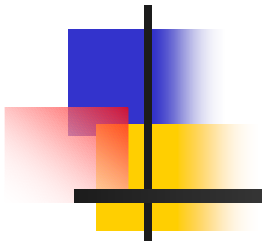


Target Formula Re-evaluation

Target Formula Background

- Target formula is used to distribute federal funding to the eight ATPs
- Current formula was developed in 1996
- Reauthorization of federal transportation funding
- Assess how to ensure strategic transportation needs and priorities are met
- Work Team established to develop recommendations
- Goal: Refine the target formula and ATP process to reflect current statewide transportation policies and goals

Changes in Policy Context

- Implementing Performance Management

  – The current target formula does not adequately relate to system performance, especially since it does not address congestion, mobility, or safety.

- Established IRC System & Bottleneck Removal Plan – The current target formula does not reflect these strategic priorities.

- Adopted new Statewide Transportation plan (2003) and updating District Long-range Plans

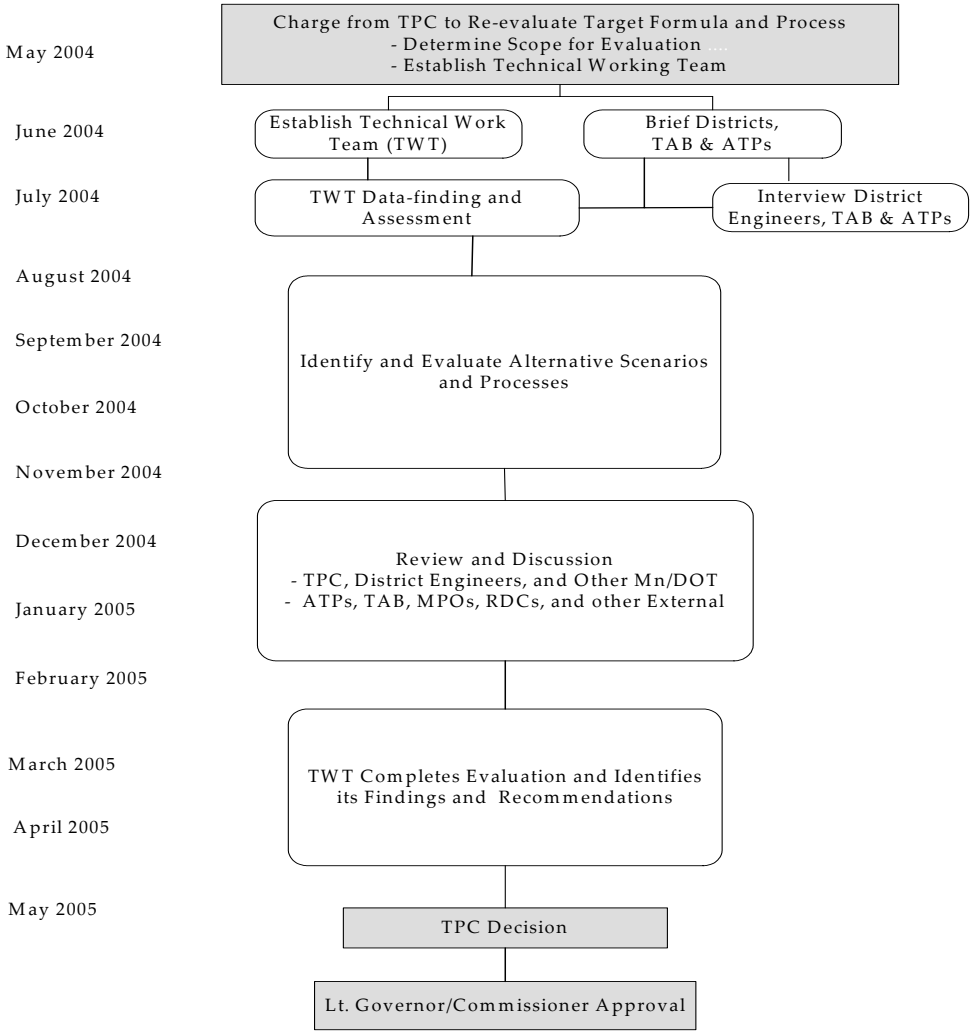
Other Concerns

- Difficult for any District to fund mega projects such as “Budget Buster” bridges and major corridor improvements
- Suballocating to local units of government divides available revenues into small “pots” and reduces flexibility to solve problems

