



MnDOT Functional Classification Metro Review

Joe Widing | Senior Transportation Planner
Office of Transportation System Management
January 6, 2021

1	Process Background
2	Review Process
3	Early takeaways
4	Next Steps

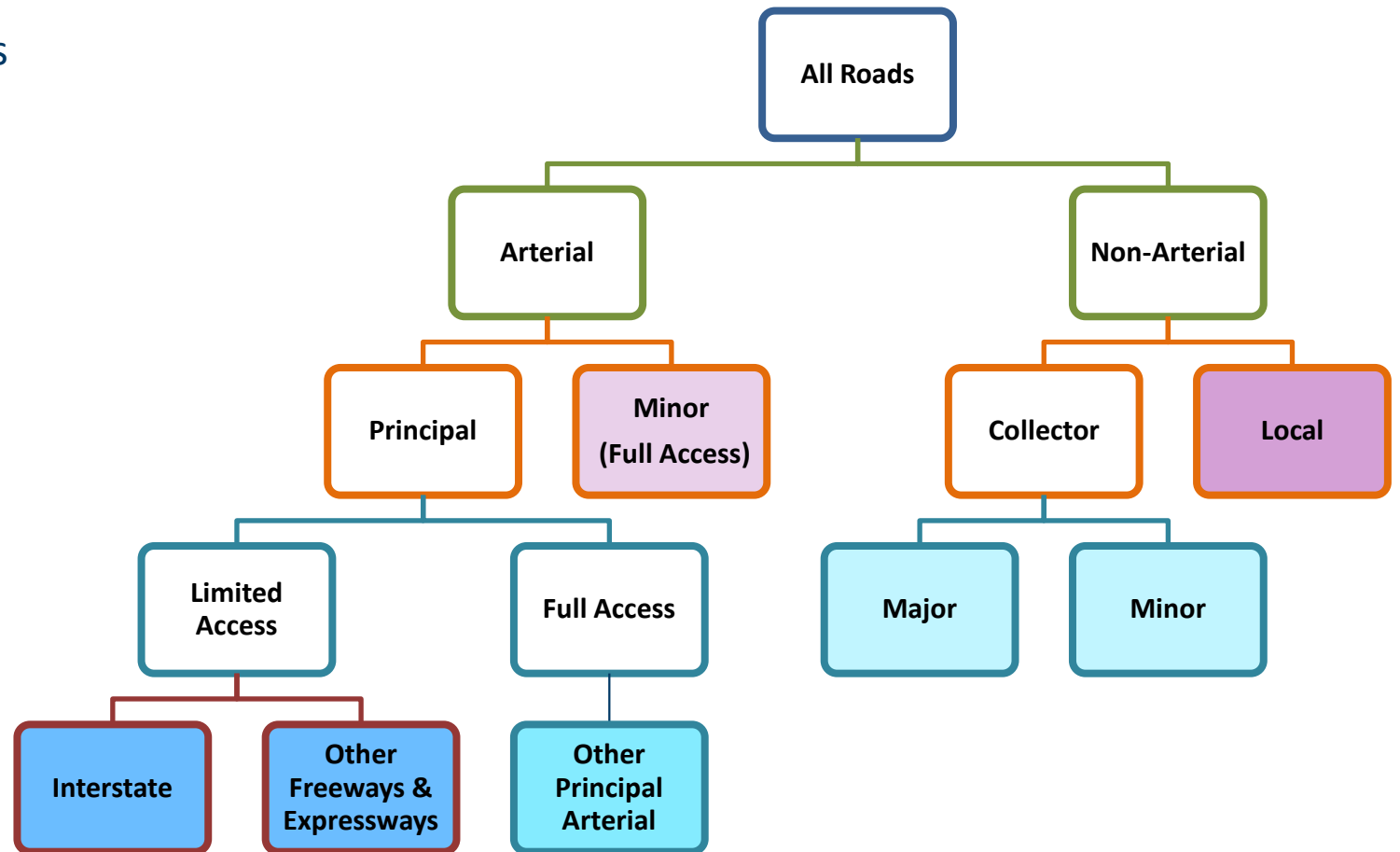
Functional Classification Decision Tree

Three broad classification categories

- Arterials
 - Principal
 - Minor
- Collectors
 - Major
 - Minor
- Local

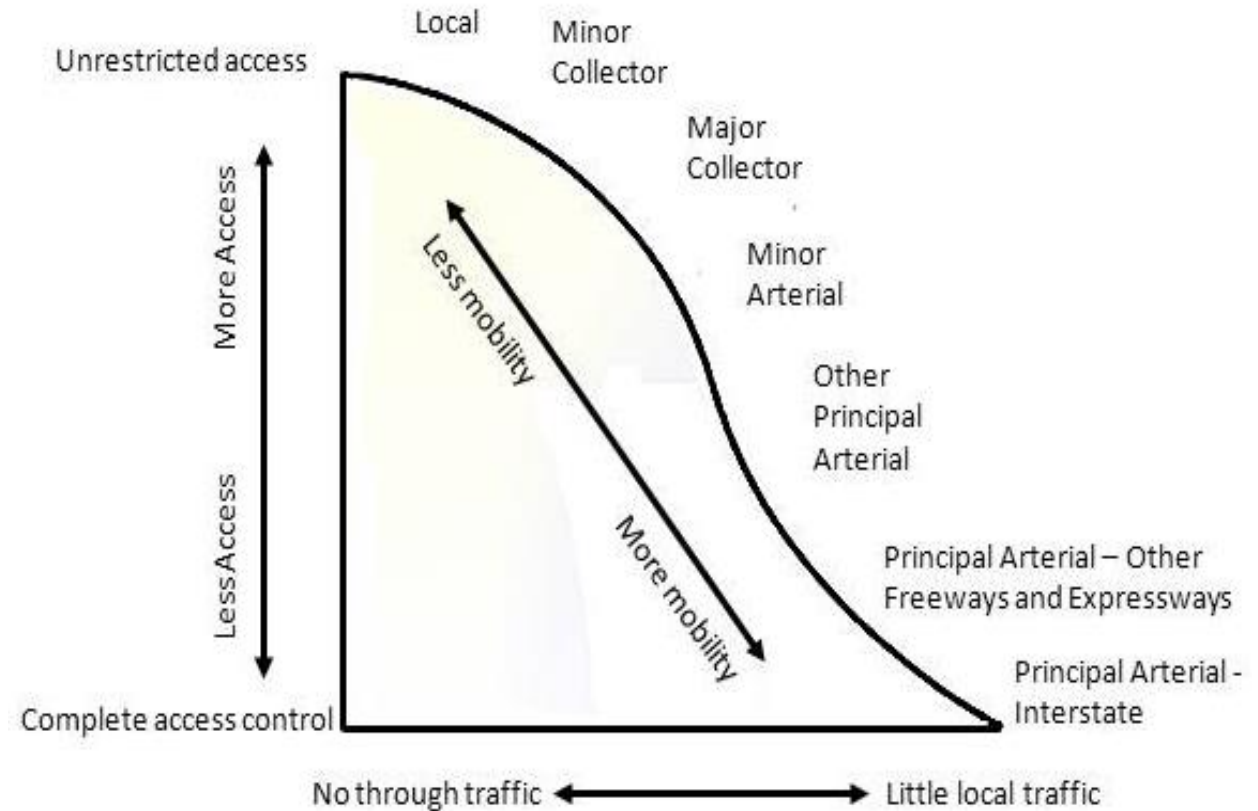
Two area classifications

- Urban
- Rural



Functional Classification: What's the Purpose

- Mobility vs Access: FC system balancing act between mobility and access.
- Efficiency: FC system intends to maximize efficiency of road network.
- Standardization: FC system creates one standard for all states. Allows coordination, comparison, knowledge transfer.
- Funding: Tying funding to FC allows for thresholds to be set, streamlines decision making and fosters more transparent process.
 - Urban: Minor Collector and Above
 - Rural: Major Collector and Above



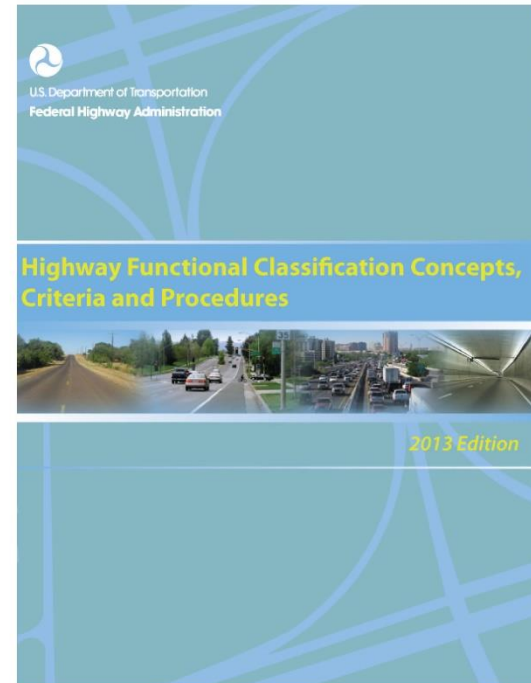
How is functional classification determined?

