



TRANSPORTATION

Introduction

The Transportation Chapter guides the creation of a safe, equitable and well-maintained multi-modal transportation system in Saint Paul that supports the needs of all users, enhances vitality, and sets the stage for infill development to accommodate the city's projected growth. The transportation system relies primarily on streets, which connect people to jobs, homes, shopping, education and recreation, but also includes water (the Mississippi River), trail and rail. It is important to have a consistent long-term vision that will gradually, strategically and consistently remake the city's transportation system so that it works better for all users.

Since opportunities to remake streets are infrequent due to limited funds and a high volume of needs (the life expectancy of Saint Paul streets is approximately 40 years, and many go 90 years or more before being reconstructed), the chapter establishes clear priorities for project selection. Projects will prioritize the safety of people walking and biking, equity, and improved access to economic opportunity. Maintenance is also established as a "first cut" for project selection, because regular maintenance is much more cost-effective in the long run and allows for a greater number of projects to be accomplished over time. Further, the ability to obtain outside funding will be considered.

Priorities are also established for the design of our rights-of-way, with the needs of pedestrians and bicyclists placed at the top. This includes aggressively evaluating and pursuing "road diets" that improve pedestrian safety while having a minimal impact on traffic flow. Considering pedestrians first will ensure a safe transportation system that works well for everyone. Additional supporting materials for Transportation Chapter policies can be found in the appendices beginning of page 79.

The following goals guide the Transportation chapter:

1. Investment that reflects the City's priorities.
2. Safety and accessibility for all users.
3. A transportation system that supports access to employment and economic opportunity.
4. True transportation choice throughout the city, with a shift from single-occupant vehicles toward other modes.
5. Sustainable and equitable maintenance models.
6. Environmentally-sustainable design.
7. Functional and attractive Parkways.
8. A system that responds to technology and shapes its implementation.

Goal 1: Investment that reflects the City's priorities.

Policy T-1. Prioritize safety and racial and social equity benefits in project selection, followed by support of quality full-time, living wage jobs – both through business support and connection of residents to job centers. Priorities will also be informed by specific modal plans, such as the Bicycle Plan or the forthcoming Pedestrian Plan (See Sidebar and Maps T-1, T-3, T-5, and T-6).

Policy T-2. Use surface condition and multimodal usage rates to prioritize transportation projects and ensure well-maintained infrastructure that benefits the most people (See Maps T-10 and T-12).

Policy T-3. Design rights-of-way per the following modal hierarchy:

1. Pedestrians, with a focus on safety
2. Bicyclists, with a focus on safety
3. Transit
4. Other vehicles

Policy T-4. Significantly reduce carbon emissions from motor vehicles by developing infrastructure that supports vehicle electrification.

Goal 2: Safety and accessibility for all users.

Policy T-5. Adopt and implement a “Vision Zero” program with the long-term goal of achieving zero traffic fatalities and severe injuries. Components of the program should include street design improvements and behavioral safety improvements, such as reducing driver impairment, inattentiveness and speed through education and enforcement.

Policy T-6. Implement “road diets” for undivided four-lane roads to convert them to two or three lanes, where feasible, in order to prioritize pedestrian safety (See Map T-2).

Policy T-7. Implement intersection safety improvements such as traffic signal confirmation lights, pedestrian countdown timers, and leading pedestrian signal intervals. Reduce pedestrian roadway exposure via median refuge islands, curb extensions, narrowed travel lanes and other elements designed to lower motor vehicle speeds.

Policy T-8. Reduce speed limits where it will improve safety, and work with State and Ramsey County governments to overcome obstacles to implementing this policy.

Policy T-9. Design the rights-of-way for all users, including older people, children and those with mobility constraints, as guided by the Street Design Manual and Safe Routes to School Plans, and by thoughtfully addressing streetscape issues such as curb cut design, level sidewalks, lighting, accessibility to/from bus stops, and the presence of benches and buffers between sidewalks and streets.

Policy T-10. Design sidewalks, trails and transit stops for personal safety (real and perceived), including by providing lighting and boulevards.

Policy T-11. Support driver, bicyclist and pedestrian education to improve mutual awareness and safety.

Policy T-12. Minimize and consolidate driveway curb cuts as redevelopment opportunities arise for redevelopment sites that have sufficient existing access or can reasonably be accessed via side streets, alleys or shared driveways, especially in areas with anticipated high pedestrian activity or with adjacent planned bikeways.

Policy T-13. When street design changes involve the potential loss of on-street parking spaces, prioritize safety for all transportation modes. Explore mitigation of lost spaces where feasible and practical.

Economic and Social Impacts of Motor Vehicle Crashes

Transportation safety is worth the investment. According to a National Highway Traffic Safety Administration (NHTSA) study, in 2010 there were 32,999 people killed, 3.9 million people injured, and 24 million vehicles damaged in motor vehicle crashes in the United States. The economic costs of these crashes totaled \$242 billion, which represents the equivalent of nearly \$784 for each person living in the United States, and 1.6 percent of the \$14.96 trillion real U.S. Gross Domestic Product for 2010. These costs represent the tangible losses that result from motor vehicle crashes. However, in cases of serious injury or death, such costs fail to capture the rather intangible value of lost quality-of-life that results from these injuries. When quality of life valuations are considered, the total value of societal harm from motor vehicle crashes in 2010 was \$836 billion. In 2015, the number of traffic fatalities was 35,091, a 6% increase over 2010. In Saint Paul in 2018, there were 265 vehicular crashes involving pedestrians and bicyclists alone, including 4 fatalities and 208 injuries (140 requiring hospital attention).

Roadway Safety Plan

In January 2016, MnDOT released its Roadway Safety Plan for Saint Paul, a consultant-produced document with City of Saint Paul staff participation that identified the greatest opportunities to reduce the number of severe crashes based on the City's crash data, street contexts and strategies with demonstrated effectiveness in mitigating the types of severe crashes experienced here. The study recommended focusing on certain arterial streets, employing the following types of safety projects:

- improving pedestrian safety (primarily at intersections);
- reducing the frequency of red light violations at traffic signals; and
- improving the safety characteristics of undivided streets.
- The specific safety improvement strategies could include:
 - road diet (convert to three lanes);
 - access management;
 - traffic signal confirmation lights;
 - pedestrian/bicycle countdown timers;
 - pedestrian/bicycle leading pedestrian intervals
 - pedestrian/bicycle curb extensions; and
 - pedestrian/bicycle median refuge islands.

Goal 3: A transportation system that supports access to employment and to economic opportunity.

Policy T-14. Work with agency partners and the Saint Paul Port Authority to implement and support freight transportation improvements in and near industrial areas of regional economic importance, particularly West Midway, the Great Northern corridor, river industrial areas, and the portion of West Side Flats east of Robert Street, to improve safety and connections to the regional transportation network (See Map T-15).

Policy T-15. Explore freight delivery solutions that resolve loading/unloading conflicts in congested areas to support businesses and provide safety to pedestrians, bicyclists and other road users. Solutions could include delivery coordination and timing, and use of smaller freight delivery vehicles.

Policy T-16. Support financing for above-standard streetscapes in business areas.

Policy T-17. Use pricing to manage parking demand and improve parking efficiency in areas with high demand and short supply.

Policy T-18. Work with agency partners, including the Minnesota Department of Transportation and the Metropolitan Airports Commission to maintain a regional aviation system that balances commercial demand and capacity while being compatible with the community, particularly in terms of safety and noise. See also Policy LU-12. (Figure T-17).

Policy T-19. Work with the Saint Paul Port Authority to maintain the Mississippi River as a working river through land use policy and support for jobs in river-related industries.

Policy T-20. Prioritize investments in infrastructure that improve river commerce and conditions necessary to maintain and grow regional logistics and commodities hubs connecting, river, rail, truck modes.

Goal 4: True transportation choice throughout the city.

Policy T-21. Reduce vehicle miles traveled (VMT) by 40% by 2040 by improving transportation options beyond single-occupant vehicles.

Policy T-22. Shift mode share towards walking, biking, public transit, carpooling, ridesharing and carsharing in order to reduce the need for car ownership.

Policy T-23. Formulate responses to traffic issues identified through traffic studies based on desired, rather than current, mode share.

Policy T-24. Implement the Bicycle Plan to make bicycling safe and comfortable throughout the city, and to increase bicycling mode share.

Policy T-25. Implement the Pedestrian Plan to make walking safe and comfortable throughout the city, increase pedestrian mode share for short trips, and increase physical activity in people's daily routines. Until the Pedestrian Plan is adopted, focus pedestrian infrastructure improvements in areas with acute pedestrian safety hazards, with existing or anticipated high pedestrian activity, and/or in racially concentrated areas of poverty.

Policy T-26. Provide sidewalks throughout the city, generally on both sides of the street, except potentially in portions of Highwood as directed via other officially-adopted City plans (See Map T-1).

Policy T-27. Improve public transit mode share and support quality public transit in all parts of the city through strategic establishment of transit-supportive land use intensity and design, increased traffic signal optimization for transit, working with transit providers to improve their service offerings and supporting transit facilities (See Maps T-5, T-6 and T-8).

Policy T-28. Facilitate intermodal trips at mobility hubs (where walking, biking, public transit, ridesharing and carsharing are intentionally designed to connect) by providing enhanced security, lighting, information, shelter, placemaking, comfort and convenience.

Policy T-29. Expand commuter options with Travel Demand Management (TDM) and support of carpooling facilities.

1. Require a TDM Plan for all large developments and large employers.
2. Create incentives, employer programs and parking policies, especially in downtown but throughout the city, that encourage and accelerate use of walking, biking, transit and carshare.
3. Support the work of other agencies, organizations and the private sector to market and support transit, carshare, rideshare, carpooling, biking, walking, flexible work hours and telecommuting.
4. Consider options to enforce and improve implementation of TDM Plans.

Policy T-30. Design holistically for all modes, especially pedestrians and bicycles, in any bridge reconstruction or maintenance project such as for bridges (or lids) over interstate highways or the Mississippi River. Ensure that the project scope incorporates adjacent intersections as necessary.

Policy T-31. Establish (or re-establish) the right-of-way grid with block lengths of 300 to 600 feet as redevelopment occurs on large sites in order to increase neighborhood connectivity and accommodate pedestrian-oriented, higher-density development.

Policy T-32. Accommodate access to community events and around construction projects by all mode users, including by working with Metro Transit to provide additional transit service, providing sufficient bicycle parking, generally avoiding the closure of bicycle lanes and sidewalks and providing detours for all modes.

Policy T-33. Improve pedestrian and recreational connections to the Mississippi River.

Policy T-34. Promote safe walking and bicycling to school by supporting Safe Routes to School efforts and investing in sidewalk connectivity and crossing enhancements near schools.