Technical Work Team Membership

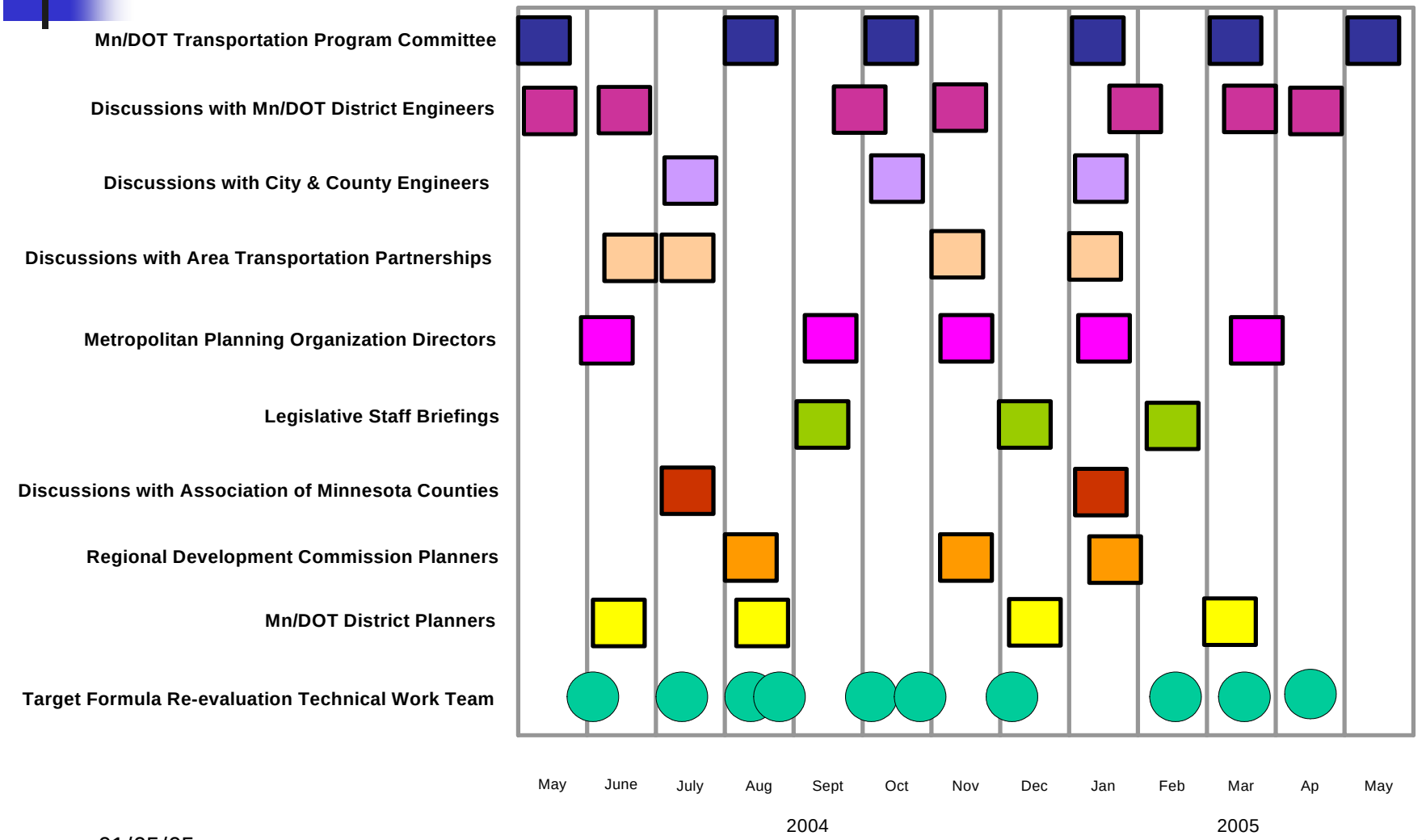
- Chair: Al Schenkelberg,Mn/DOT Office of Investment Management
- One member from each Mn/DOT District
- Mn/DOT legislative, finance, and transit staff
- Counties: Doug Fischer (Anoka)
- Cities: Steve Gaetz (St. Cloud)
- MPOs: Ron Chicka (Duluth) & Carl Ohrn (Met Council)
- Information provided to Federal Highway Administration

