



Principal Arterial Study:

Highway System Options



How PA work was done

- Joint MnDOT/Metropolitan Council study
- Metropolitan Council and MnDOT staff
- Consultants help to define low cost / high benefit projects
- TAB appointed Policy Task Force
- TAC appointed Technical Task Force representatives



Why PA study was needed

- Study commitment made in 2030
TPP (adopted 2004)
 - Identify highway system needs based on 2030 growth
 - Functional classification change requests
- Input for TPP 2008 update
- Input for MnDOT's Statewide Transportation Plan and Metro Transportation System Plan (TSP) updates



Analyzed Twelve “Themes”

- Themes included broad types of highway system investments, i.e. converting all expressways to freeways, adding a lane on all congested highways, etc..
- Themes applied to specific geographic areas, i.e. adding capacity only outside I-694/494 ring
- Regional travel forecast model used extensively



Focus of theme analysis

Analyzed impacts on:

- Location and extent of congestion
- System-wide speed
- Safety
- Cost



Theme analysis conclusions

- There is no silver bullet
- Some themes did exhibit more positive performance than others
- Effecting system-wide performance, requires investments that greatly exceed projected budget



Narrowed to four approaches

1. Adopted 2030 TPP highway projects
2. Low cost/high benefit projects
3. System of priced lanes
4. Highway investments to “fix” congestion



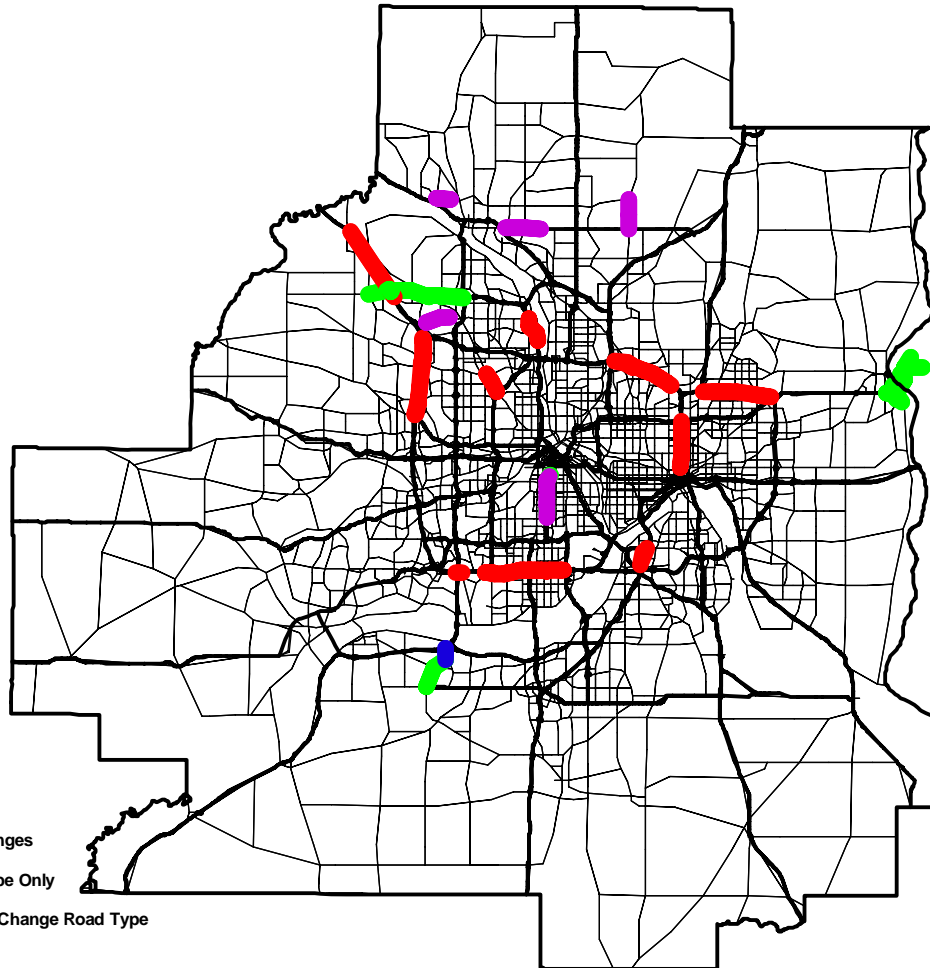
Comparison of approaches

TPP projects	Low cost / high benefit	Priced system	Fix congestion
Specific large projects	Widely disbursed, low cost projects	Select lanes provide congestion free alternative	Region-wide distribution of major investments
Geographically Focused due to limited resources	Assumed/required design exceptions	Concentrated investments create a system responding to congestion	Significant benefit to Minor Arterial System due to shift of traffic.
Design assumes a congestion fix		No “take aways”	
\$2.9 B	\$1.7 B	\$8.0 B	\$43.0 B