- Roadways serve two primary functions:
 - Access to property
 - Travel mobility
- All roadways perform these functions to varying degrees.
- Determining a roadway's primary purpose helps determine how to classify the roadway.
- Represents the existing conditions of a roadway.



Functional Classification: Why We're Here

- 2010 Census
 - New urban area boundaries
- 2013 FHWA updated FC guidelines
- 2015: MnDOT completed review and update of functional classification for Greater Minnesota following updated 2013 FHWA guidelines and 2010 decennial Census
- This update did not include metro
 - Determined that systems were different enough to separate into two processes
- FHWA has requested metro FC be reviewed and updated to achieve consistency with Greater Minnesota and better adhere to guidelines.



Functional Classification: Why We're Here

- Project Management Team

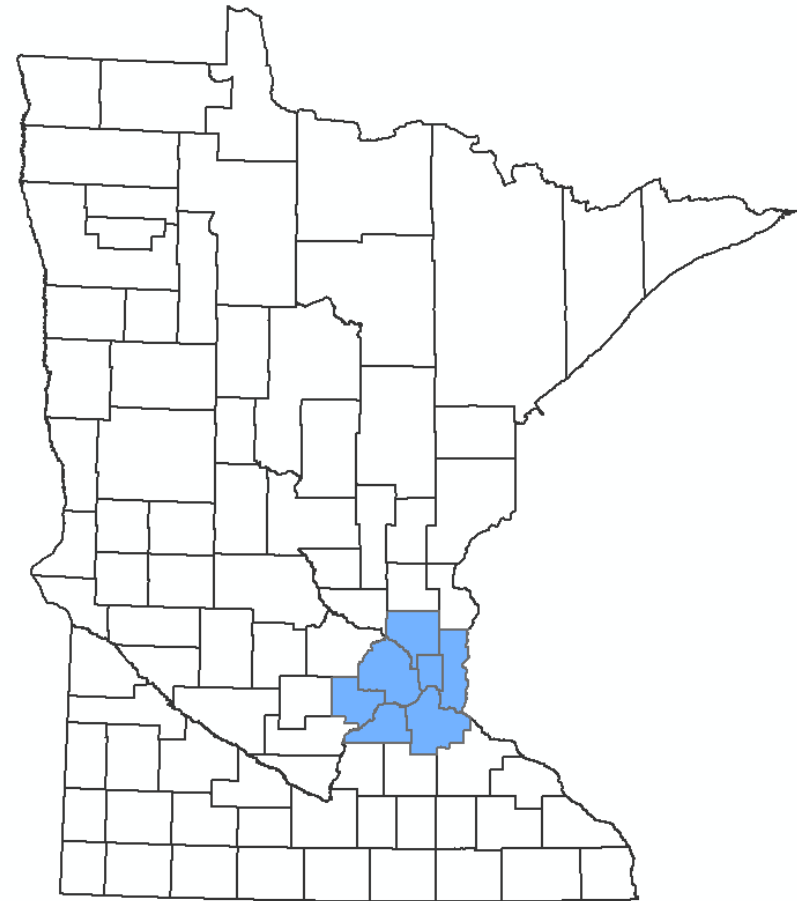
- Made up of MnDOT staff and Met Council representative
- Leading technical review
- County by county process

- Steering Committee

- Made up of local representatives (local, county and Met Council) and MnDOT staff
- Provides direction of review process
- Final decision on any differences of classification
- Final approval of metro area functional classification review and update prior to FHWA submittal

Statewide perspective

- Greater Minnesota functional classification review completed; FHWA approved October 2015
- 7 metro county functional classification review intended to begin in 2015 but was delayed multiple times
- Anoka first county to be reviewed and is complete
- Carver and Scott County nearly finished
- Now working with Hennepin, Ramsey, Washington and Dakota Counties



Statewide perspective: 2016

Functional classification	Urban miles	% urban	FHWA urban guideline*	Rural miles	% rural	FHWA rural guideline*
Principal Arterial-Interstate	325.4	1.5%	1-3%	588.1	0.5%	1-3%
PA- Freeway/Expressway	220.7	1.0%	0-2%	45.4	<0.1%	0-2%
PA- Other	616.2	2.8%	4-9%	3,443.1	2.9%	2-6%
Minor Arterial	2,550.2	11.5%	7-14%	6,675.3	5.5%	2-6%
Major Collector	2,198.2	9.9%	3-16%	15,653.3	13.0%	8-19%
Minor Collector	789.9	3.6%	3-16%	12,014.3	10.0%	3-15%
Local	15,454.5	69.8%	67-76%	82,199.8	68.1%	62-74%
Total	22,155.11			120,619.4		

*FHWA Functional Classification Concepts, Criteria and Procedures, 2013

Minnesota is considered a rural state. There is guidance for rural/urban system separate from state designation

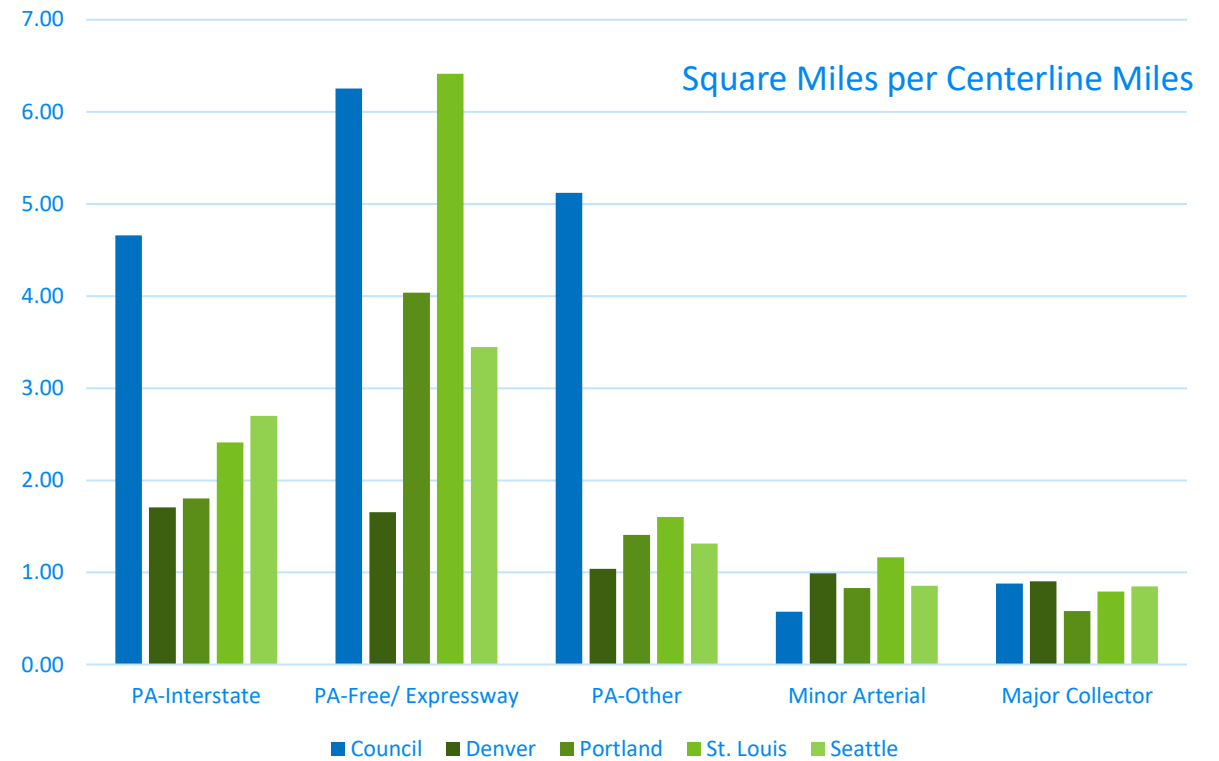
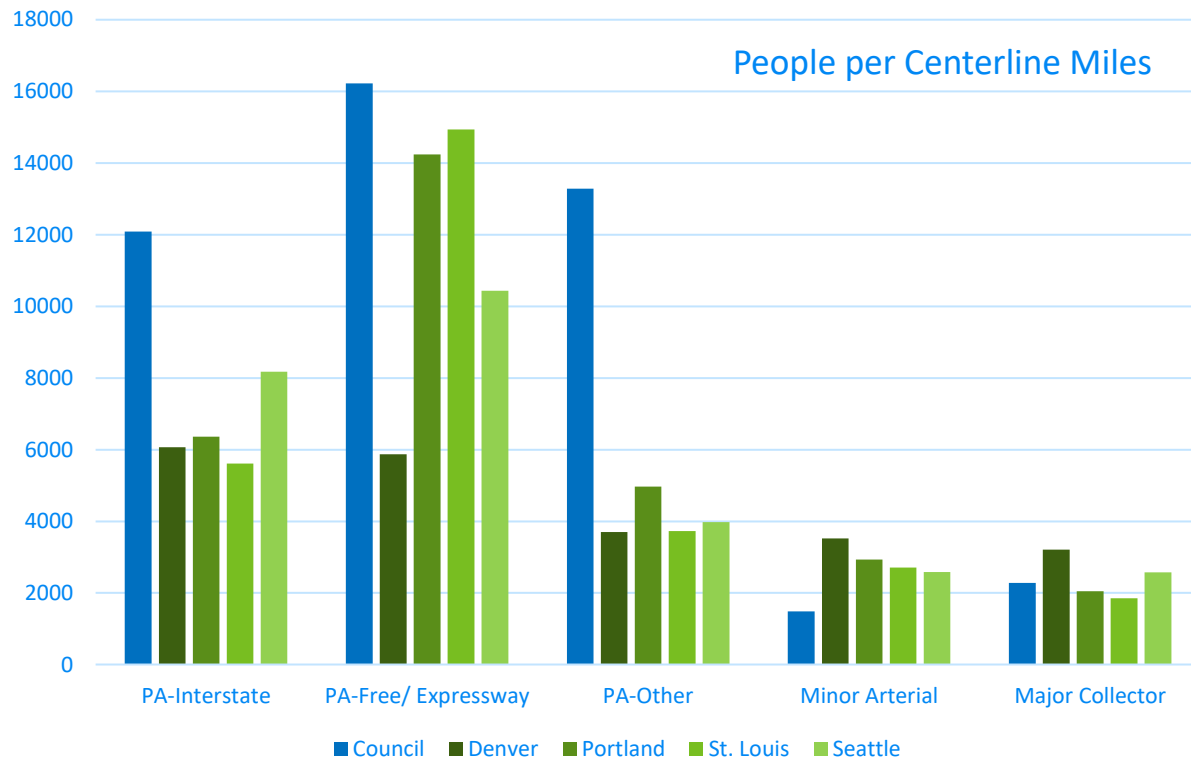
Peer MPO: Functional Classification Comparison