Target Formula Re-Evaluation Process

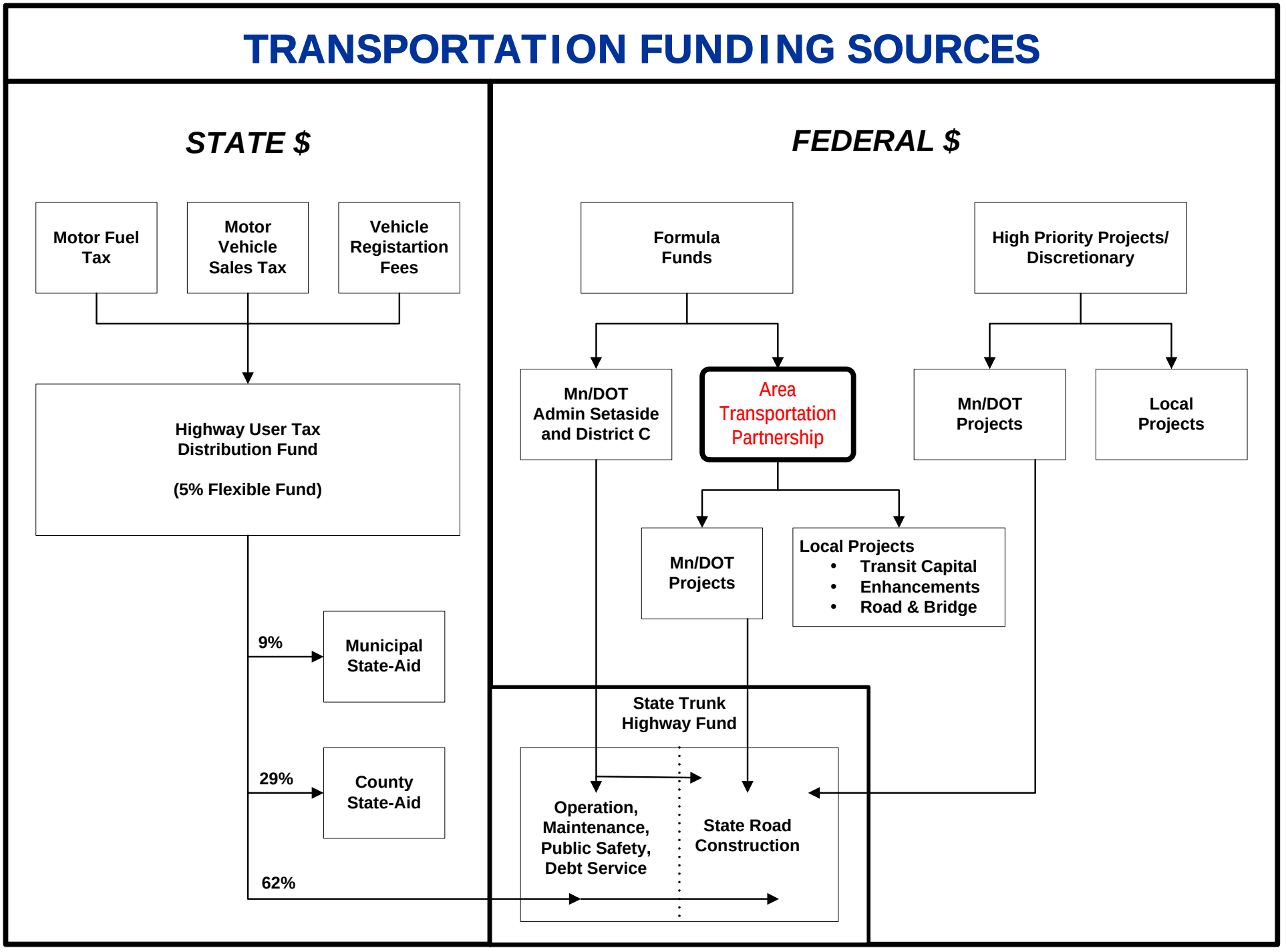


Target Formula Stakeholder Involvement

Planned Opportunities for Stakeholder Involvement



TRANSPORTATION FUNDING SOURCES



Work Team Progress

- Work Team has met monthly since June 2004
- Reviewed comments from ATPs, legislators and staff, MPOs, counties, cities, AMC, others
- Reviewed practices in other states
- Reviewed data sources, availability, and reliability
- Reviewed over 50 formula scenarios
- Reviewed general central fund alternatives
- Stakeholder review/comment through February 4
- Work Team recommendation to TPC in Spring 2005

Comments Received To Date

- Process fosters understanding and partnership
- Predictability is important
- Difficult to address regional projects
- Major projects disrupt an otherwise stable system
- Other funding options needed for mega bridges
- Not everyone defines “mega” the same
- Concern about lost tax capacity and ability to support existing system where population is decreasing
- Both state and local systems are important
- Projects should come from plans showing needs/priorities
- ATPs generally like the current process

Common ATP Suggestions

- Preservation is most important, but also must meet needs of growth areas
- Safety needs to be a factor
- Future population is weighed too heavily
- Give more weight to heavy commercial vehicles
- Consider roadway type – additional infrastructure is needed for freeways

Direction for Formula Development

- TPC direction
  - Emphasis on meeting preservation needs (State Plan priority)
  - Include at least one performance-based variable
  - Include a central fund
  - Change effective in 2009
- Work Team considerations
  - Transparent process and explainable formula
  - Base on reliable data
  - Limit changes in shares
  - Provide funding for all preservation needs

