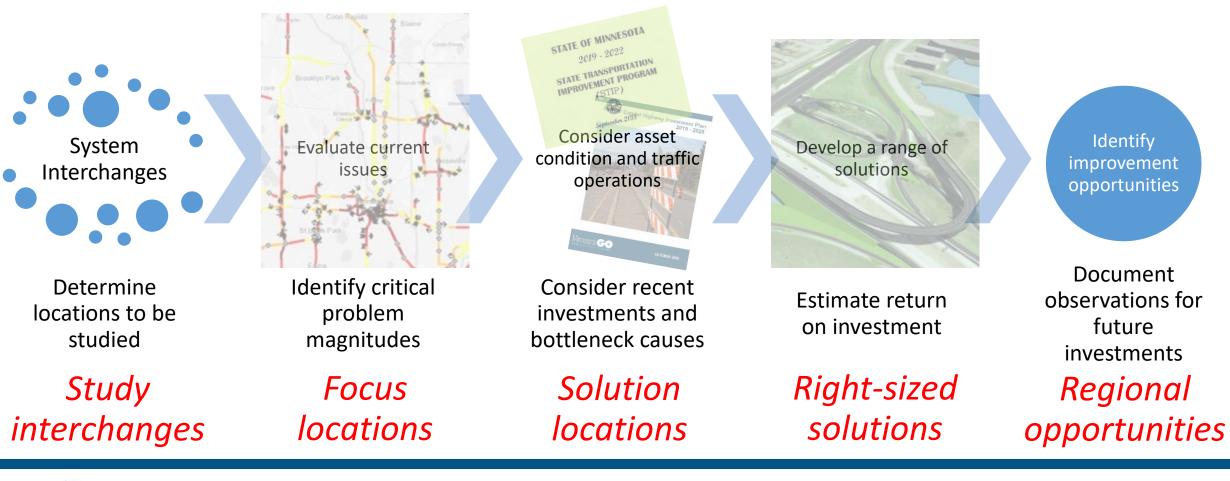
Stakeholder Engagement

Study Leadership	Agen	cy Outreach
Technical Advisory Committee	• Mi	nnesota Fright Advisory Committee
Seven-county Metro Area counties	• Tra	Insportation Advisory Board
 Wright and Sherburne counties 	_	Technical Advisory Committees
Local governments		ngestion Management Process
 Federal Highway Administration 		
• MnDOT	• Sta	te's Capital Improvements Committee
Metropolitan Council	• Me	et Council Transportation Committee