MPO	PA- Interstate	PA-Free/ Expressway	PA-Other	Minor Arterial	Major Collector	Minor Collector	Local
Council	219.3	163.4	199.6	1,781.7	1,162.4	198.5	9,750.8
Denver	391.5	404.1	641.5	673.7	738.9	--	7,144.6
Portland	290.6	129.9	372.4	629.8	903.6	156.5	10.7
St. Louis	383.1	144.0	576.3	793.3	1,163.3	467.5	2,708.0
Seattle	374.3	293.2	768.6	1,181.8	1,187.9	25.2	1.5

Note: Data based on centerline miles.

Source: 2018 HPMS data.

Peer MPO: Functional Classification Per Capita



Metro Perspective: Existing Classification Percentage

Original	Anoka		Ramsey		Carver		Scott		Washington		Dakota		Hennepin	
Total Miles	2454.41		2018.22		1180.24		1342.17		1969.23		2641.57		5449.23	
Principal Arterial	81.79	3.33%	81.09	4.02%	45.37	3.84%	56.71	4.23%	50.28	2.55%	126.72	4.80%	244.92	4.49%
PA-Interstate	23.37	0.95%	51.46	2.55%	0.00	0.00%	6.02	0.45%	24.59	1.25%	36.08	1.37%	87.45	1.60%
PA-Freeway	13.89	0.57%	16.72	0.83%	8.81	0.75%	11.84	0.88%	8.07	0.41%	15.49	0.59%	88.87	1.63%
PA-Other	44.53	1.81%	12.92	0.64%	36.57	3.10%	38.84	2.89%	17.32	0.88%	75.15	2.84%	68.6	1.26%
Minor Arterial	312.54	12.73%	343.48	17.02%	213.34	18.08%	233.31	17.38%	314.16	15.95%	339.24	12.84%	677.33	12.43%
A-Minor (% of MA system)	254.14	81.31%	218.74	63.68%	170.72	80.02%	166.23	71.25%	297.72	94.77%	289.12	85.23%	550.21	81.23%
B-Minor (% of MA system)	58.4	18.69%	124.71	36.31%	42.62	19.98%	67.08	28.75%	16.44	5.23%	50.12	14.77%	127.12	18.77%
Major Collector	208.08	8.48%	176.49	8.74%	115.65	9.80%	104.18	7.76%	182.07	9.25%	251.08	9.50%	524.96	9.63%
Minor Collector	64.82	2.64%	32.96	1.63%	52.3	4.43%	98.50	7.34%	104.08	5.29%	217.60	8.24%	250.46	4.60%
Local	1787.18	72.82%	1384.19	68.58%	753.57	63.85%	849.47	63.29%	1318.66	66.96%	1713.59	64.87%	3751.56	68.85%

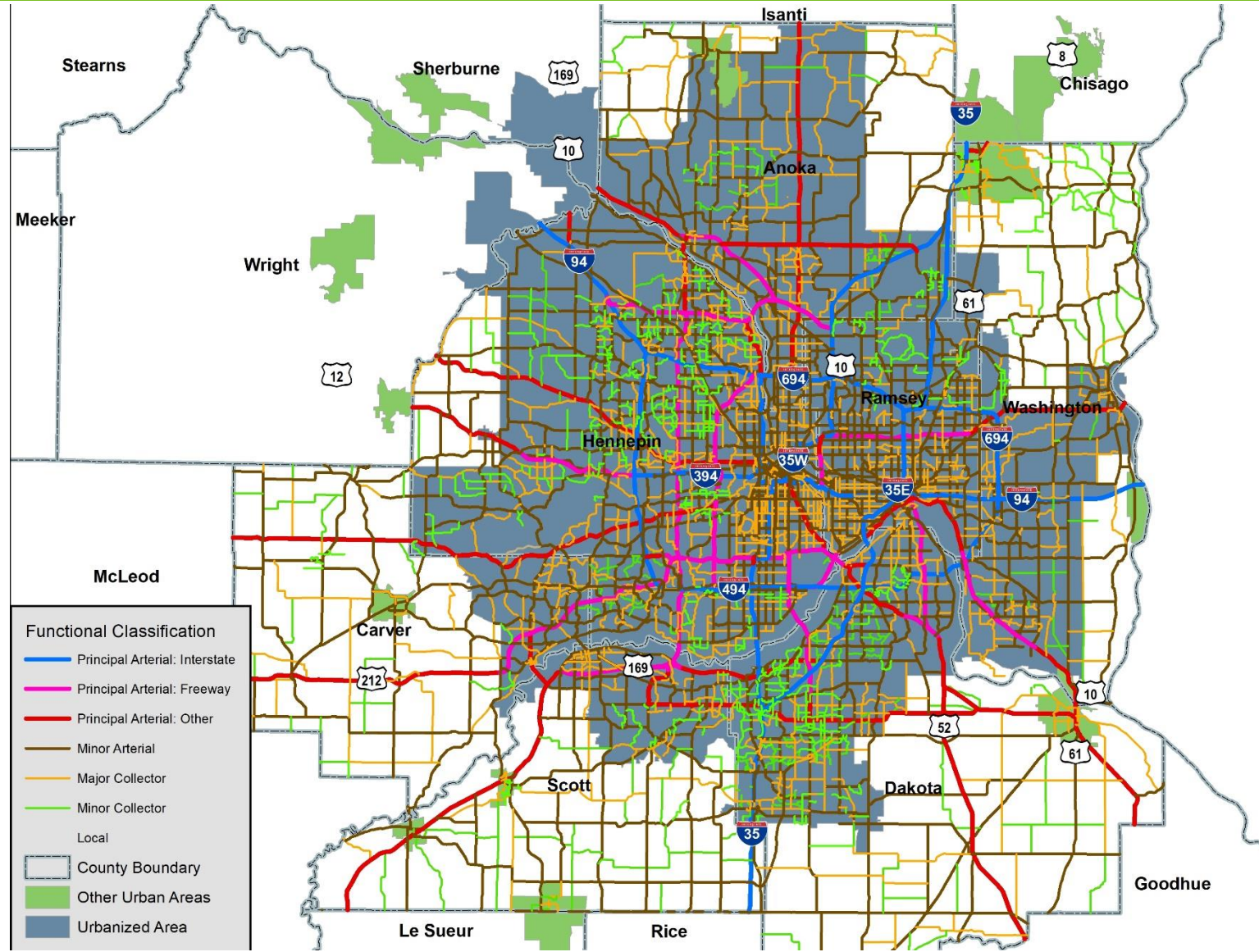
Note: Data based on centerline miles.