Existing Target Formula

				SYS	Units	Variables	Weight	ATP 1	ATP 2	ATP 3	ATP 4	ATP 6	ATP 7	ATP 8	METRO
System Size & System Usage	100%	SYSTEM SIZE	40%	*FA*	sq yd	**Bridge Area**	**10%**	1.40%	0.46%	0.70%	0.41%	1.15%	0.84%	0.49%	4.55%
				FA	lane-miles	**Lane-Miles**	**25%**	3.25%	2.99%	3.29%	2.88%	2.74%	2.89%	2.75%	4.22%
				All	buses	**Buses**	**5%**	0.48%	0.09%	0.22%	0.13%	0.18%	0.12%	0.09%	3.71%
		SYSTEM USAGE	60%	*FA*	VMT	**Vehicle Miles Traveled**	**25%**	2.12%	0.91%	3.00%	1.47%	2.43%	1.62%	1.20%	12.25%
				TH	VMT	**HCVMT**	**5%**	0.47%	0.21%	0.65%	0.44%	0.75%	0.48%	0.31%	1.69%
				All	People	**Future Population**	**30%**	1.85%	0.91%	3.58%	1.29%	2.62%	1.54%	1.20%	17.01%
TOTAL							**100%**	**9.6%**	**5.6%**	**11.4%**	**6.6%**	**9.9%**	**7.5%**	**6.0%**	**43.4%**

Definitions

Bridge Area	1998 data from TIS, Bridges 20 feet and greater
Lane Miles	1998 Lane Miles from TIS
Buses	1997 Minnesota Transit Report
VMT	1998 Vehicles Miles Traveled
HCVMT	1998 Daily Heavy Commercial Vehicle Miles Traveled from TIS
Future Population	2025 Population, State Demographic Office 1998

Key Target Formula Concepts

- Current formula: System Size & Usage
- New formula:

  Achieve Statewide Plan performance goals for
  - **Preservation** - Maintaining the state's physical transportation assets in sound and safe condition
  - **Safety** - Improving safety for the traveling public
  - **Mobility** - Investing in the IRC system and reducing traffic congestion

Variables Evaluated

- Reviewed over 120 potential variables
- Considered data availability and reliability
- Focused on nine key variables
  - Mix of data on system size and performance
  - Best representation of key elements measuring the system and its performance
  - Data reliability is good

Target Formula Variables

- Preservation
  - Bridge Area
  - Adjusted Lane Miles
  - Bridge Needs
  - Pavement Needs
  - Heavy Commercial VMT
- Safety
  - Fatal/A Injury Crashes
- Mobility
  - Congested VMT
  - Buses
  - Future Population (2015)

Performance-Based Variables

- A performance based variable measures the condition of the transportation system
  - Lane miles is not a performance measure
    - Doesn't measure miles in need of repair or type of repair
    - Doesn't measure how many miles are or will be congested
    - Doesn't measure safety
  - Pavement needs is a performance measure
    - Measures the condition of pavement and identifies the most cost-effective repair

Preservation – 55% of Formula

- Preservation is the first priority
  - State Plan and customer input
- Preservation needs have been identified by management system models
  - Identifies current and future needs
  - Used in District planning process
- Preservation currently accounts for 50-60% of Mn/DOT funds
- Heavy commercial vehicles directly impact both pavement and bridge preservation

Preservation Variables

- **Bridge Area**
  - All Federal Aid eligible bridges 20’ and greater
- **Adjusted Lane Miles**
  - Accounts for auxiliary lanes and ramps
  - Entire Federal Aid eligible system
- **Bridge and/or Pavement Needs**
  - 2008-2030 needs from Mn/DOT management systems
- **Heavy Commercial VMT**
  - Miles traveled by vehicles with dual tires on one or more axels or buses with a seating capacity of more than ten.
  - Data for trunk highway only

Safety – 10% of Formula

- Safety is a priority
  - Statewide Plan, customer input, ATP feedback
  - Minnesota safety initiatives
- Recognizes importance of safety, but:
  - Safety is part of EVERY highway project
  - Highway design/engineering cannot prevent all crashes

Safety Variable

- Fatal/A Injury crashes on all Federal Aid eligible roadways
  - Crashes that result in a fatality or a life-changing injury
  - Data for other crashes is not reliable

Mobility – 35% of Formula

- Provide reliable travel times between Minnesota's regional trade centers
- Address congestion and growth within regional trade centers
- Recognize mobility needs served by other modes: transit, bikes, etc.

Mobility Variables

- **Congested VMT**
  - 2003 congested VMT for entire Federal Aid system
  - Measures moderate and higher levels of congestion by facility type, based on IRC definitions
- **Buses**
  - Number of buses (10 passenger and larger)
  - Measures general transit needs
  - Federal funds can be used to fund transit
- **Future Population (2015)**
  - Share of state population

Target Formula Scenarios

- These nine variables were used to develop four illustrative target formula scenarios

Target Formula Scenario A

Formula Scenario A (Revised Weights, Adjusted Lane-Miles replaces Lane Miles, future population 2015)

Performance-based Variables (Fatal/A Injury Crashes and Congested VMT)