Working River

Barges move millions of tons of raw materials on the Mississippi River every year in one of the most efficient and environmentally responsible ways possible. Saint Paul's four river terminals are important economic generators, hosting 34 companies that employ over 1,000 people. (St. Paul Port Authority 2017)



Goal 5: Sustainable and equitable maintenance models.

Policy T-35. Pursue fiscally- and environmentally-sustainable models for equitably maintaining transportation infrastructure in Saint Paul, including for right-of-way maintenance, bridges, sidewalks, trails and alley snowplowing.

Policy T-36. Consider the full long-term infrastructure costs when allocating maintenance funding compared to reconstruction funding.

Policy T-37. Maintain roadway pavements in pursuit of achieving a Pavement Condition Index (PCI) of 70 on all City-owned streets. (See Map T-10).

Policy T-38. Reduce the number of heavy vehicle trips on local streets through measures such as consolidation, coordination and route designation/planning, in order to reduce maintenance costs.

Goal 6: Environmentally-sustainable design.

Policy T-39. Seek opportunities to improve the environmental sustainability of rights-of-way in the city, such as through shared, stacked-function green infrastructure (SSGI) planting trees to reduce the urban heat island effect and reducing the amount of land devoted to parking.

Policy T-40. Lessen the negative impacts of interstate highways by supporting design interventions, such as “land bridges” and landscaping and liner buildings on new bridges, that improve connectivity, hide the road and/or reduce pollution.

Goal 7: Functional and attractive Parkways.

Policy T-41. Maximize space for recreation and landscaping uses within Parkway rights-of-way, and prioritize recreation and landscaping in Parkway design in order to maintain a park-like feel, particularly on the Grand Round.

Goal 8: A system that responds to technology and shapes its implementation.

Policy T-42. Ensure that new technologies, such as automated vehicles, further the City's transportation and land use priorities.

Policy T-43. Ensure that right-of-way design and management accounts for changing vehicle technologies and forms of use, such as automated vehicles, car-sharing, curbside pickup and delivery, ride-hailing and ride-sharing.

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Appendix B

List of Potential Projects.....98

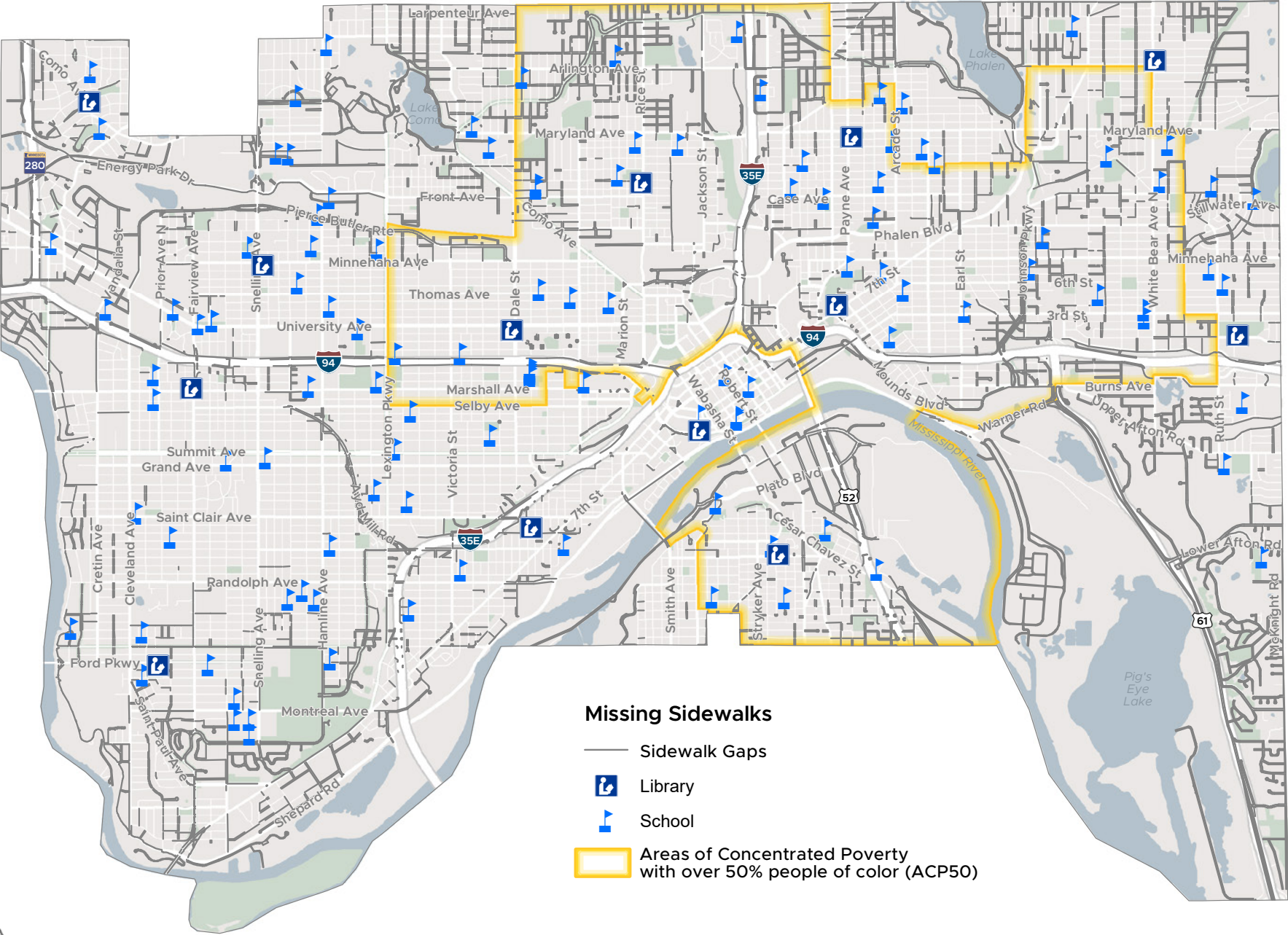
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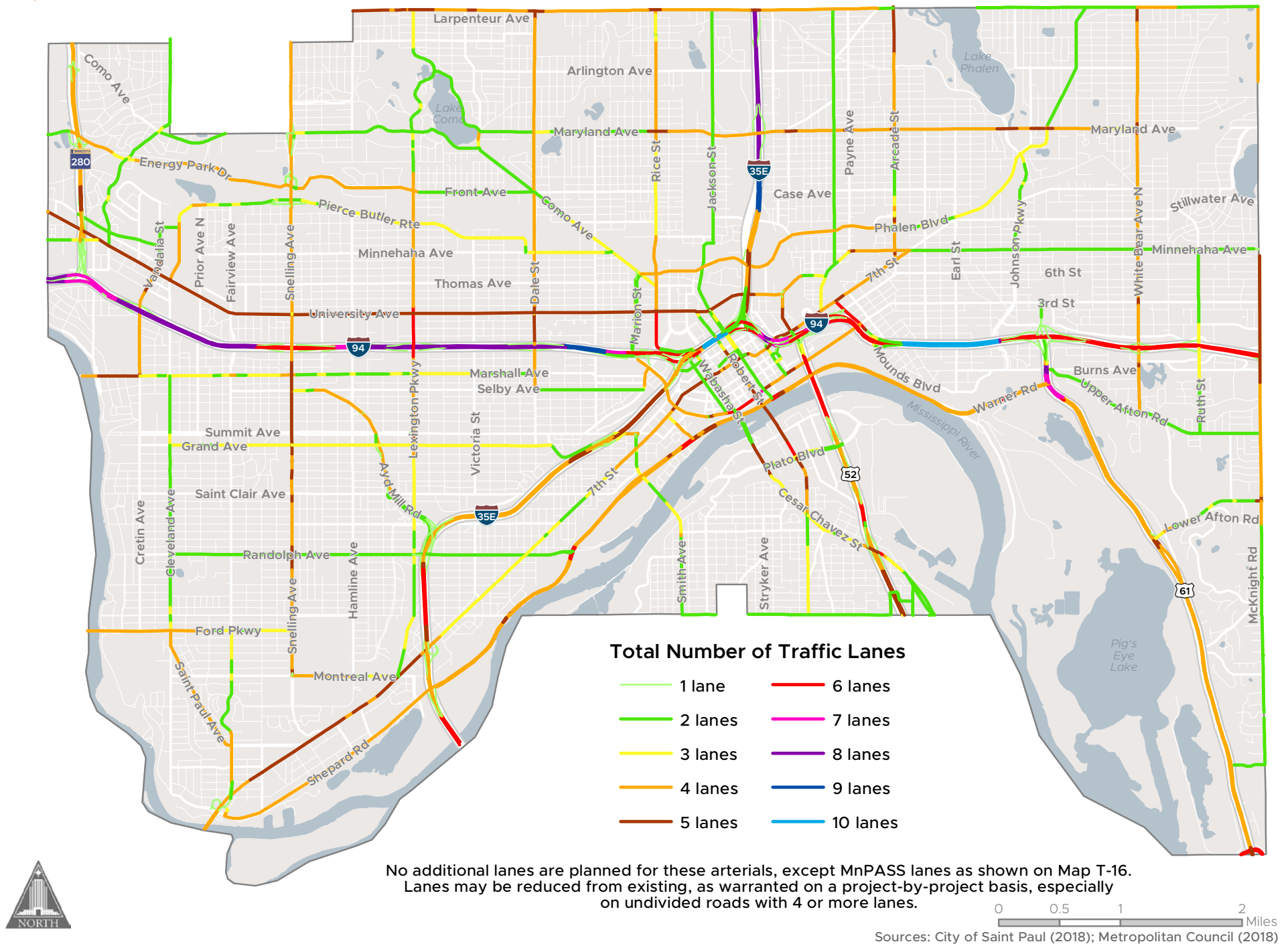
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Map T-1: Missing Sidewalks