Source: 2018 HPMS data and local comp plans

Understanding urban vs. rural areas

- Urban area - boundaries updated every 10 years with the U.S. Decennial Census
 - U.S. Census Bureau – any area having a population of 2,500 or more
 - FHWA – any urban area identified by the U.S. Census Bureau with a population of 5,000 or more
 - Federal legislation allows State DOTs to adjust urban boundaries with FHWA approval
- Urbanized area
 - Subset of urban areas
 - Population of 50,000 or more
- Rural area
 - All other areas
- Urban area boundaries (of population 5,000 and above) distinguish between “rural” and “urban” functional classification

Adjusted Metro Urban Area



Areas Needing Closer Review

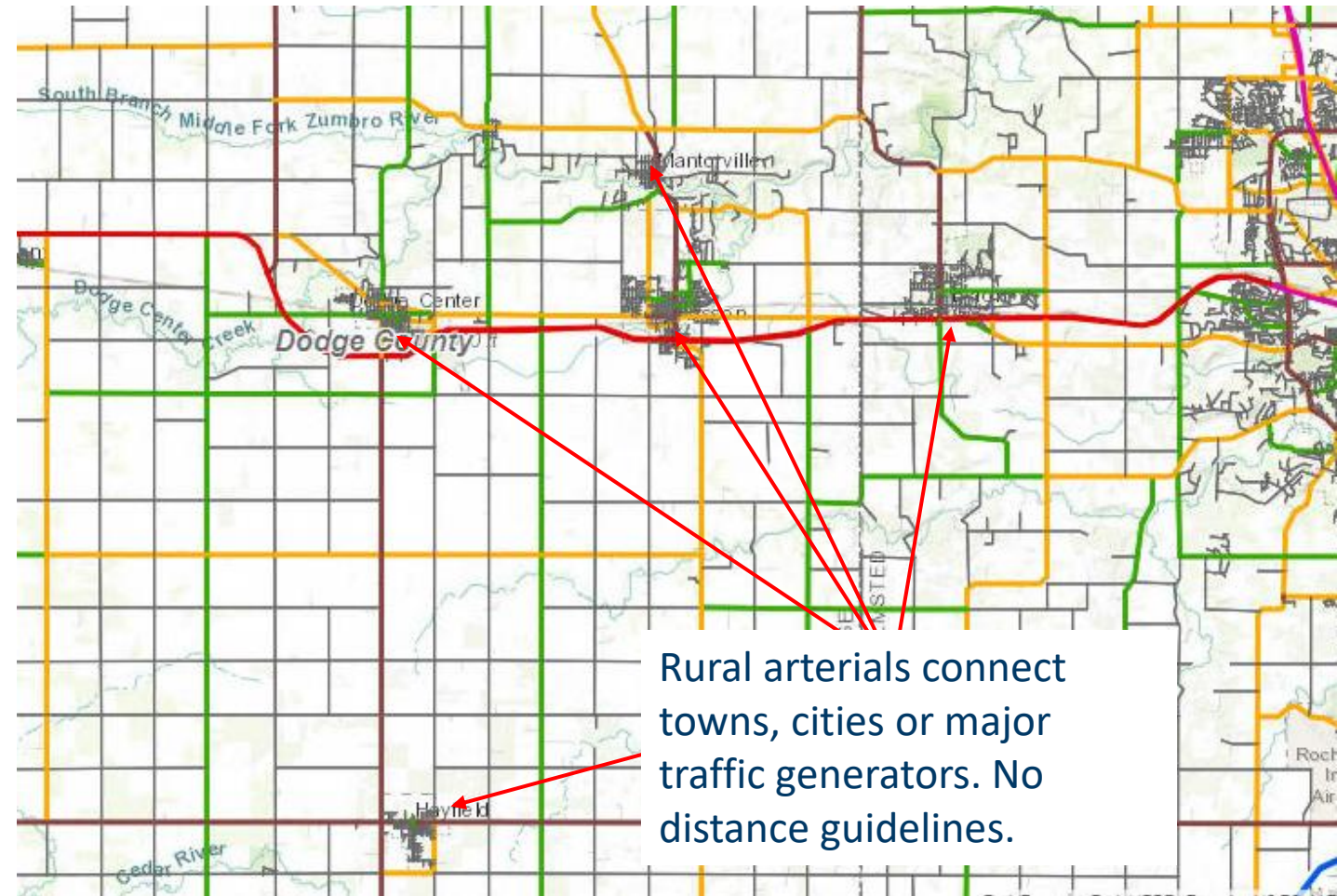
To identify areas needing a closer review:

- **Spacing:** Are similar classifications adjacent to each other? Are they spaced apart appropriately?
- **Lack of classifications:** Is there a lack of classifications (e.g., no Minor Collectors, few of any classifications besides arterial and local)?
- **Border discrepancies:** Does the classification change at a boundary?
- **Stubs:** Does the classification end in a stub i.e. dead end or abruptly shift to lower classification?
- **Consistency:** Is application of classifications consistent (e.g., spacing, AADT)?
- **Other Considerations:** Does road geometry, intersection design or other factors influence classification?

Example: Spacing

Spacing:

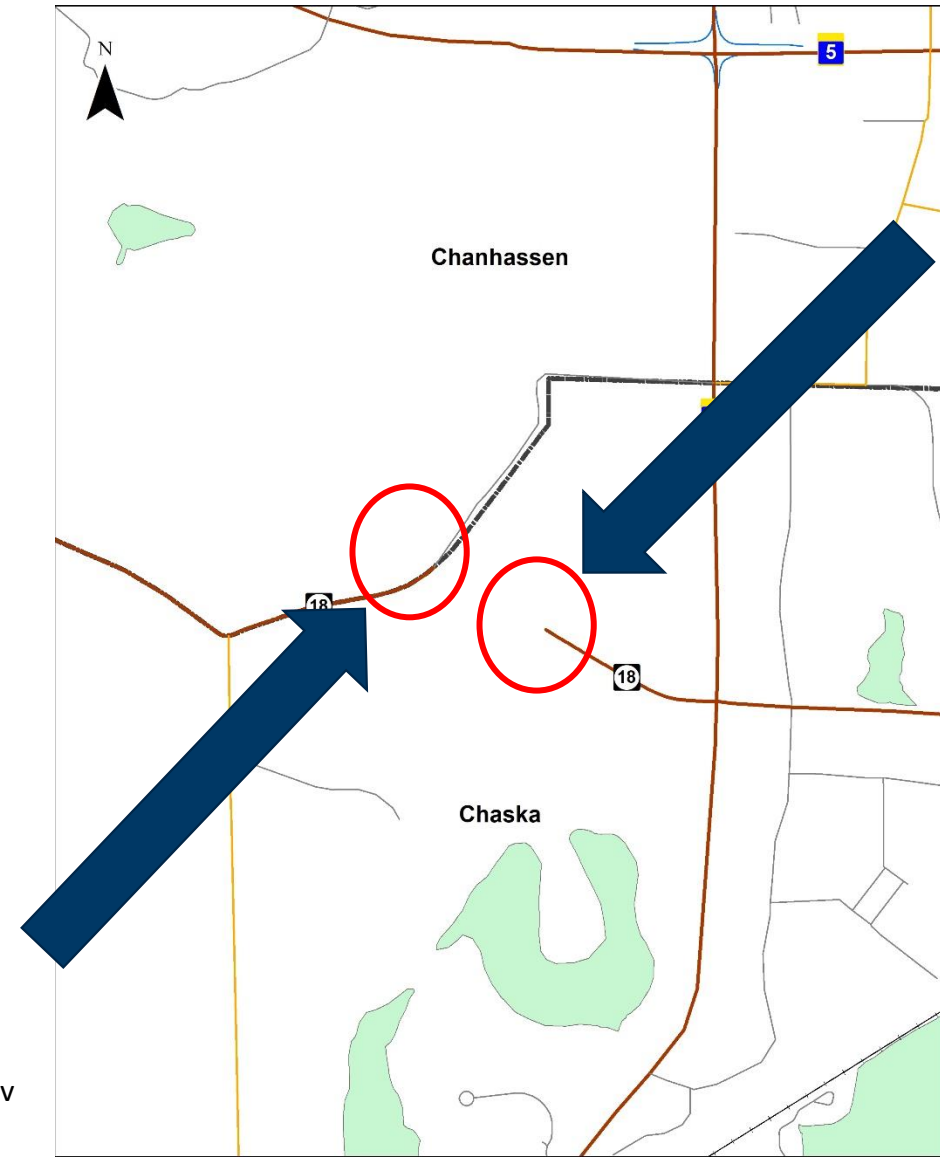
- Minor arterial spacing (generally):
 - Urban: ½-1 mile
 - Suburban: 2 to 3 miles
 - Rural: Connect rural towns, cities, traffic generators
- Should avoid situations where adjacent roadways have same classification (exception Local roads)
- May be exceptions – but exceptions should be well documented
- Should not purposely overclassify a roadway as a work around