Study Process







Phase 1: Study Interchanges

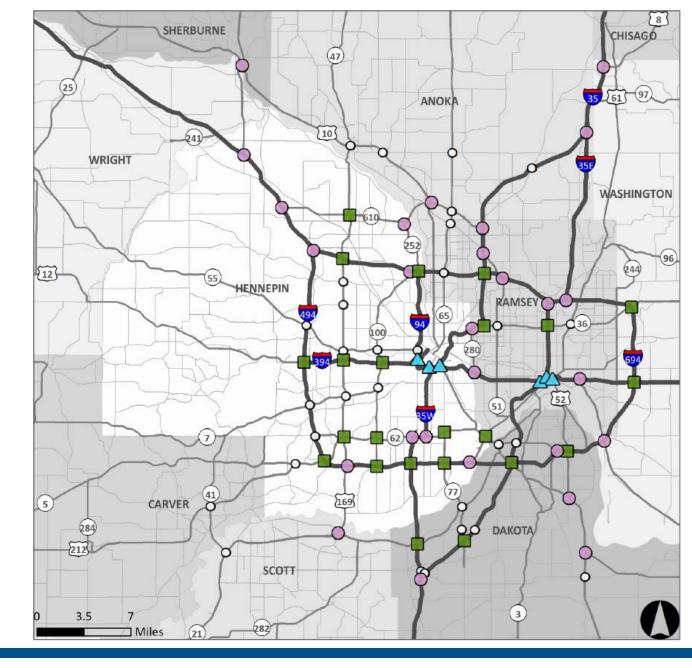




Study Interchanges

• 56 interchanges

- Cloverleaf 23
- Downtown commons 6
- Other interchange types 27







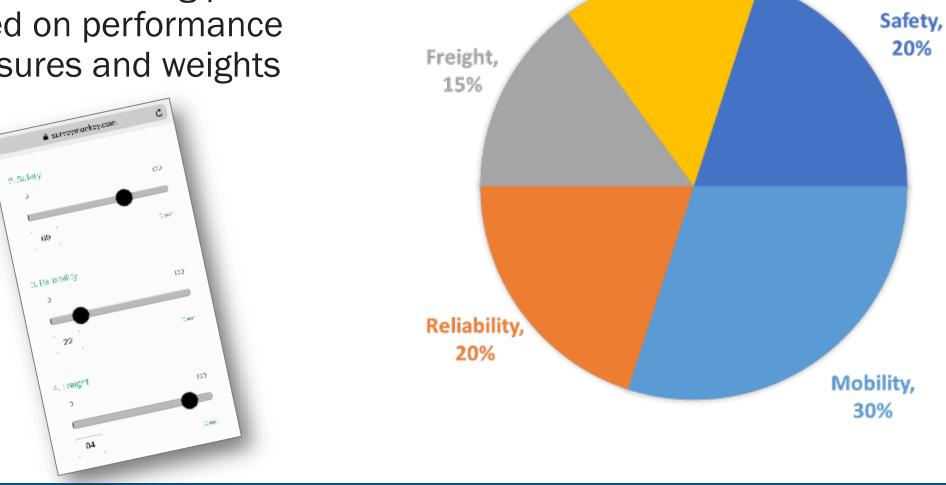
Phase 2: Focus Locations





Weighting

• Technical scoring process based on performance measures and weights



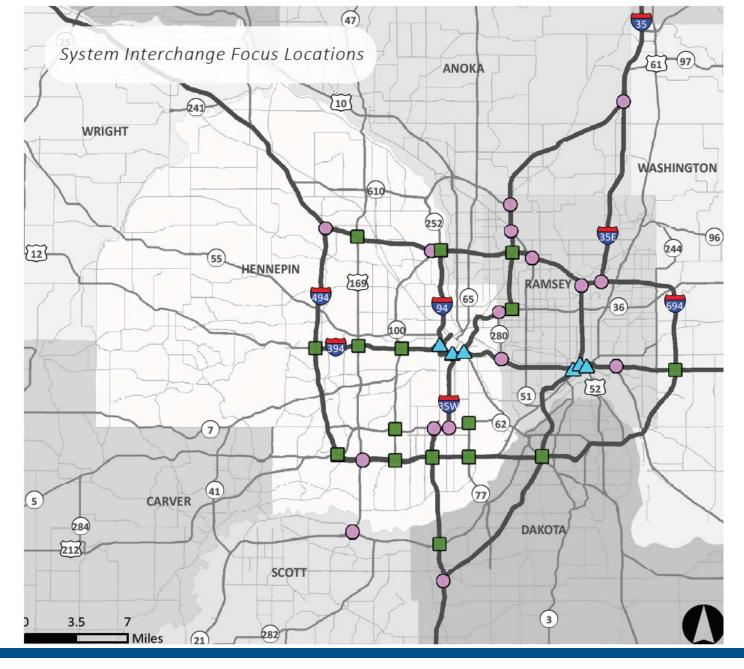
Transit, 15%





Focus Locations

- 37 system
 interchanges with
 94 focus locations
 - Top 63 approaches
 - 31 add'l Interstateto-Interstate







Phase 3: Solution Locations





Bottleneck Definitions

Interchange bottleneck	Congestion is attributed to geometric and/or demand conditions in the system interchange area (approach, within, departure)	Primary
Upstream bottleneck	Congestion is present upstream of the system interchange such that, if resolved, would deliver meaningfully more traffic (would affect operations)	bottleneck Location that is the principal cause of congestion observed in the influence area
Downstream Bottleneck	Congestion downstream of the system interchange that would worsen if more traffic were delivered, or may be queuing back through the interchange	and may be maskin, other bottlenecks