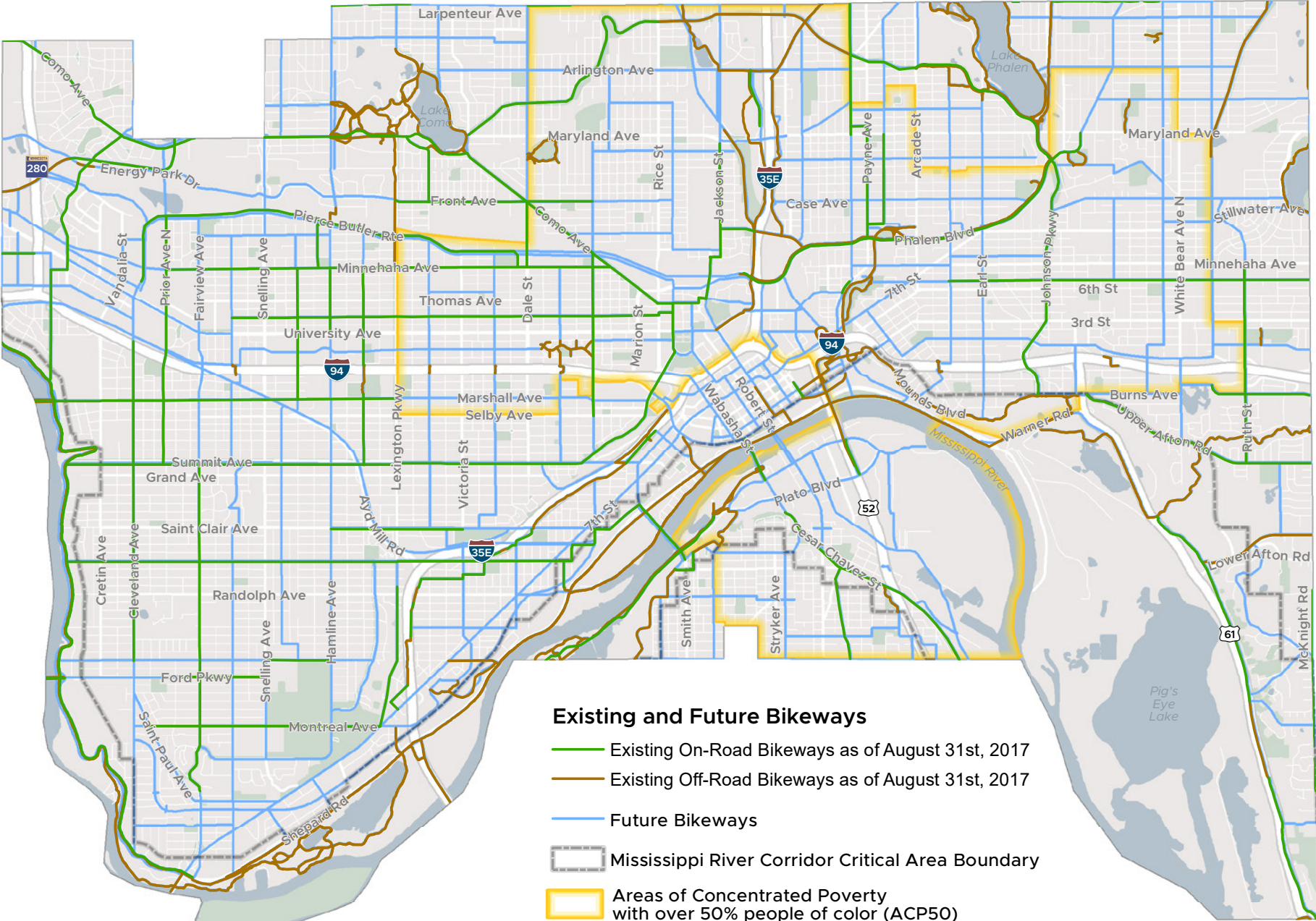


Sources: City of Saint Paul (2017); Minnesota Department of Education (2017); Metropolitan Council (2018)

Map T-2: Number of Traffic Lanes on Arterials

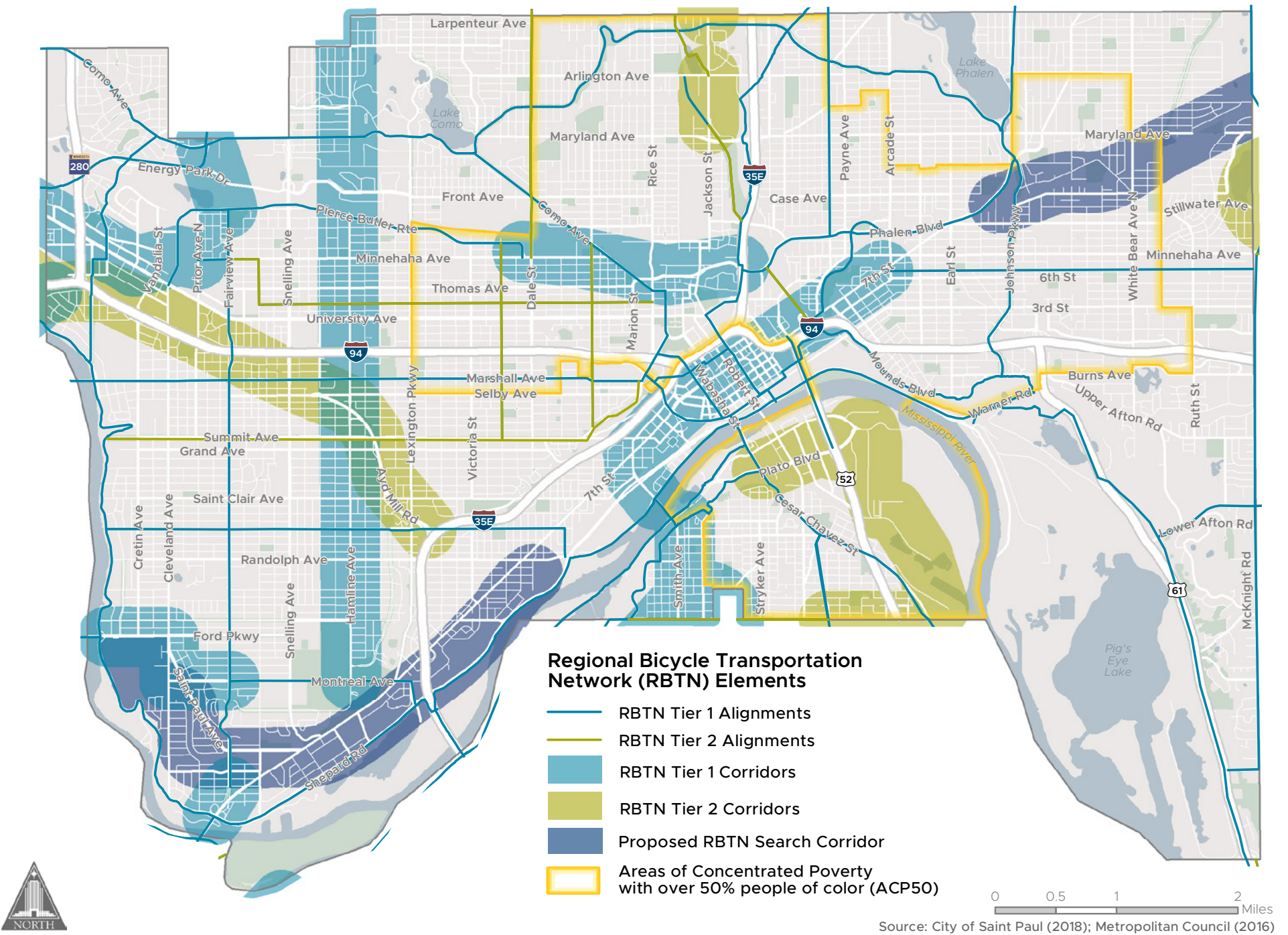


Map T-3: Bikeways

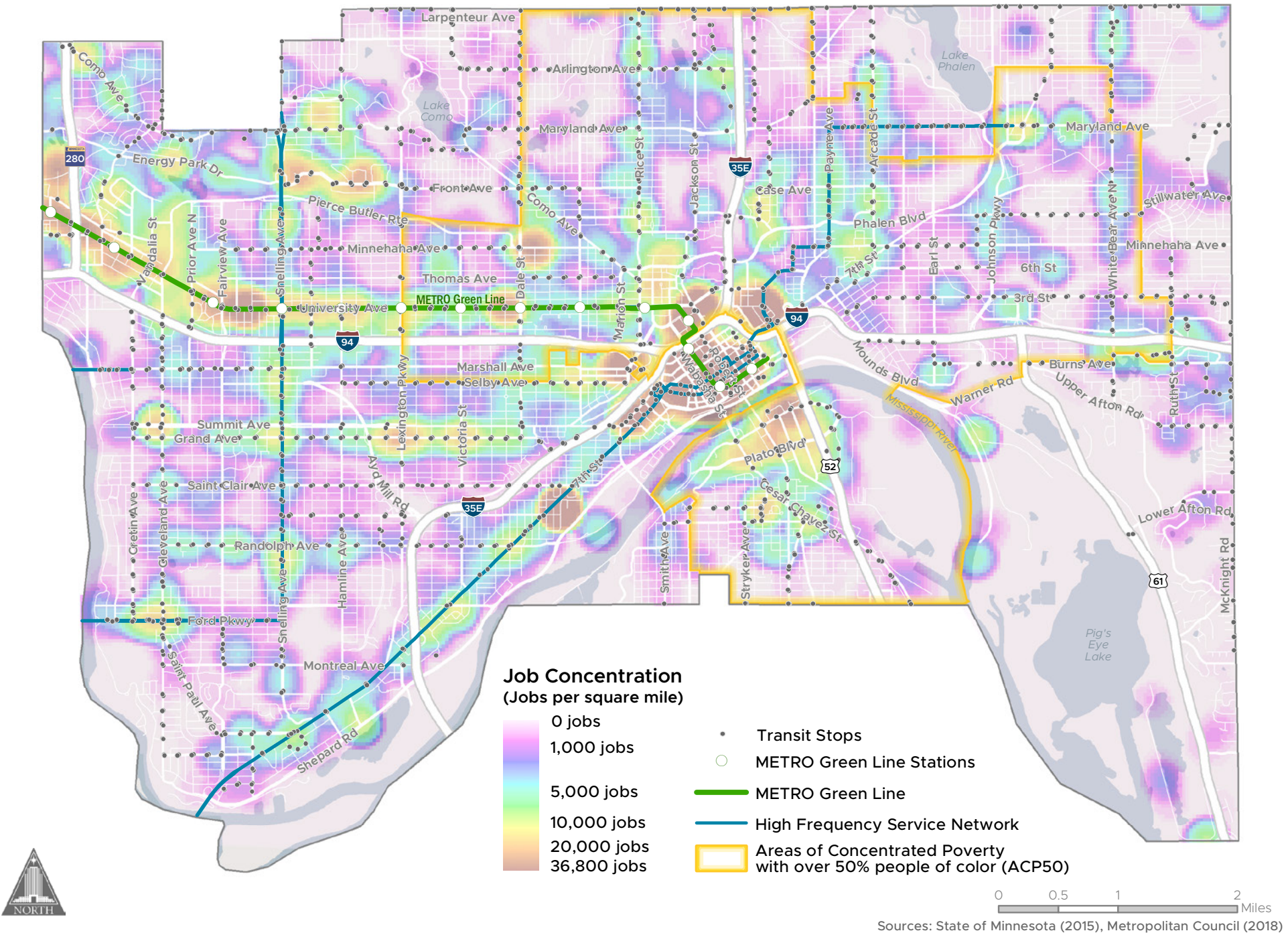


Sources: City of Saint Paul (2018); Metropolitan Council (2018)