Example: Stubs

Stubs:

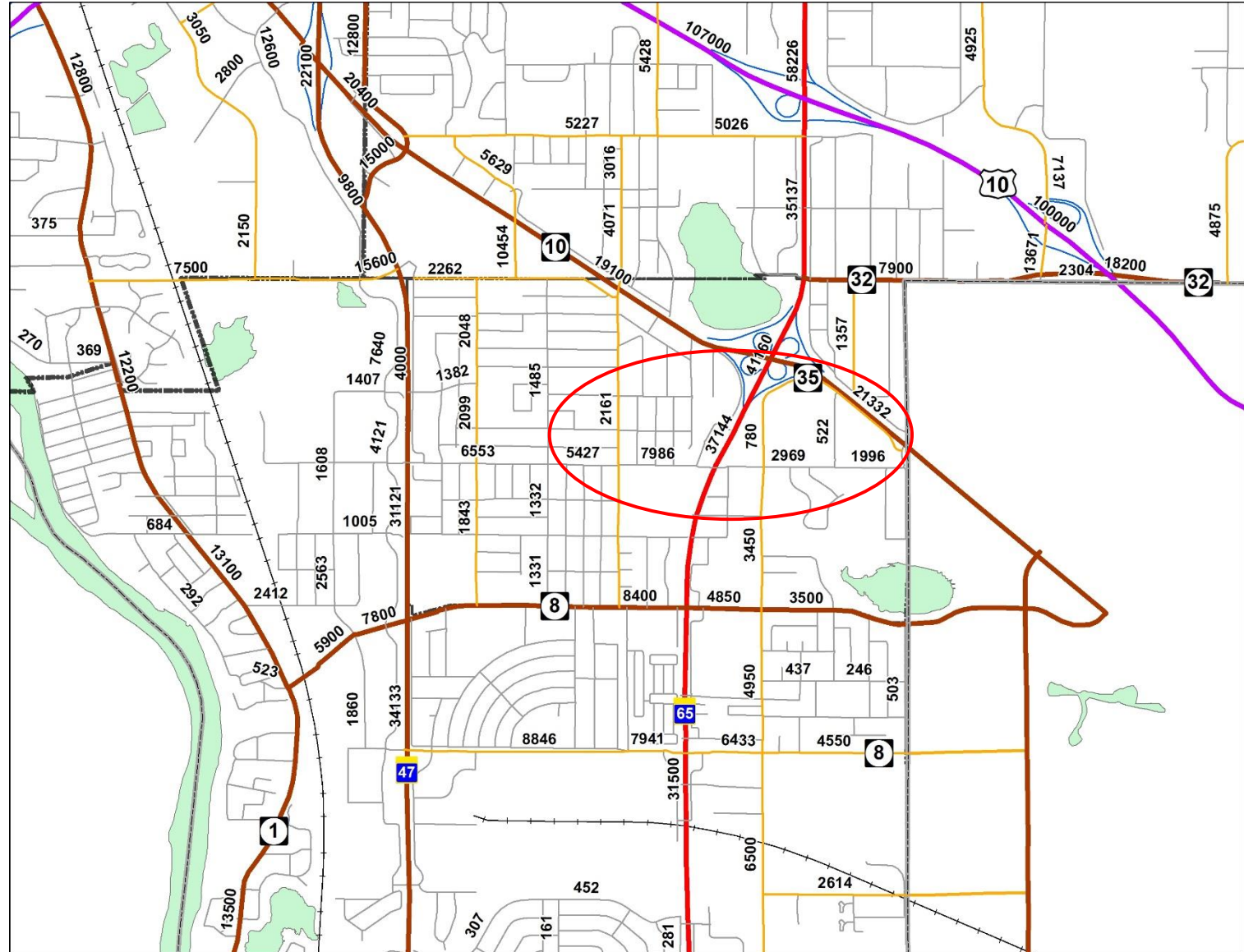
- Functional classification ends/stubs
 - Roadway dead ends
 - Classification changes abruptly
- Situations where stubs are OK
 - major traffic generators
 - higher class connecting to multiple lower class roads which together provide same capacity/function as higher class
- Typically, Locals always can stub and Minor Collectors more acceptable as stubs than higher classifications



Example: Consistency

Consistency:

- AADT
- Modified federal guide (Urban)
 - Minor Arterial: 4,000-14,000
 - Major Collector: 3,000-6,500
 - Minor Collector: 1,000-4,000
 - Local: 0-700
- Federal Guide (Rural)
 - Minor Arterial: 1,500-6,000
 - Major Collector: 300-2,600
 - Minor Collector: 150-1,110
 - Local: 0-400



Other Considerations

- Road Geometry/Intersection Design
 - Intersections – if signalized or controlled in some other way, could determine appropriateness of classification
 - Surfacing – If roadway not surfaced with pavement it cannot be designated higher than local
 - Transit service – Roadways classified as local should not be handling transit service (generally)
- Route Length/System Connectivity
 - Minor Arterials
 - Longer trip lengths
 - Longer continuous route length
 - (Generally) Connected arterial system

Update on County Review Process Progress

Worked with county and city staff

- Have held multiple meetings in each county worked with so far
 - Anoka – 3 meetings
 - Carver – 2 meetings
 - Scott – 2 meetings
 - Ramsey – 2 planned meetings
 - St. Paul – 1 meeting planned
 - Hennepin – 1 meeting held, 2 planned
 - Minneapolis – 1 meeting planned
 - Washington – 3 meetings planned
 - Dakota – 3 meetings planned