Outcome: Carry approaches forward to **Solution Locations** when **Interchange** bottleneck = **Primary** bottleneck





Phase 4: Right-Sized Solutions





Solution Development

Auviliandanas	Medium Scope		
- Auxiliary lanes		Large Scope	
Buffer lanes	- CD road	Laige beope	
- Acceleration lanes	- Ramp consolidation	- Bridge braids	
Escape lanes	- Two-lane ramp	- Flyovers	
Signage enhancements	- Ramp geometric	- Turbine ramps	
- ATM strategies	enhancements (e.g. radius)	- MnPASS connection	
	- Access control	- Transit advantages	





Solution Development

- Bottom-up design approach
 - Assess if lower-cost solutions can address operational issues before moving to higher-cost solutions



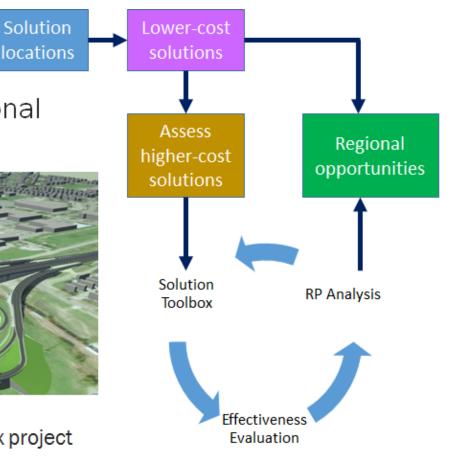
Low Scope Solutions

- Planning-level concept sketches
- Assess severity of pavement and grading, right-of-way impacts, etc.



High Scope Solutions

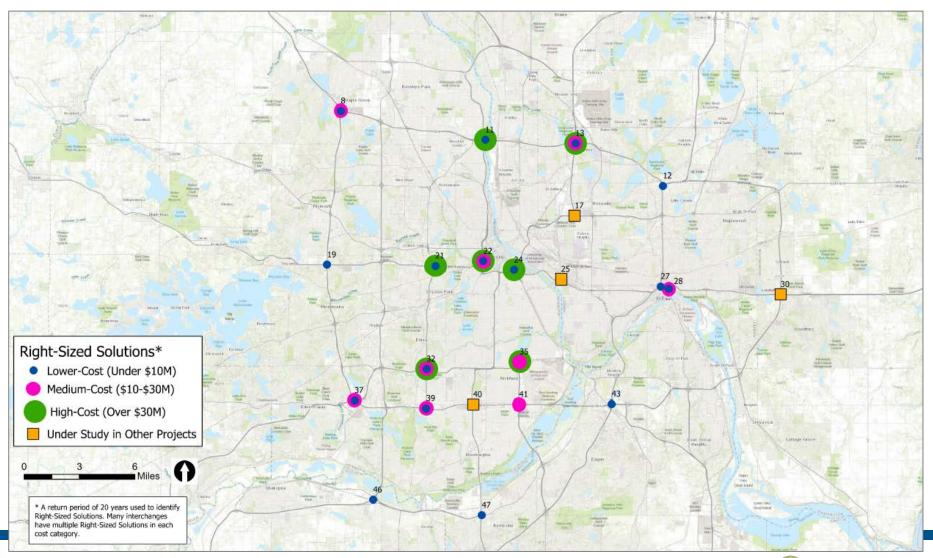
- Detailed design intended for complex project alternatives
- Assess vertical and horizontal clearance, quantify itemized construction elements, etc.







Right-Sized Solution Locations







Phase 5: Regional Opportunities





Freeway System Interchange Investment Approach

- Preservation projects should be used as a catalyst to address other identified safety, mobility, freight, bicycle, and pedestrian needs
- Integrating with preservation projects:
 - Minimizes costs
 - Reduces inconvenience to travelers
 - Addresses multiple policy objectives
- Where mobility needs are identified, investments should be made in lower cost projects that produce high benefits and avoid exceeding the point of diminishing returns

The "Regional Opportunity" categories are intended to inform project scoping and future funding decisions

Funding plans, funding decisions, and project priorities will be proposed by MnDOT and the Metropolitan Council separate from this study process





Thank you!

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