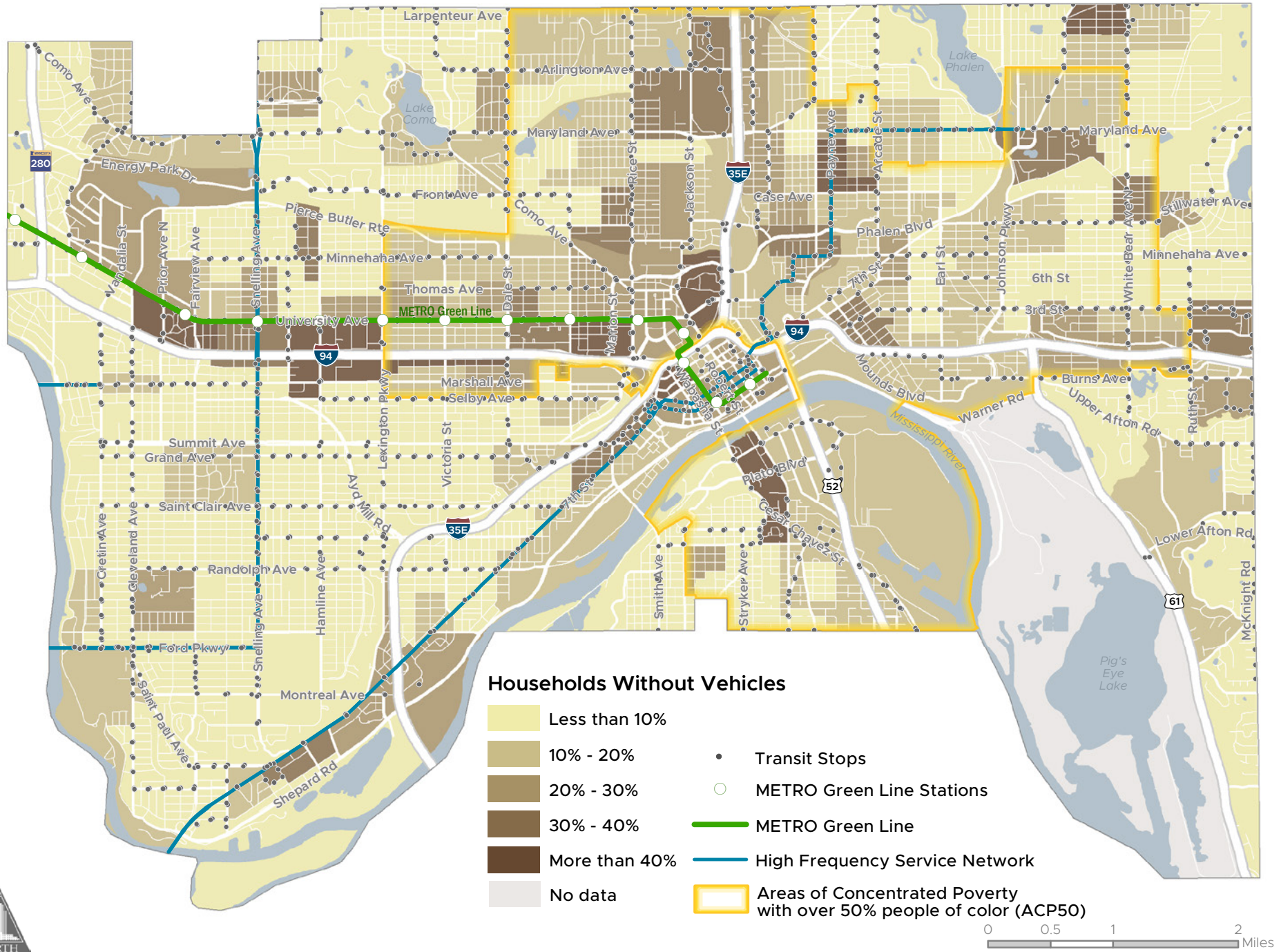
Map T-4: Regional Bicycle Transportation Network



Map T-5: Job Concentrations and Transit



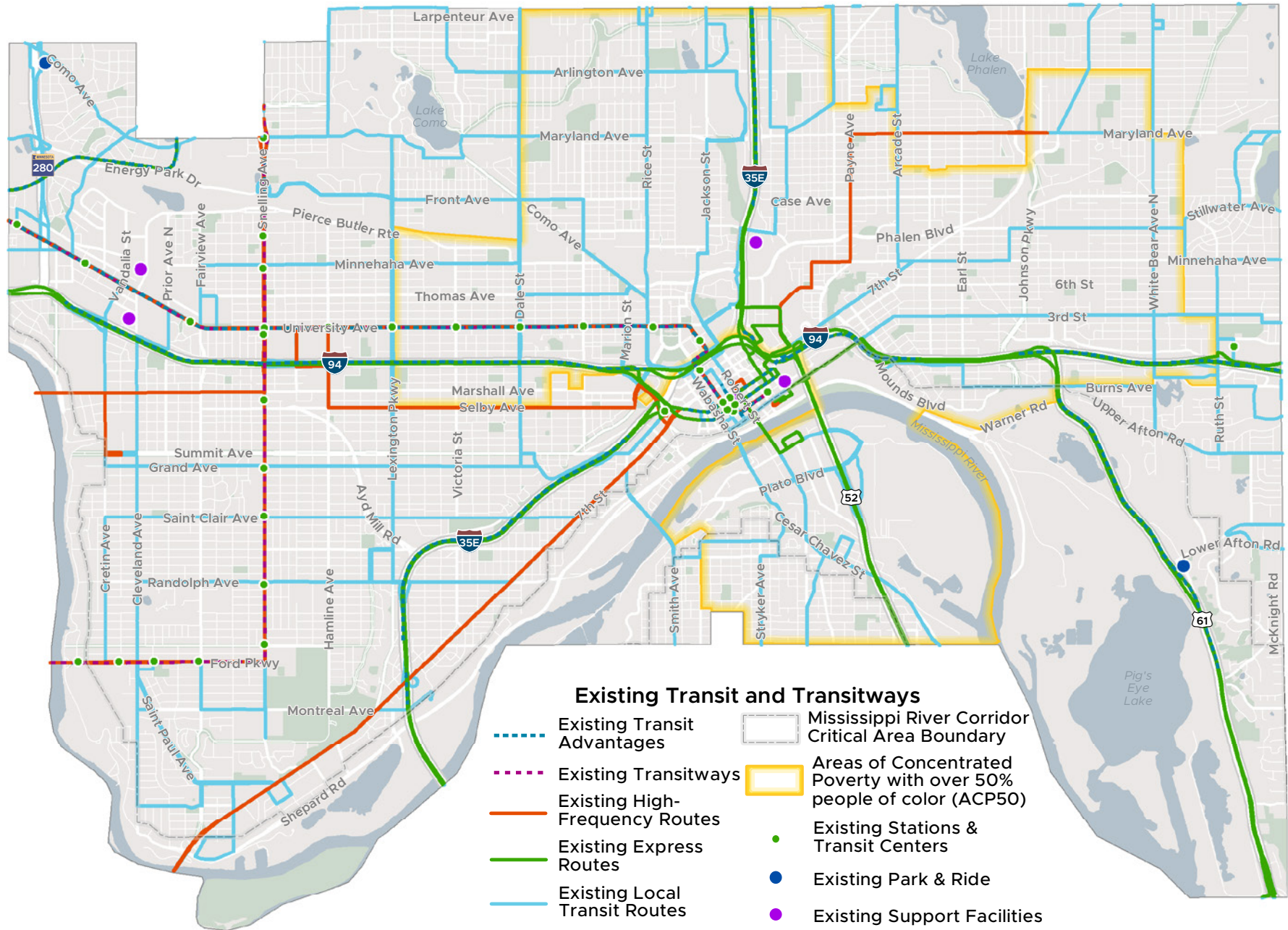
Map T-6: Households without Vehicles and Transit Network



Sources: U.S. Census Bureau (ACS 2012-2016), Metropolitan Council (2017-2018)



Map T-7: Existing Transit and Transitways



0 0.5 1 2 Miles

Source: City of Saint Paul (2016); Metropolitan Council (2017-2018)

Map T-8: Planned/Potential Transitways and High-Frequency Transit



* Lake St - Marshall Ave Corridor is a Potential Current Revenue Project

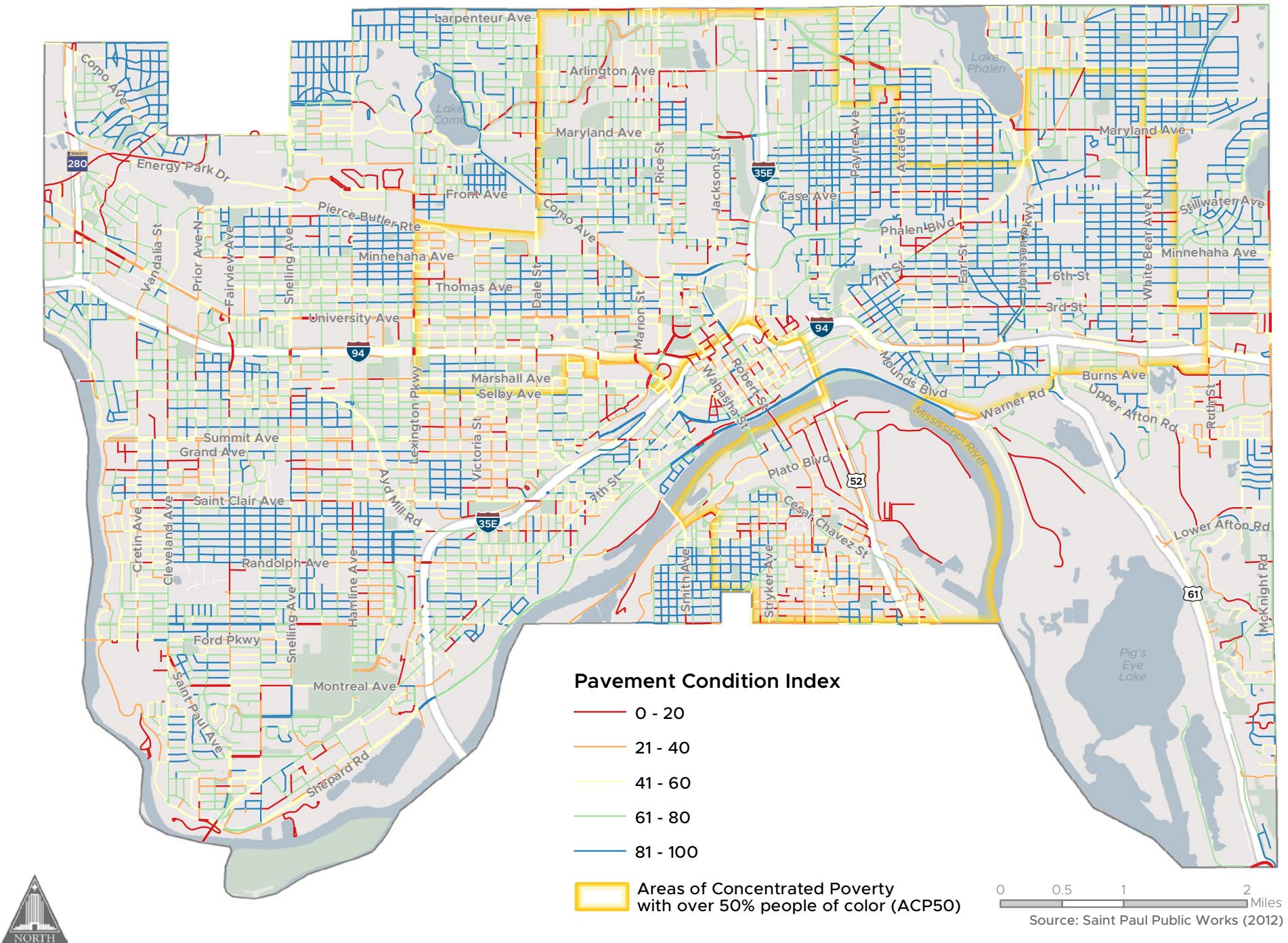
Source: City of Saint Paul (2018); Metropolitan Council (2017-2018)