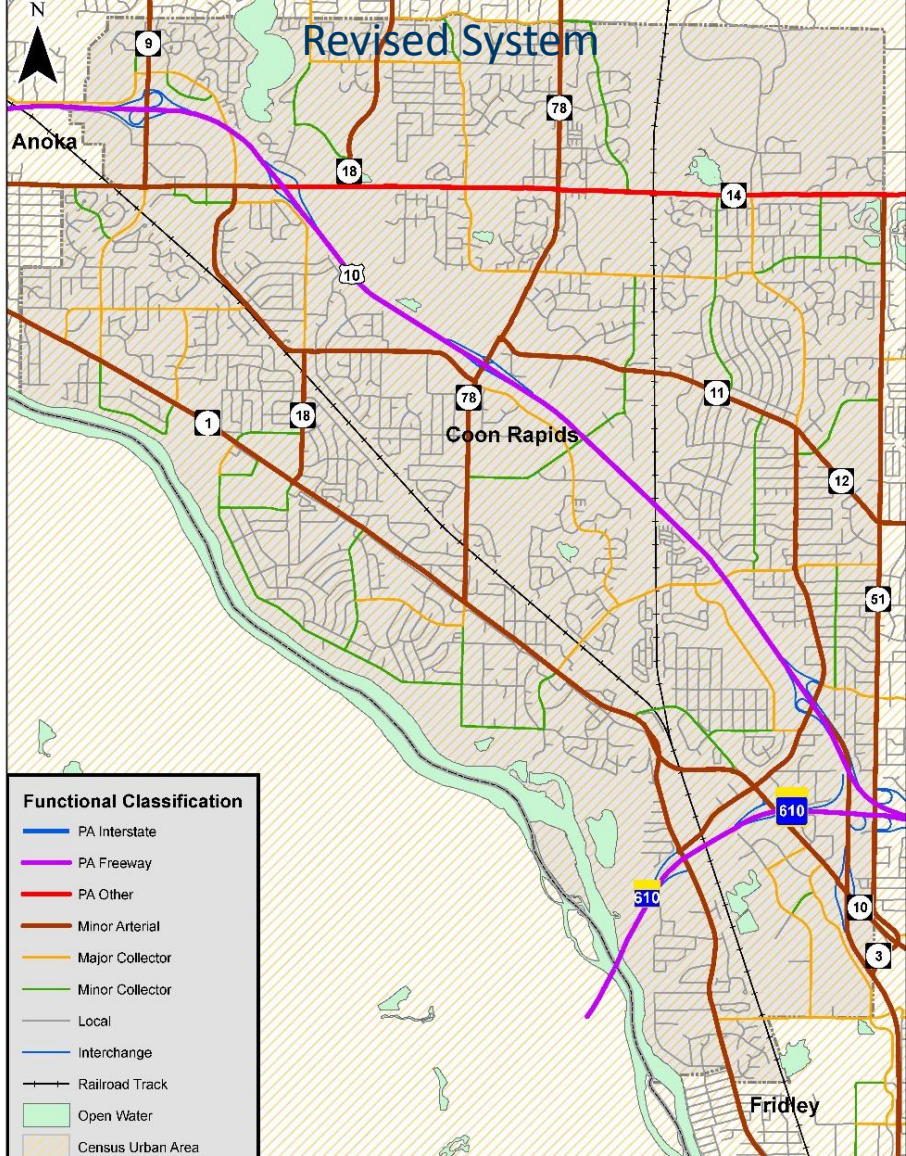
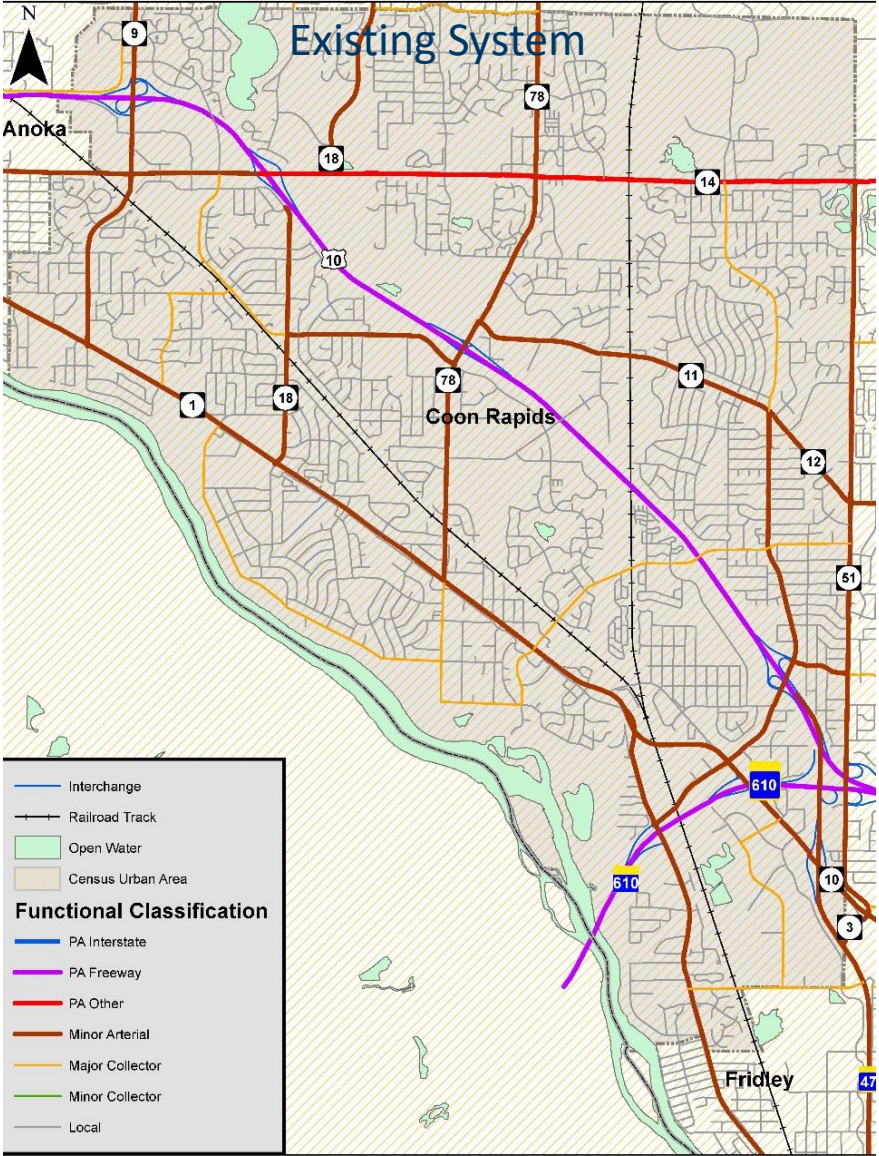
Review process

- MnDOT review materials sent to counties and cities
- Not all MnDOT marked routes were ultimately changed
 - If county or local had issue or more information, generally deferred unless far out of guidelines
 - Most recommended revisions have been ultimately made, few outstanding disagreements
- Some cities have offered additional roadways to classify

Update on County Progress – Anoka County

Original			Revised			FHWA Mileage Guideline
Total Miles	2454.41		Total Miles	2454.41		
Principal Arterial	81.79	3.33%	Principal Arterial	81.79	3.33%	5%-14%
PA-Interstate	23.37	0.95%	PA-Interstate	23.37	0.95%	1%-3%
PA-Freeway	13.89	0.57%	PA-Freeway	13.89	0.57%	0%-2%
PA-Other	44.53	1.81%	PA-Other	44.53	1.81%	4%-9%
Minor Arterial	312.54	12.73%	Minor Arterial	283.84	11.56%	7%-14%
A-Minor (% of MA system)	254.14	81.31%	A-Minor (% of MA system)	249.79	88.00%	N/A
B-Minor (% of MA system)	58.4	18.69%	B-Minor (% of MA system)	34.05	12.00%	N/A
Major Collector	208.08	8.48%	Major Collector	237.82	9.69%	3%-16%
Minor Collector	64.82	2.64%	Minor Collector	124.57	5.08%	3%-16%
Local	1787.18	72.82%	Local	1726.39	70.34%	62%-74%