				SYS	Units	Variables	Weight	ATP 1	ATP 2	ATP 3	ATP 4	ATP 6	ATP 7	ATP 8	METRO
System Size & System Usage	100%	PRESERVATION	55%	*FA*	sq ft	**Bridge Area**	**15%**	1.83%	0.86%	1.20%	0.77%	2.05%	1.45%	0.95%	5.90%
				FA	lane-miles	**Adjusted Lane-Miles**	**30%**	3.84%	3.51%	4.00%	3.41%	3.30%	3.44%	3.24%	5.28%
				TH	VMT	**HCVMT**	**10%**	0.79%	0.44%	1.49%	0.91%	1.60%	1.01%	0.64%	3.12%
		SAFETY	10%	*FA*	crashes	**Fatal/A Injury Crashes (*3 year average*)**	**10%**	0.73%	0.40%	1.29%	0.53%	1.03%	0.48%	0.53%	5.01%
		MOBILITY	35%	*FA*	VMT	**Congested VMT**	**20%**	0.31%	0.07%	1.38%	0.11%	0.58%	0.18%	0.06%	17.32%
				All	buses	**Buses**	**5%**	0.43%	0.09%	0.24%	0.15%	0.22%	0.16%	0.12%	3.59%
				All	People	**Future Population**	**10%**	0.67%	0.31%	1.20%	0.45%	0.92%	0.51%	0.39%	5.56%
TOTAL							**100%**	**8.6%**	**5.7%**	**10.8%**	**6.3%**	**9.7%**	**7.2%**	**5.9%**	**45.8%**

Target Formula Scenario B

Formula Scenario B (Revised Weights, future population 2015)

Performance-based Variables (Pavement and Bridge Needs, Fatal/A Injury Crashes and Congested VMT)

				SYS	Units	Variables	Weight	ATP 1	ATP 2	ATP 3	ATP 4	ATP 6	ATP 7	ATP 8	METRO
System Size & System Usage	100%	PRESERVATION	55%	*TH*	$	**Average Bridge Needs**	**20%**	2.12%	0.80%	1.19%	0.35%	2.51%	0.79%	0.29%	11.94%
				TH	$	**Average Pavement Needs**	**35%**	4.98%	3.35%	4.50%	3.46%	5.75%	3.69%	3.69%	5.58%
		SAFETY	10%	*FA*	crashes	**Fatal/A Injury Crashes (*3 year average*)**	**10%**	0.73%	0.40%	1.29%	0.53%	1.03%	0.48%	0.53%	5.01%
		MOBILITY	35%	*FA*	VMT	**Congested VMT**	**20%**	0.31%	0.07%	1.38%	0.11%	0.58%	0.18%	0.06%	17.32%
				All	buses	**Buses**	**5%**	0.43%	0.09%	0.24%	0.15%	0.22%	0.16%	0.12%	3.59%
				All	People	**Future Population**	**10%**	0.67%	0.31%	1.20%	0.45%	0.92%	0.51%	0.39%	5.56%
TOTAL							**100%**	**9.2%**	**5.0%**	**9.8%**	**5.1%**	**11.0%**	**5.8%**	**5.1%**	**49.0%**

Target Formula Scenario C

Formula Scenario C (Revised Weights, Includes bridge area, future population 2015)

Performance-based Variables (Pavement Needs, Bridge Needs, Fatal/A Injury Crashes and Congested VMT)

				SYS	Units	Variables	Weight	ATP 1	ATP 2	ATP 3	ATP 4	ATP 6	ATP 7	ATP 8	METRO
System Size & System Usage	100%	PRESERVATION	55%	*FA*	sq ft	**Bridge Area**	**10%**	1.22%	0.57%	0.80%	0.51%	1.37%	0.97%	0.63%	3.93%
				TH	$	**Pavement Needs**	**35%**	4.98%	3.35%	4.50%	3.46%	5.75%	3.69%	3.69%	5.58%
				TH	$	**Bridge Needs**	**10%**	1.06%	0.40%	0.60%	0.18%	1.25%	0.39%	0.15%	5.97%
		SAFETY	10%	*FA*	crashes	**Fatal/A Injury Crashes (*3 year average*)**	**10%**	0.73%	0.40%	1.29%	0.53%	1.03%	0.48%	0.53%	5.01%
		MOBILITY	35%	*FA*	VMT	**Congested VMT**	**20%**	0.31%	0.07%	1.38%	0.11%	0.58%	0.18%	0.06%	17.32%
				All	buses	**Buses**	**5%**	0.43%	0.09%	0.24%	0.15%	0.22%	0.16%	0.12%	3.59%
				All	People	**Future Population**	**10%**	0.67%	0.31%	1.20%	0.45%	0.92%	0.51%	0.39%	5.56%
TOTAL							**100%**	**9.4%**	**5.2%**	**10.0%**	**5.4%**	**11.1%**	**6.4%**	**5.6%**	**47.0%**