Map T-9: Boardings and Alightings on Transit System

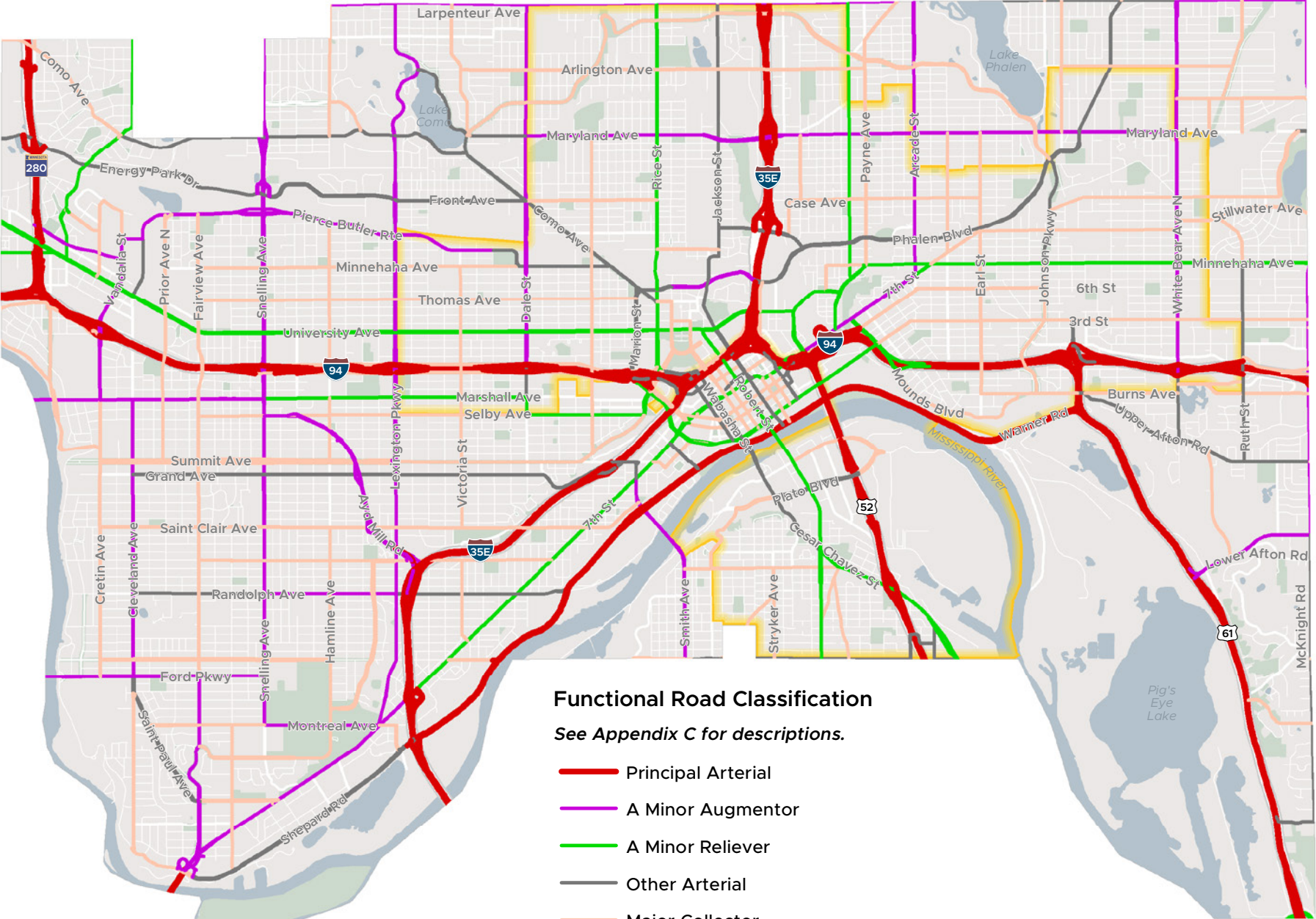


0 0.5 1 2 Miles
Source: City of Saint Paul (2016); Metropolitan Council (2017-2018)

Map T-10: Pavement Condition Index



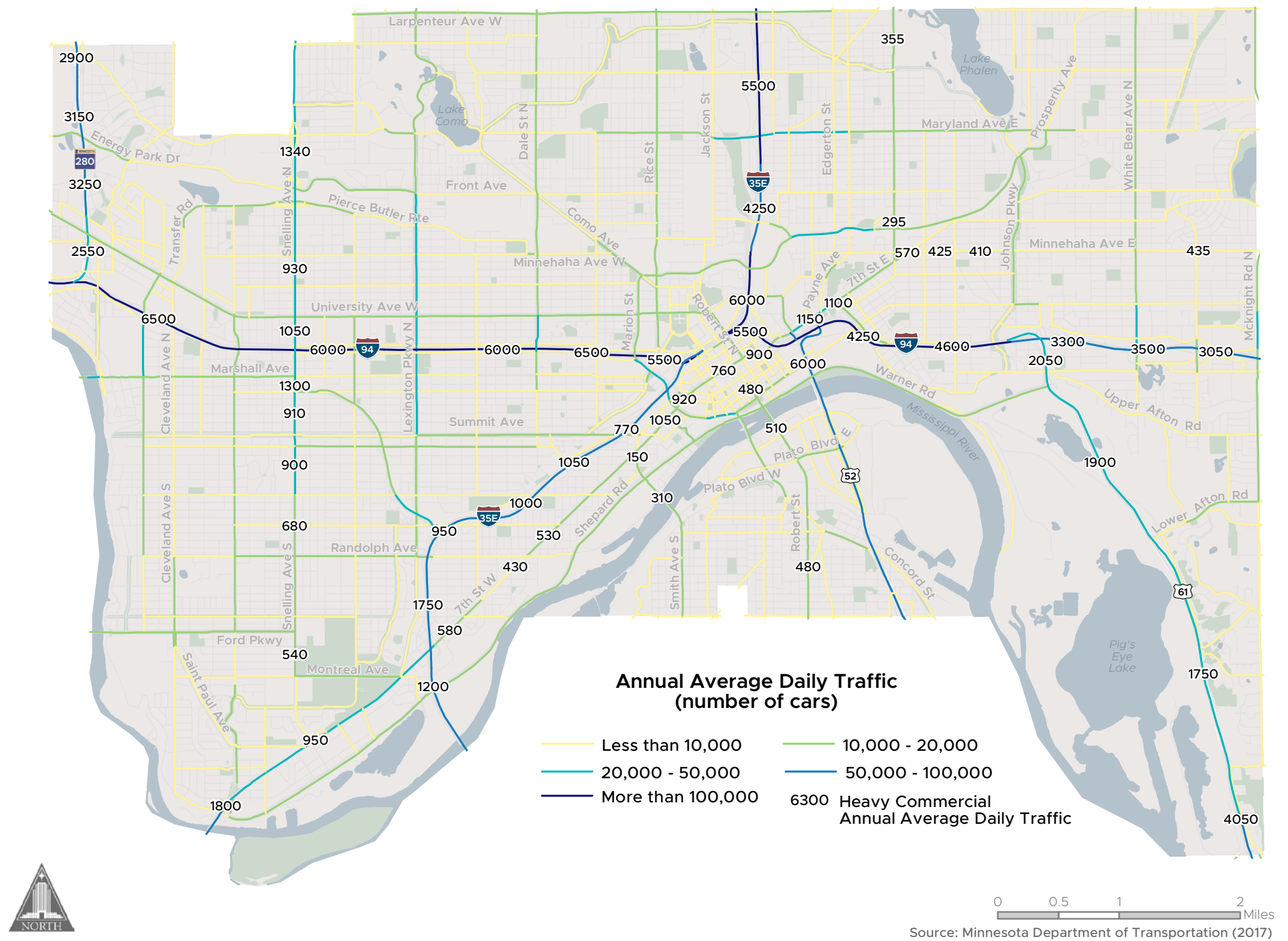
Map T-11: Functional Road Classification*