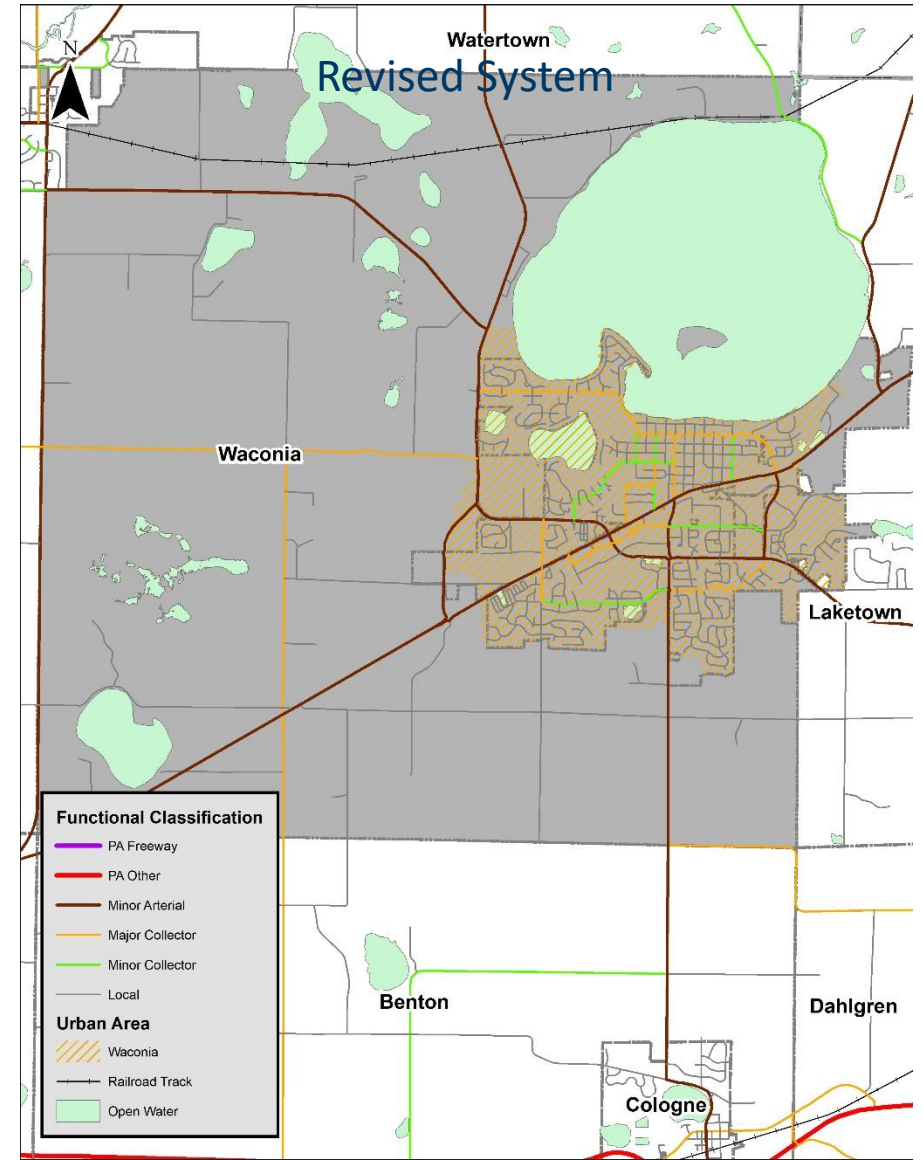
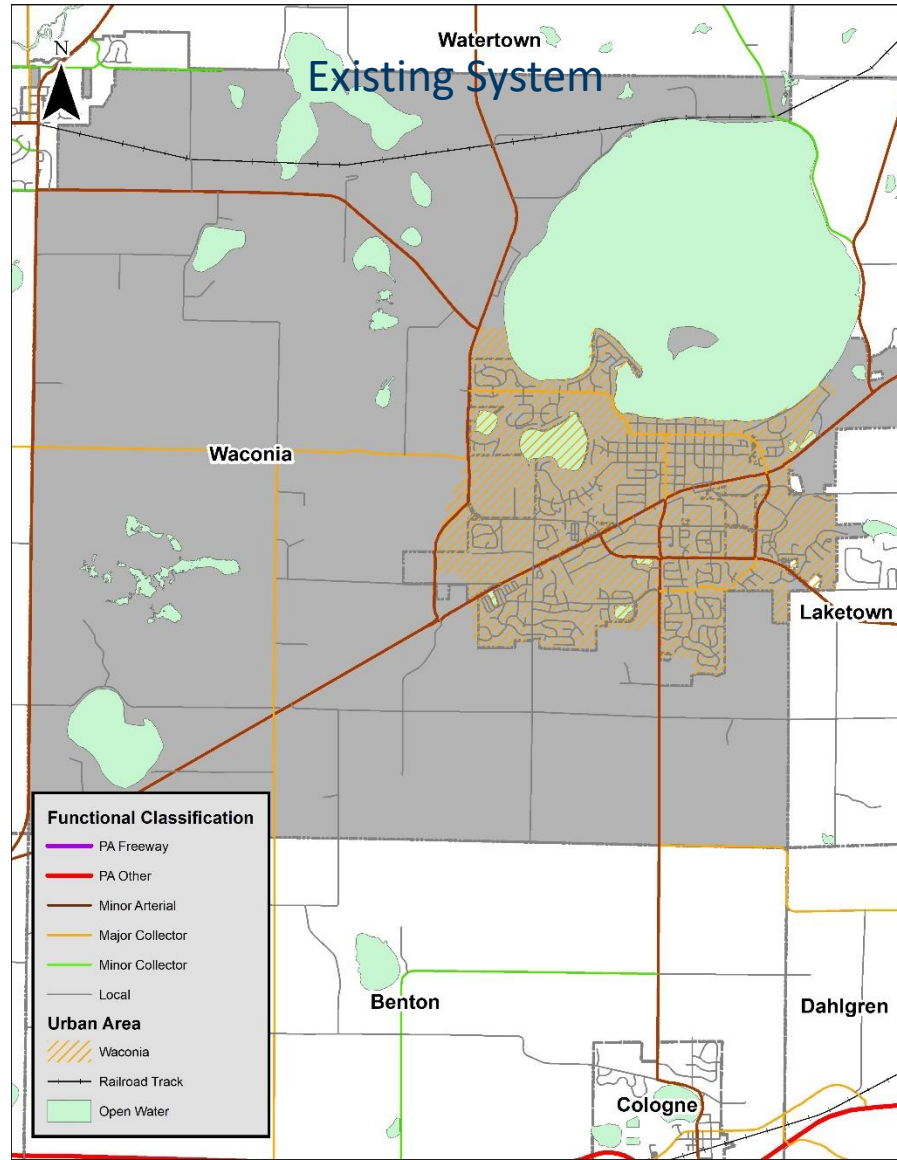
Update on County Progress – Anoka County Example



Update on County Progress – Carver County

Original			Revised (Preliminary)			FHWA Mileage Guideline
Total Miles	1180.24		Total Miles	1180.24		
Principal Arterial	45.37	3.84%	Principal Arterial	45.37	3.84%	5%-14%
PA-Interstate	0.00	0.00%	PA-Interstate	0.00	0.00%	1%-3%
PA-Freeway	8.81	0.75%	PA-Freeway	8.81	0.75%	0%-2%
PA-Other	36.57	3.10%	PA-Other	36.57	3.10%	4%-9%
Minor Arterial	213.34	18.08%	Minor Arterial	200.45	16.98%	7%-14%
A-Minor (% of MA system)	170.72	80.02%	A-Minor (% of MA system)	166.38	81.73%	N/A
B-Minor (% of MA system)	42.62	19.98%	B-Minor (% of MA system)	34.07	18.27%	N/A
Major Collector	115.65	9.80%	Major Collector	123.79	10.49%	3%-16%
Minor Collector	52.3	4.43%	Minor Collector	65.53	5.55%	3%-16%
Local	753.57	63.85%	Local	745.09	63.13%	62%-74%