Target Formula Scenario D

Formula Scenario D (Revised Weights, Bridge Area, Bridge Needs, Adjusted Lane-Miles, Pavement Needs, HCVMT, Congested VMT, Fatal/A Injury Crashes and future population 2015)

				SYS	Units	Variables	Weight	ATP 1	ATP 2	ATP 3	ATP 4	ATP 6	ATP 7	ATP 8	METRO
System Size & System Usage	100%	PRESERVATION	55%	*FA*	sq ft	**Bridge Area**	**8%**	0.98%	0.46%	0.64%	0.41%	1.09%	0.78%	0.50%	3.15%
				TH	$	**Bridge Needs**	**7%**	0.74%	0.28%	0.42%	0.12%	0.88%	0.28%	0.10%	4.18%
				FA	lane-miles	**Adjusted Lane-Miles**	**15%**	1.92%	1.75%	2.00%	1.70%	1.65%	1.72%	1.62%	2.64%
				TH	$	**Pavement Needs**	**15%**	2.14%	1.44%	1.93%	1.48%	2.46%	1.58%	1.58%	2.39%
				TH	VMT	**HCVMT**	**10%**	0.79%	0.44%	1.49%	0.91%	1.60%	1.01%	0.64%	3.12%
		SAFETY	10%	*FA*	crashes	**Fatal/A Injury Crashes (*3 year average*)**	**10%**	0.73%	0.40%	1.29%	0.53%	1.03%	0.48%	0.53%	5.01%
		MOBILITY	35%	*FA*	VMT	**Congested VMT**	**20%**	0.31%	0.07%	1.38%	0.11%	0.58%	0.18%	0.06%	17.32%
				All	buses	**Buses**	**5%**	0.43%	0.09%	0.24%	0.15%	0.22%	0.16%	0.12%	3.59%
				All	People	**Future Population**	**10%**	0.67%	0.31%	1.20%	0.45%	0.92%	0.51%	0.39%	5.56%
TOTAL							**100%**	**8.7%**	**5.2%**	**10.6%**	**5.9%**	**10.4%**	**6.7%**	**5.5%**	**47.0%**

Central Fund Alternatives

- Need to address funding for mega projects and statewide priorities that may be difficult to achieve when all funds are suballocated
  - TPC required provision of a central fund
  - Currently a small central fund ("District C") for statewide programs such as TOCCs
- A district may receive central funding *in addition* to the funds distributed with the target formula

Central Fund Alternatives

- Central fund alternatives range from
  - Major bridges
  - Major bridges and IRCs
  - Major bridges, IRCs, and major expansion
- All assume ATP will share project cost
- Each central fund alternative assumes total federal funding of $470 million
  - Current federal funds of $330 million
  - Estimated additional federal funds of $140 million
- The central fund would provide additional funding to ATPs for major projects of statewide significance

Central Fund Alternative 1

Total Federal Funds	**$470 m**	*Total Funding represents current Federal Funds of $330 m and $140 m in new money under a new Federal Funding Bill.*
Central Funds	**$40 m**	*Major Bridge Project - Any bridge project with construction cost (bridge and approaches, but not right-of-way or project development) that exceeds 50% of annual ATP allocation of Federal $ (Mn/DOT+local)*
Distributed Federal Funds	**$430 m**	*Portion of Total Federal Funding to be distributed to the ATPs*

ATP	*Scenario 0A (Current Formula/Current Year)*	*Formula Scenario A*	*Formula Scenario B*	*Formula Scenario C*	*Formula Scenario D*
	6/2/2004	*12/1/2004*	*12/1/2004*	*12/1/04*	*12/1/2004*
ATP 1	**$32 m**	**$37 m**	**$40 m**	**$40 m**	**$37 m**
ATP 2	**$18 m**	**$24 m**	**$22 m**	**$22 m**	**$22 m**
ATP 3	**$38 m**	**$46 m**	**$42 m**	**$43 m**	**$46 m**
ATP 4	**$22 m**	**$27 m**	**$22 m**	**$23 m**	**$25 m**
ATP 6	**$33 m**	**$42 m**	**$47 m**	**$48 m**	**$45 m**
ATP 7	**$25 m**	**$31 m**	**$25 m**	**$27 m**	**$29 m**
ATP 8	**$20 m**	**$25 m**	**$22 m**	**$24 m**	**$24 m**
METRO	**$143 m**	**$197 m**	**$211 m**	**$202 m**	**$202 m**
Central Fund	***n/a***	***$40 m***	***$40 m***	***$40 m***	***$40 m***
TOTAL	**$330 m**	**$470 m**	**$470 m**	**$470 m**	**$470 m**

Note: Red and green shading represents how actual funding compares to current formula/current year funding. No shading represents funding within + or - $1 m of current formula/current year funding.