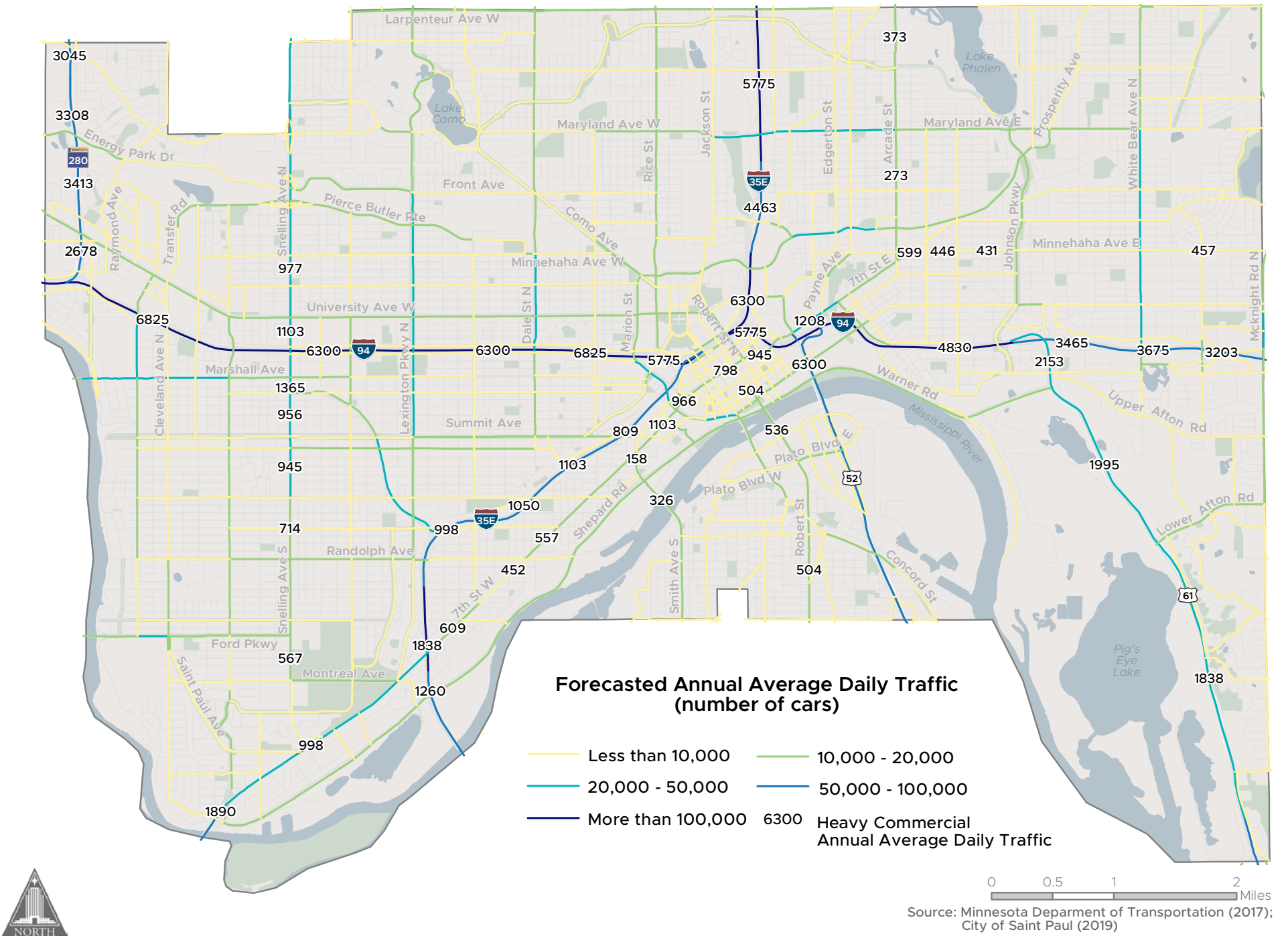
0 0.5 1 2 Miles
Source: Metropolitan Council (2019)



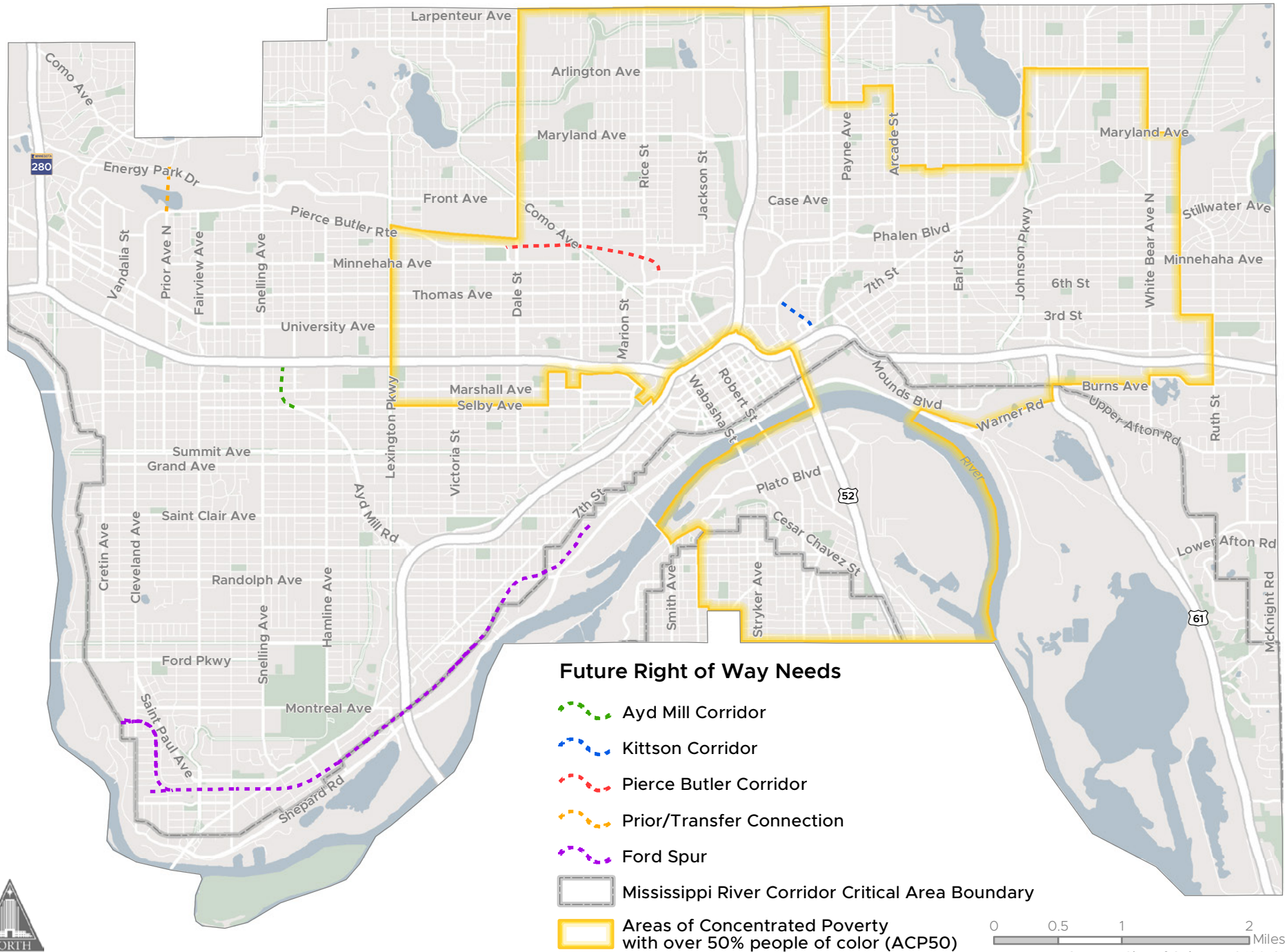
Map T-12: Annual Average Daily Traffic (ADT)



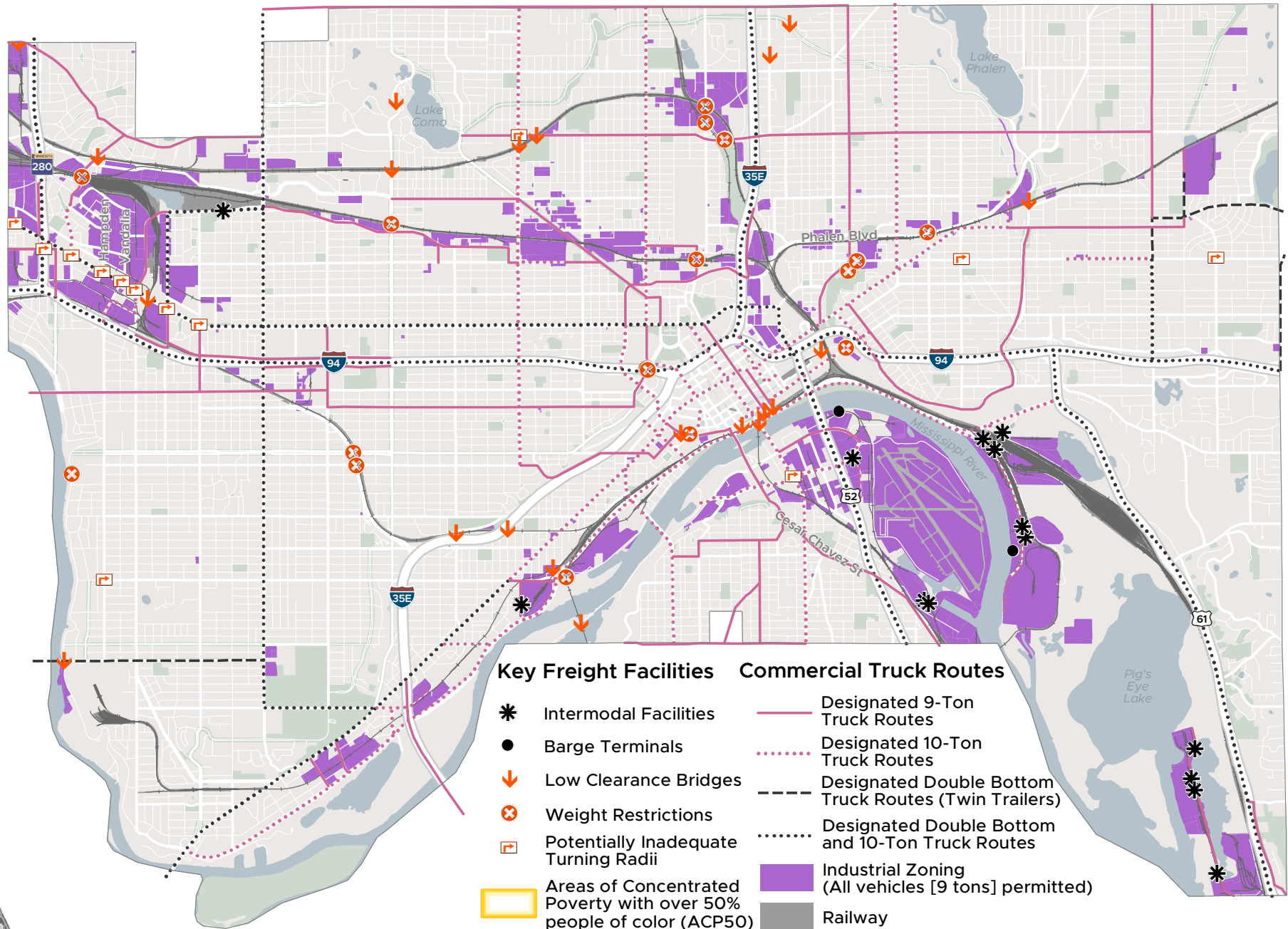
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Map T-14: Potential Major Future Right-of-Way Connections