Update on County Progress – Carver County Example

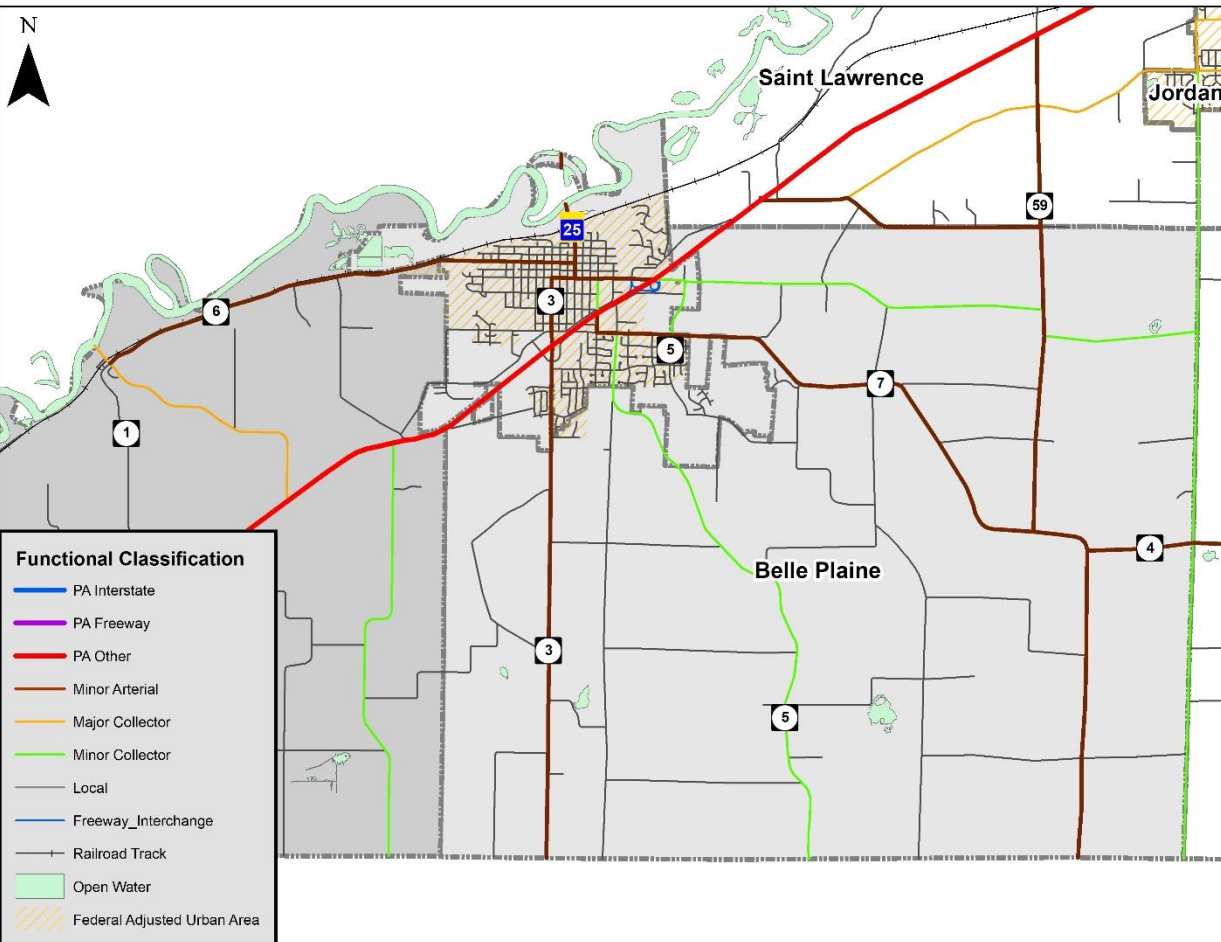


Update on County Progress – Scott County

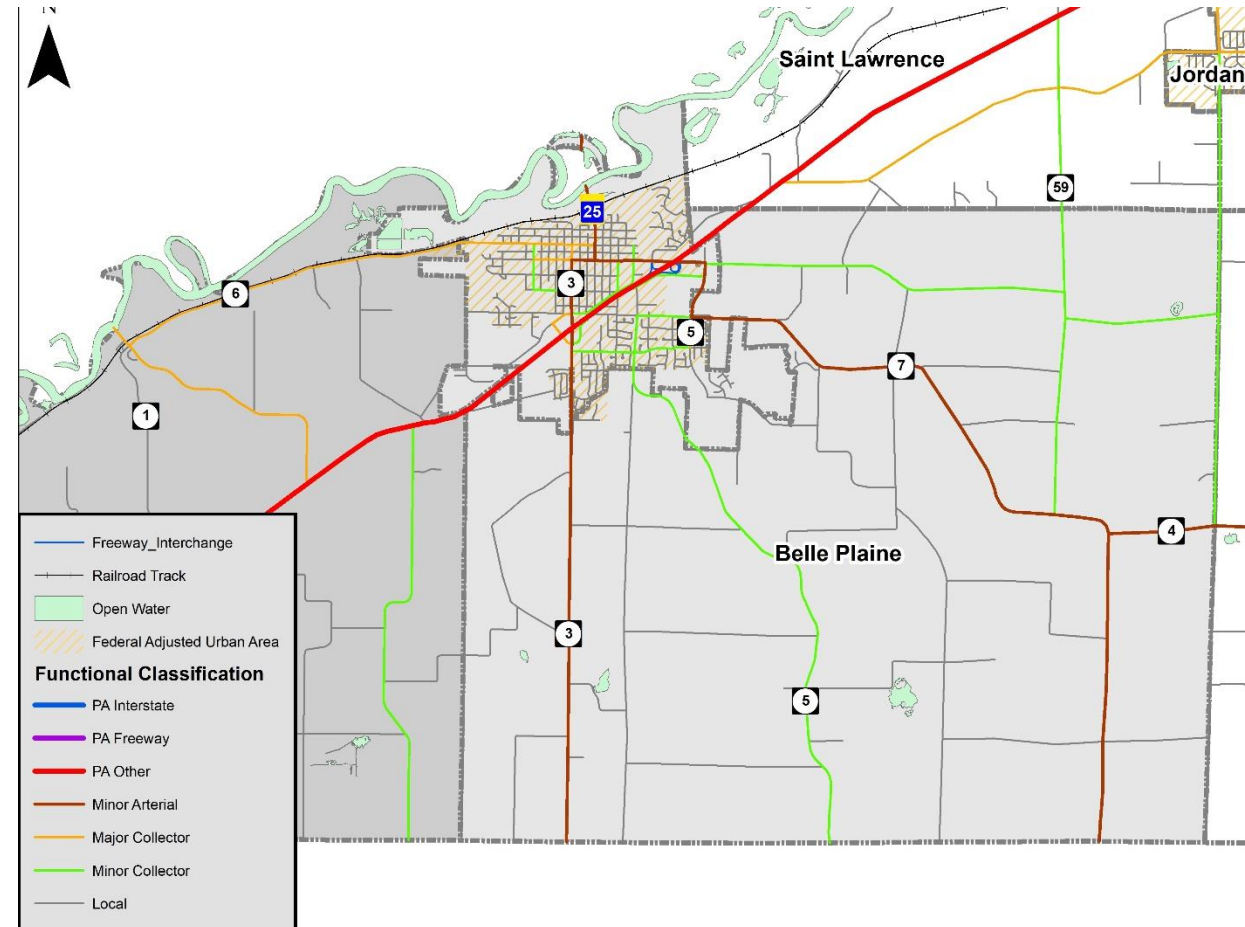
Original			Revised (Preliminary)			FHWA Mileage Guideline
Total Miles	1342.17		Total Miles	1342.17		
Principal Arterial	56.71	4.23%	Principal Arterial	56.71	4.23%	5%-14%
PA-Interstate	6.02	0.45%	PA-Interstate	6.02	0.45%	1%-3%
PA-Freeway	11.84	0.88%	PA-Freeway	11.84	0.88%	0%-2%
PA-Other	38.84	2.89%	PA-Other	38.84	2.89%	4%-9%
Minor Arterial	233.31	17.38%	Minor Arterial	210.04	15.65%	7%-14%
A-Minor (% of MA system)	166.23	71.25%	A-Minor (% of MA system)	164.29	78.22%	N/A
B-Minor (% of MA system)	67.08	28.75%	B-Minor (% of MA system)	45.75	21.78%	N/A
Major Collector	104.18	7.76%	Major Collector	106.15	7.91%	3%-16%
Minor Collector	98.50	7.34%	Minor Collector	124.64	9.29%	3%-16%
Local	849.47	63.29%	Local	846.96	63.10%	62%-74%

Update on County Progress – Scott County Example

Existing System



Revised System



Update on County Progress – Other Counties

- Ramsey County

- Meeting with city staff – January 7th
- Scheduling meeting with St. Paul and County staff

- Hennepin County

- Met with County staff – December 29th
- Working with Minneapolis staff and will meet in January 2021
- Working on setting up city (and others) meeting(s) in January

- Washington County

- Technical review complete
- Will begin review with county and city staff January/February

- Dakota County

- Technical review complete
 - Preliminary contact via draft County LRTP
- Will begin review with county and city staff January/February

Key Takeaways So Far

- Metro is very low in Principal Arterial – Other mileage
 - FHWA guideline = 4%-9% of system
 - Actual = 1.72%
 - This may be influencing higher levels of Minor Arterials
- Majority of minor arterials highlighted for review/revised are B-Minor/Other
 - Overall change* = -7.5%
 - A-Minor change* = -2.6%
 - B-Minor/Other change* = -27.0%
- Lack of understanding of urban/rural & existing/planned dichotomy
- Wide variance from city to city
 - Comp planning process seemed insufficient for functional classification review without extensive MnDOT collaboration

Preliminary Revisions*

	Before	After	Change
Minor Arterial	2,433.40	2,251.44	-7.5%
A-Minor	1,946.88	1,896.46	-2.6%
B-Minor/Other	486.49	354.98	-27.0%
Major Collector	1,562.51	1,643.58	5.2%
Minor Collector	820.72	1,246.82	51.9%
Local	11,558.22	11,229.25	-2.8%

*Preliminary data is subject to change per local reviews

Key Takeaways So Far

- Future reviews (and comp plans) should be smoother going forward
 - Minor Collector classification added for urban areas in 2013
 - Previous comp plan round required cities to build minor collector system from scratch
 - Next round will be able to build off this process
- County by county review format has been well received
 - MnDOT staff meeting with each county independently
 - Multiple meetings and increased collaboration
 - Allows for more detailed back and forth
 - Locals more open to initial discussions than previous attempts
 - Have had varying degree of input/feedback from cities
 - Has slowed down overall process
 - Original schedule aimed for January 2021 completion, now likely March

Next Steps in Process

- Finish local partner review
- Tentative February 2021 final Steering Committee meeting
 - Aiming to have any/all outstanding disagreements ready for Committee final decision
- Submission of updated system to FHWA – March/April 2021
- Met Council update on process and formal review/approval
 - Will be coming back for review and ultimately formal approval of Metro system early 2021

Questions



Thank you!

Joe Widing

joseph.widing@state.mn.us