Central Fund Alternative 2

Total Federal Funds	**$470 m**	*Total Funding represents current Federal Funds of $330 m and $140 m in new money under a new Federal Funding Bill.*
Central Funds	**$90 m**	*Major Bridge, Major Mobility Project - Any IRC or Bottleneck project with construction cost (excluding right-of-way and project development) that exceeds 50% of annual ATP allocation of Federal $ (Mn/DOT + Local)*
Distributed Federal Funds	**$380 m**	*Portion of Total Federal Funding to be distributed to the ATPs*

ATP	*Scenario 0A (Current Formula/Current Year)*	*Formula Scenario A*	*Formula Scenario B*	*Formula Scenario C*	*Formula Scenario D*
	6/2/2004	*12/1/2004*	*12/1/2004*	*12/1/04*	*12/1/2004*
ATP 1	**$32 m**	**$33 m**	**$35 m**	**$36 m**	**$33 m**
ATP 2	**$18 m**	**$22 m**	**$19 m**	**$20 m**	**$20 m**
ATP 3	**$38 m**	**$41 m**	**$37 m**	**$38 m**	**$40 m**
ATP 4	**$22 m**	**$24 m**	**$19 m**	**$20 m**	**$22 m**
ATP 6	**$33 m**	**$37 m**	**$42 m**	**$42 m**	**$40 m**
ATP 7	**$25 m**	**$28 m**	**$22 m**	**$24 m**	**$25 m**
ATP 8	**$20 m**	**$23 m**	**$19 m**	**$21 m**	**$21 m**
METRO	**$143 m**	**$174 m**	**$186 m**	**$178 m**	**$178 m**
Central Fund	***n/a***	***$90 m***	***$90 m***	***$90 m***	***$90 m***
TOTAL	**$330 m**	**$470 m**	**$470 m**	**$470 m**	**$470 m**

Note: Red and green shading represents how actual funding compares to current formula/current year funding. No shading represents funding within + or - $1 m of current formula/current year funding.

Central Fund Alternative 3

Total Federal Funds	**$470 m**	*Total Funding represents current Federal Funds of $330 m and $140 m in new money under a new Federal Funding Bill.*
Central Funds	**$140 m**	*Major Bridge, Major Mobility Project - Any expansion, IRC or Bottleneck project with construction cost (excluding right-of-way and project development) that exceeds 50% of the annual ATP allocation of Federal $ (Mn/DOT + Local)*
Distributed Federal Funds	**$330 m**	*Portion of Total Federal Funding to be distributed to the ATPs*

ATP	*Scenario 0A (Current Formula/Current Year)*	*Formula Scenario A*	*Formula Scenario B*	*Formula Scenario C*	*Formula Scenario D*
	6/2/2004	*12/1/2004*	*12/1/2004*	*12/1/04*	*12/1/2004*
ATP 1	**$32 m**	**$28 m**	**$30 m**	**$31 m**	**$29 m**
ATP 2	**$18 m**	**$19 m**	**$17 m**	**$17 m**	**$17 m**
ATP 3	**$38 m**	**$36 m**	**$32 m**	**$33 m**	**$35 m**
ATP 4	**$22 m**	**$21 m**	**$17 m**	**$18 m**	**$19 m**
ATP 6	**$33 m**	**$32 m**	**$36 m**	**$37 m**	**$34 m**
ATP 7	**$25 m**	**$24 m**	**$19 m**	**$21 m**	**$22 m**
ATP 8	**$20 m**	**$20 m**	**$17 m**	**$18 m**	**$18 m**
METRO	**$143 m**	**$151 m**	**$162 m**	**$155 m**	**$155 m**
Central Fund	***n/a***	***$140 m***	***$140 m***	***$140 m***	***$140 m***
TOTAL	**$330 m**	**$470 m**	**$470 m**	**$470 m**	**$470 m**

Note: Red and green shading represents how actual funding compares to current formula/current year funding. No shading represents funding within + or - $1 m of current formula/current year funding.

Remaining Central Fund Questions

- TWT still must address how the central fund would be used, including:
  - How projects would be solicited
  - How projects would be chosen
    - Who would choose?
    - What criteria would be used?