Map T-15: Commercial Truck Routes

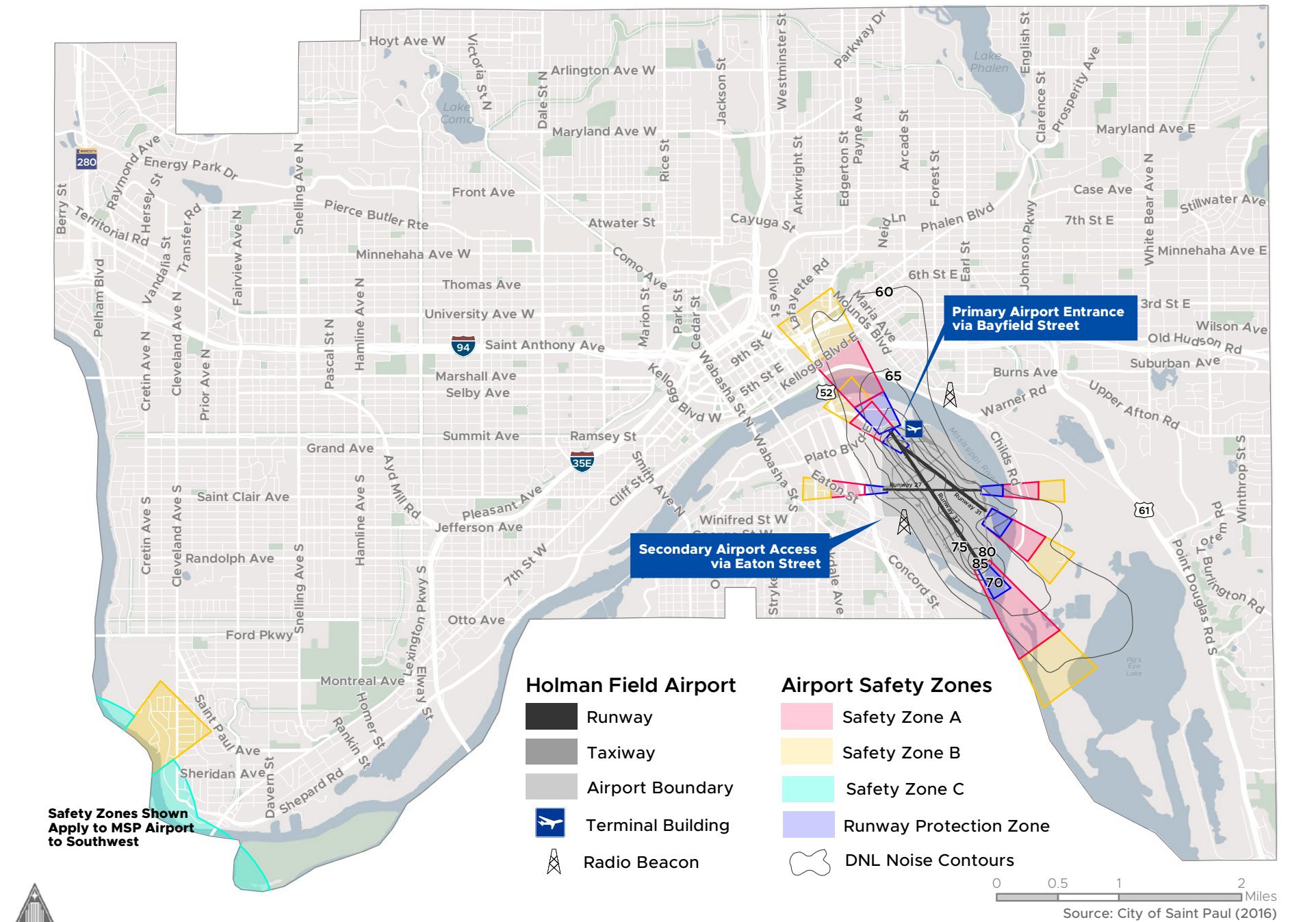


Source: City of Saint Paul (2015-2018); Metropolitan Council (2016)

Map T-16: Planned Improvements to Metro Highways

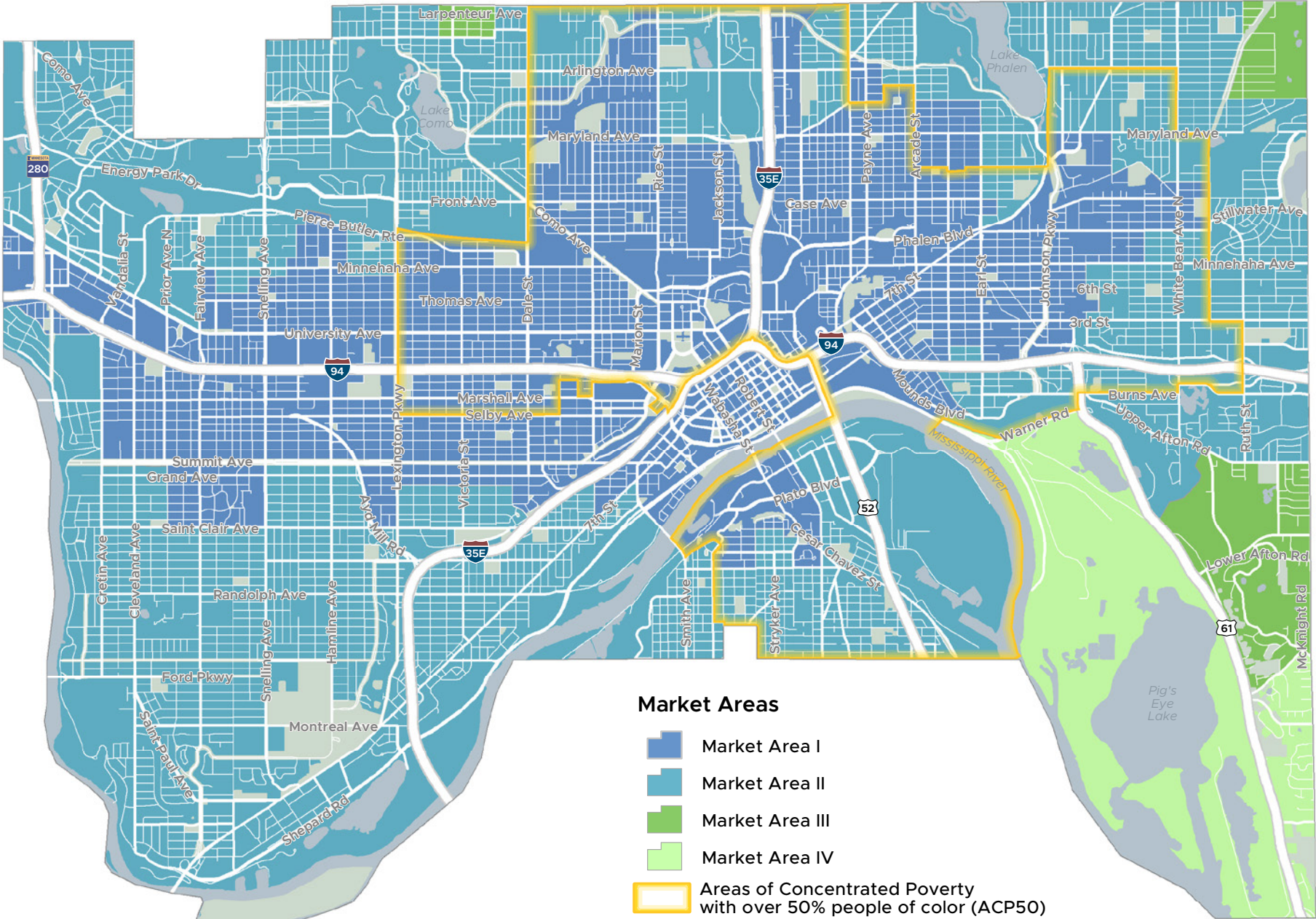


Map T-17: Airport Safety Zones and Noise Contours



Note: Airport Safety Zones are subject to land use regulations defined in Minnesota Rules Chapter 8800.2400.

Map T-18: Transit Market Areas*



*See Appendix C for Transit Market Areas



Appendix B

List of Potential Projects

The following projects are representative of those that could be considered for implementation of this chapter:

Projects	Description	Transportation Chapter Policy	Source
Conversions of four-lane roadways to three-lane roadways			
Conversions of four-lane roadways to three-lane roadways	Reallocate rights-of-way to improve safety.	Policy T-6	2040 Comprehensive Plan (2020)
Intersection improvements for safety	Improve intersections to reduce crashes overall and enhance pedestrian safety.	Policy T-7	2040 Comprehensive Plan (2020)
Pedestrian facilities	Implement pedestrian infrastructure improvements.	Policies T-25 & T-26	Saint Paul Pedestrian Plan (2020)
Bicycle facilities	Implement bicyclist infrastructure improvements.	Policy T-24	Saint Paul Bicycle Plan (2015)
Bridge improvements to safely accommodate all users, over interstates, rivers, railways, and other obstacles to connectivity	Accommodate all modes on bridge projects.	Policy T-30	2040 Comprehensive Plan (2020)
New transitways and high-frequency bus routes, such as: • Gold Line • Riverview • Rush Line • Robert Street	Develop regional transitways and high-frequency bus routes.	Policies T-22 & T-27	Metropolitan Council Transportation Policy Plan (2018, amended)

List of Potential Projects - Continued

The following projects are representative of those that could be considered for implementation of this chapter:

Projects	Description	Transportation Chapter Policy	Source
Location-Specific Projects			
Kellogg Boulevard/3rd Street Bridge reconstruction	Replace structurally deficient Kellogg/3rd St Bridge.	Policy T-37	Structural Evaluation (2014)
West Midway (Vandalia/Ellis/280/I-94/University) trucking improvements	Connect Prior Avenue to Energy Park Drive across the BNSF railroad tracks, and improve Ellis Avenue connection from Vandalia Street to Pierce Butler Road.	Policy T-14	West Midway Industrial Area Plan (2014)
Kittson extension	Connect I-94 to Pennsylvania Avenue/University Avenue.	Policy T-14	Shepard/Warner/East CBD Bypass EIS (1988), with consideration of more recent US52/I94 connection
Pierce Butler Route extension	Connect eastern end of Pierce Butler Route to 35E.	Policy T-14	Pierce Butler Draft EAW (2009)
Ayd Mill redevelopment, subject to a Supplemental Environmental Impact Statement (EIS) process involving a community task force	Study connections to Ayd Mill Road.	Policies T-22, T-23 & T-35	Ayd Mill EIS (2005)
Shepard, TH 5, and I-35E connection improvements	Realign traffic from Highway 5 to Shepard and improve connections from Shepard to 35E.	Policy T-33	Highway 5 / Shepard Road Study (2015)
Midtown Greenway extension into Saint Paul	Connect the Minneapolis Midtown Greenway across the Mississippi River into Saint Paul.	Policy T-24	District 12 Neighborhood Plan (2013)
Grand Round completion	Construct remaining Grand Round segments.	Policy T-24	Saint Paul Bicycle Plan (2015)
Capital City Bikeway completion	Construct remaining Capital City Bikeway segments.	Policy T-24	Saint Paul Bicycle Plan (2015)
Connect pedestrians to the river by opening new points of river access	Provide safer access to river through traffic calming, intersection improvements, new connections, etc.	Policy T-33	Great River Passage Plan (2013)
Canadian Pacific Rail Spur (Ford Spur) conversion to other transportation uses	Build a trail along the Ford Spur to connect the Ford Site to West 7th Street corridor.	Policy T-24	Re-Imagine the Railway: Studying New Uses for the Ford Spur (2018)

Appendix C

Other Required Transportation Information

1. Roles and responsibilities in transitway development

Transitway planning and development is generally led by county governments or Metro Transit. The City of Saint Paul participates in both the policy and technical aspects of that planning and development. It is possible that in the future the City of Saint Paul might choose to lead development of a transitway, such as a streetcar. The City of Saint Paul is currently participating in the planning for the Riverview/Ford, Rush Line and Gold Line transitway corridors.