Approach 1:



Transportation Policy Plan

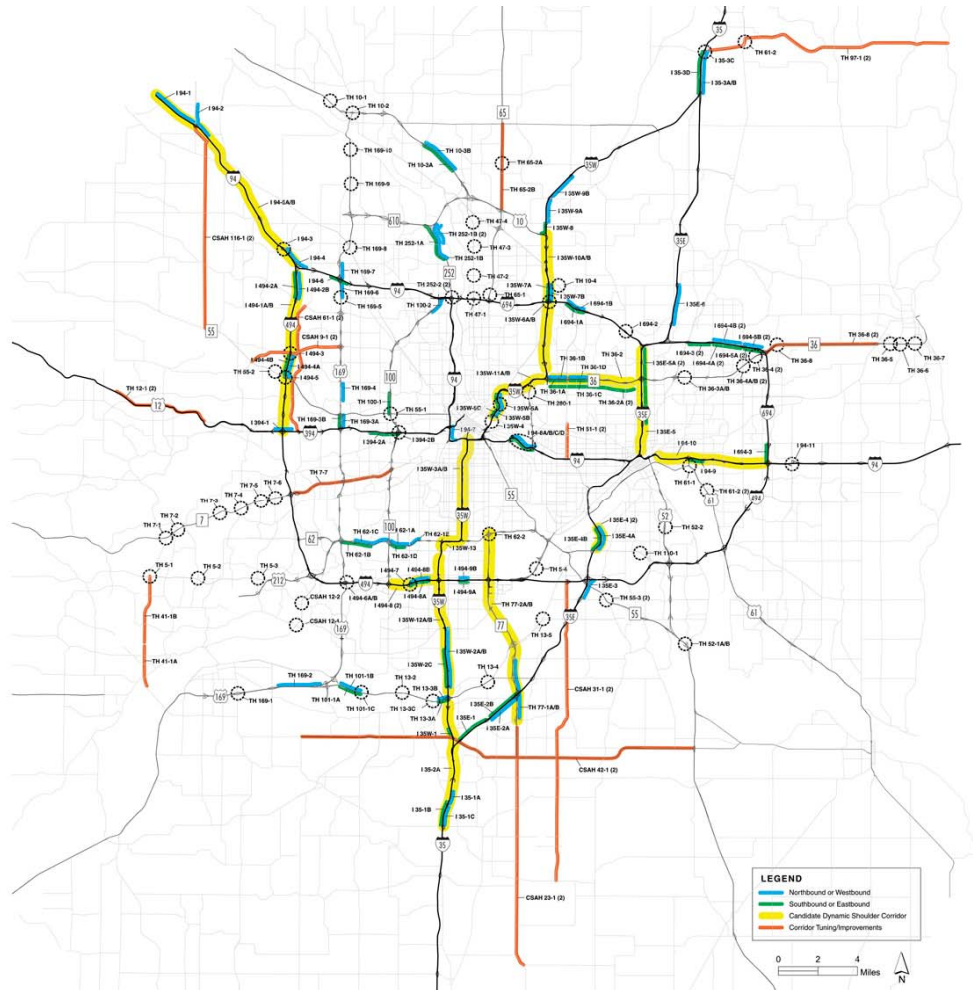


TPP/TSP Network Changes

-  Change Road Type Only
-  Add Lane(s) Only
-  Add Lane(s) and Change Road Type
-  Add New Road

Approach 2:

Low cost / high benefit



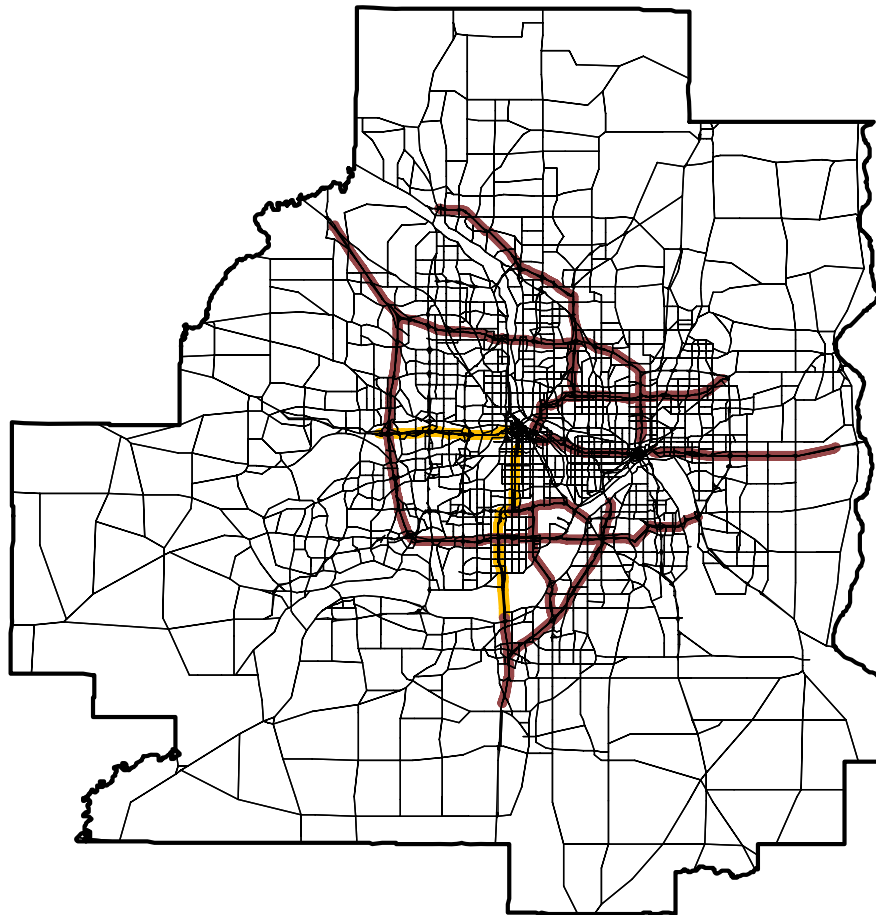


Project examples

	Project cost (in millions)	Reduction in annual hours of delay	Daily peak period vehicle flow increase	Increase in peak period speeds
I-394	\$2.6	87,000	4,650	30 mph in PM
I-94	\$10.5	139,500	3,200	40 mph in AM 25 mph in PM
TH 100	\$7.1	1,063,500	14,450	45 mph in AM 30 mph in PM

Approach 3:

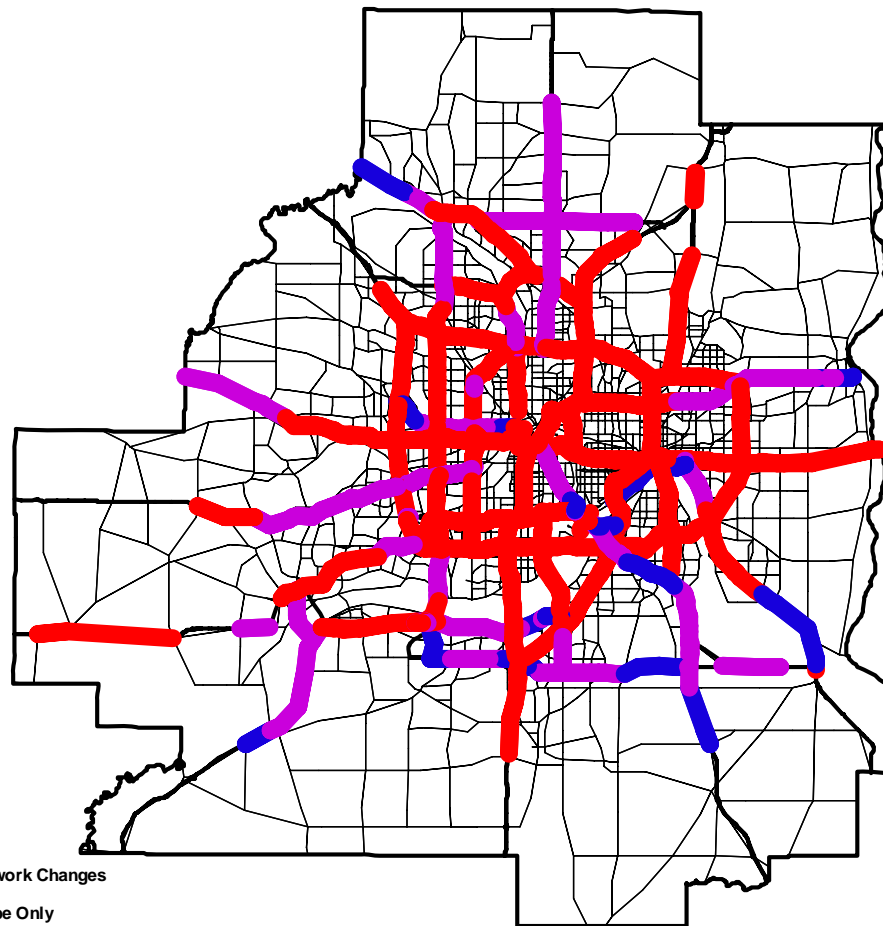
Priced system






Approach 4:



Congestion relief approach



Congestion Relief Network Changes

-  Change Road Type Only
-  Add Lane(s) Only
-  Change Road Type and Add Lane(s)



Revenue requirements

	TPP/TSP	Low cost / high benefit	Priced system	Fix congestion
Gas tax				
Metro 43.1%	8 cents/gal.	----	32 cents/gal.	\$2.30/gal.
Metro 50%	7.5 cents/gal.	----	27 cents/gal.	\$2.07/gal.
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Regional sales tax	3/10 cents	----	1.1 cents	8.3 cents
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Vehicle registration				
Metro 43.1%	125% of 2006 legislative proposal	----	4.75 times legislative proposal	35 times legislative proposal
Metro 50%	100% of legislative proposal	----	4.0 times legislative proposal	30 times legislative proposal
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Wheelage tax	\$52/vehicle/yr. for 22 years	----	\$144/vehicle/yr. for 22 years	\$1450/vehicle/yr. for 22 years



Conclusions

- Cannot afford traditional major highway projects to fix region wide congestion
- 2004 TPP had \$2 B+ for expansion; cost to “fix” congestion would be 20 times this amount
- No money left for other good, smaller projects



Conclusions

- Benefits concentrated in a few locations
- Building general purpose lanes does not change travel behavior
- Difficult to control scope or cost on large projects – buying municipal consent is expensive
- Providing alternatives to congestion may be affordable



MnDOT Fiscal Analysis

- Preservation needs have increased
- Expansion project costs have increased
- Revenues have not kept pace with inflation
- TPP is no longer in fiscal balance



Proposed system options

- **Option 1:** Fiscally Constrained Plan
- **Option 2:** Alternatives to congestion and mitigation – Limited Additional Resources
- **Option 3:** Alternatives to congestion and mitigation – Enhanced Additional Resources

Option 1:



Fiscally Constrained Plan

- Live within our means: existing and reasonably expected resources
- Focus on preservation requirements
- Safety projects are maintained
- Major expansion projects put on hold; rescope to fund critical preservation and safety needs
- Extra revenue dedicated to low cost / high benefit projects

Option 2:



Limited Additional Resources

- Dynamically priced, multi-modal shoulders with increased bus service
- Bus only shoulders with increased bus service
- Low cost / high benefit projects aimed at congestion mitigation and safety
- Low cost / high benefit projects in expansion corridors

Option 2 cont:



Limited Additional Resources

- Assumed additional resources: \$2.0 B 2009 to 2030; \$90 M avg. per year
- Raising Limited Additional Resources would require:
 - Nine cent gas tax (current metro share at 43%) or,
 - Five cent gas tax with vehicle registration tax change (as proposed in 2007 legislation)

Option 3:



Enhanced resources

- New multi-modal, priced lanes with transit facilities and BRT service
- Select priced-lane to priced-lane interchanges
- Low cost/high benefit projects aimed at congestion mitigation and safety
- Critical low cost/high benefit projects in expansion corridors
- Select major highway projects to “optimize” system performance

Option 3 cont:



Enhanced Additional Resources

- Assumed additional resources: \$4.0 B 2009 to 2030; \$180 M avg. per year
- Raising Enhanced Additional Resources would require:
 - 25 cent gas tax (current metro share at 43%) or,
 - 16 cent gas tax with vehicle registration tax change (as proposed in 2007 legislation)



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