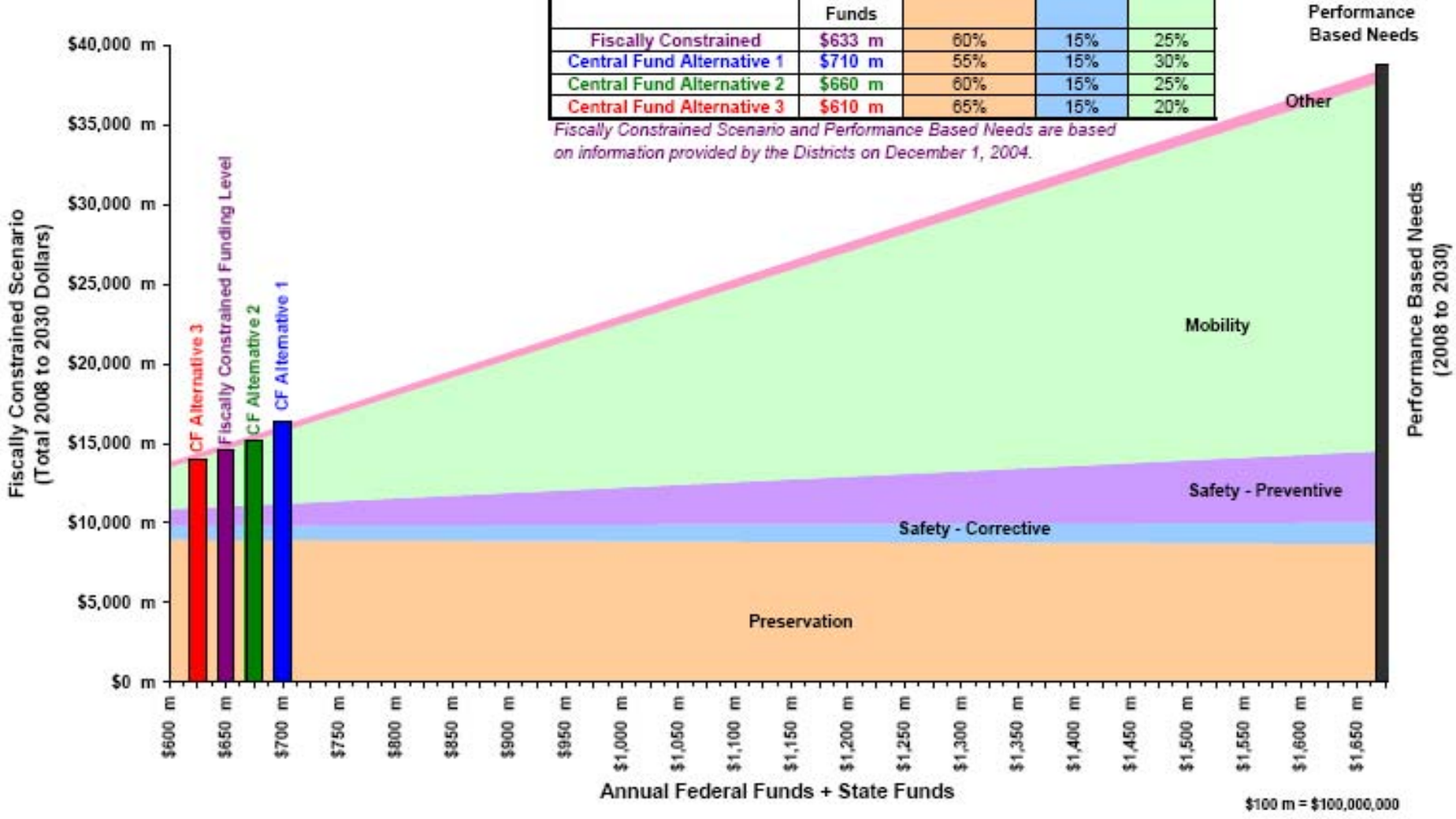
Addressing Changing Funding Levels

- At higher levels of funding, these target formula scenarios would result in over-funding of preservation needs

Example of How the Formula Funding Factor Weights Could Change Depending on Funding Levels

Central Funding Alternatives	Annual Federal + State Funds	Preservation	Safety	Mobility
Fiscally Constrained	$633 m	60%	15%	25%
Central Fund Alternative 1	$710 m	55%	15%	30%
Central Fund Alternative 2	$660 m	60%	15%	25%
Central Fund Alternative 3	$610 m	65%	15%	20%

Fiscally Constrained Scenario and Performance Based Needs are based on information provided by the Districts on December 1, 2004.



Variable Funding Chart New
Variable Funding graph.htm

DRAFT
December 2, 2004

Summary

- The target formula is being re-evaluated to ensure funding reflects policy priorities
- Scenarios address preservation, safety, and mobility
- Scenarios use relevant and reliable variables
- Four examples of target formula scenarios
- All formula scenarios must be tied to a central fund alternative
- Scenarios may need adjustment to account for variations in funding

Questions

- Are preservation, safety, and mobility the right factors to use?
- Are these the right variables?
- Are the weights right?
- Other recommendations for improvements?

Acronyms and Definitions

- AMC: Association of Minnesota Counties
- ATP: Area Transportation partnership
- Budget Buster Bridge: A major bridge project which which would require a significant portion of an ATP's annual funding
- IRC: The Interregional Corridor System, which links Minnesota's regional trade centers
- MPO: Metropolitan Planning Organization
- TOCC: Transportation Operation and Communication Centers, intended to establish an integrated statewide communication and transportation operations network for Greater Minnesota
- TPC: Transportation Program Committee, with membership of Mn/DOT Division Directors, Deputy Commissioner
- VMT: Vehicle miles of travel