2. Seaplanes

Seaplanes may be used on the Mississippi River as regulated by the Minnesota Department of Transportation.

3. Existing and future functional and operational characteristics of the St. Paul Downtown Airport

The St. Paul Downtown Airport (STP) is designated by the FAA as a Reliever Airport for the metropolitan area. It serves an important role to reduce congestion at Minneapolis/Saint Paul International Airport (MSP) by accommodating general aviation traffic that might otherwise use MSP. STP is classified as a Primary Reliever Airport by MAC; a Key Airport by the Minnesota Department of Transportation State Aviation System Plan; and an Intermediate Airport by the Metropolitan Council Regional Aviation System Plan. Further, the FAA has classified STP as a National category general aviation airport. It accommodated approximately 40,500 aircraft takeoffs and landings in 2017. By 2040, approximately 50,000 to 70,000 annual flight operations are predicted.

4. Protecting Regional Airspace

The City protects regional airspace by prioritizing compatible land uses and using FAA 7640 review to ensure that building heights do not unreasonably interfere with airspace operations close to Saint Paul Downtown Airport and Minneapolis-Saint Paul International Airport. It will participate in the Joint Airport Zoning Board (JAZB) to pursue compatible land uses near the airports, as guided by the Metropolitan Council's Land Use Compatibility Guidelines for Aircraft Noise, which could restrict development/redevelopment and construction within the noise contours of 60 or greater. See map T-17 for airport safety zones and noise contours.

5. Transit Services

Most transit service in Saint Paul is provided by Metro Transit, including Green Line Light Rail Transit, Arterial Bus Rapid Transit, regular route buses and express transit service to/from downtown. Express transit service to downtown is also provided by the Minnesota Valley Transit Authority. Transit Link, provided by the Metropolitan Council, is shared-ride public transportation where regular route transit service is infrequent or unavailable. Transit Link is only available where regular fixed-route transit service is more than 1/2 mile away (1/4 mile in winter). Metro Mobility, also provided by the Metropolitan Council, provides shared rides for people who are unable to use regular fixed-route buses due to a disability or health condition. Private/nonprofit transit services also operate in Saint Paul.

Other Required Transportation Information - Continued

6. Functional Class Descriptions

Roads in our region are categorized into functional classes, including Principal Arterials, Minor Arterials, Collectors and Local Streets. Principal Arterials provide the highest vehicle speeds and least access, and are designed for longer trips. Minor Arterials in Saint Paul can either augment (add to) Principal Arterials' function or relieve traffic from them, and are intended for multimodal medium-length trips and to support our businesses. A-Minor Arterials, in particular, support principal arterials and access to regional job concentrations, community amenities, manufacturing and distribution areas, and freight terminals. Other Arterials serve a similar role to A-Minor Arterials, but do not carry the same designation. Collectors provide finer-grained multimodal linkages to larger developments and community amenities, and generally do not link communities to one another. Local Streets provide direct multimodal access to other individual parcels throughout the city.

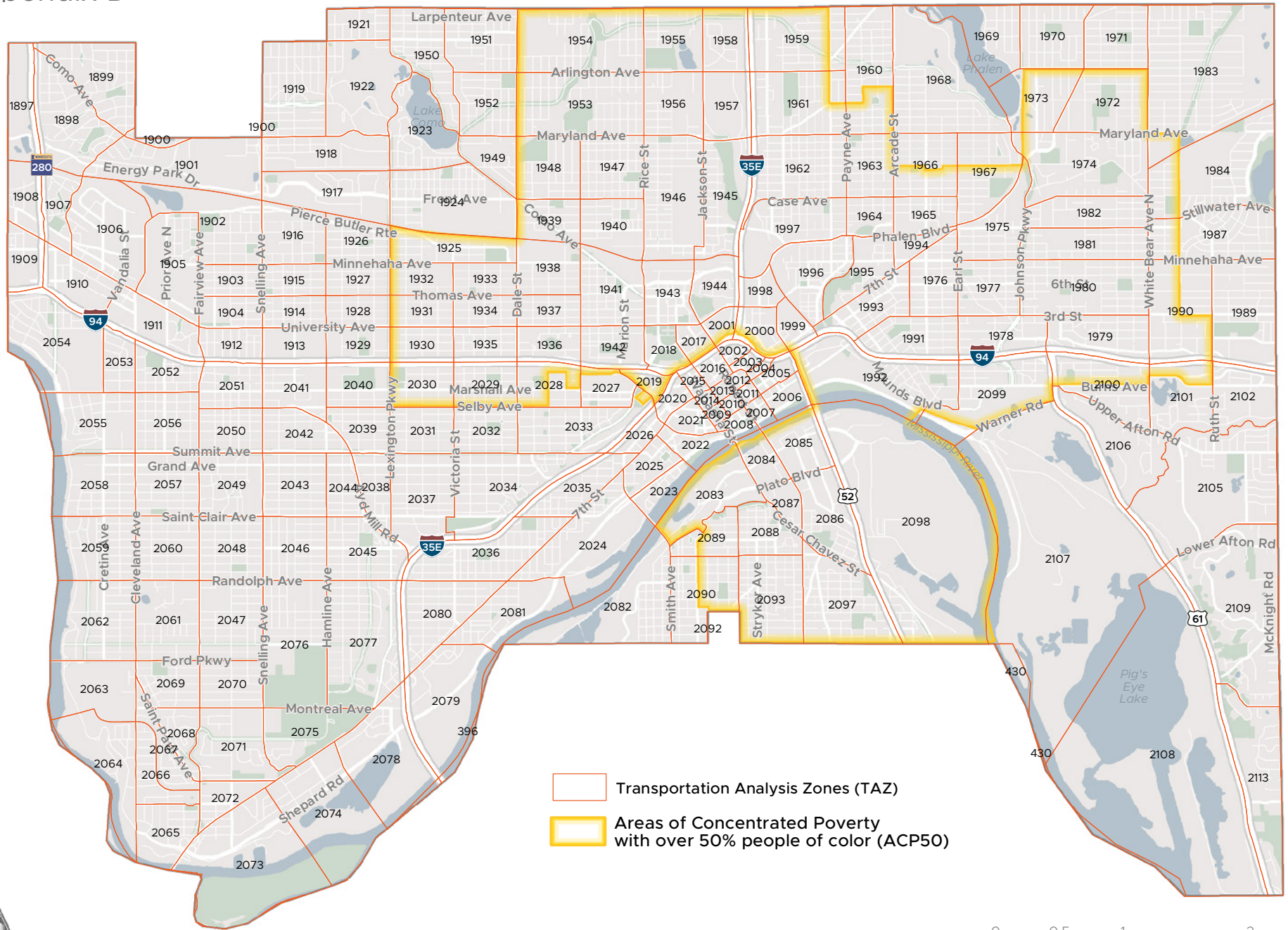
7. Transit Market Areas

Transit Market Areas are Metropolitan Council designations that indicate the likely cost effectiveness of transit service investments. Transit Market Area I has the potential transit ridership necessary to support the most intensive fixed-route transit service, typically providing higher frequencies, longer hours, and more options available outside of peak periods. Market Area II can support many of the same types of fixed-route transit as Market Area I, although usually at lower frequencies or shorter service spans. Market Area III primarily supports commuter express bus service with some fixed-route local service providing basic coverage. Market Area IV can support peak-period express bus services if a sufficient concentration of commuters likely to use transit service is located along a corridor.

8. Access Management

Access management guidelines are provided by the City's Street Design Manual.

Appendix D



- Transportation Analysis Zones (TAZ)
- Areas of Concentrated Poverty with over 50% people of color (ACP50)

0 0.5 1 2 Miles
Source: Metropolitan Council (2016, 2018)



Figure T-1: Transportation Analysis Zone (TAZ) Estimates

TAZ #	2010			2020			2030			2040		
	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP
1897	2	1	608	0	0	583	0	0	654	0	0	722
1898	1616	671	838	1683	722	933	1680	720	913	1702	718	909
1899	1848	654	729	2081	825	729	2622	1066	752	3383	1353	773
1900	269	133	0	546	228	0	1229	514	0	2134	899	0
1901	868	422	1267	1086	477	2151	1187	505	2479	1285	526	2785
1902	1435	607	302	1546	622	266	1482	596	251	1444	577	240
1903	1286	554	92	1382	569	68	1326	547	63	1295	532	60
1904	872	481	4337	1211	499	4432	1152	477	4259	1102	454	4140
1905	719	304	3281	783	323	4192	754	311	3892	720	295	3640
1906	890	505	3186	1190	534	4068	1188	505	4734	1194	478	5400
1907	582	276	436	584	293	590	582	278	689	589	264	789
1908	601	171	2415	409	203	3246	495	233	3525	585	261	3797
1909	976	543	1369	1142	567	1682	1137	539	1829	1144	514	1973
1910	43	32	2106	264	149	3487	561	317	4094	815	452	4656
1911	975	475	3212	1428	633	3182	1373	642	3754	1345	653	4316
1912	876	388	1368	1025	485	1563	979	452	1825	951	422	2076
1913	0	0	1551	108	48	2158	521	246	3138	1235	604	4258
1914	1197	506	457	1511	553	573	1542	581	651	1596	611	722
1915	1100	437	77	1269	470	112	1254	478	135	1241	480	158
1916	1668	457	1238	2111	488	1229	2224	492	1194	2342	495	1190
1917	1225	730	4745	1526	773	4454	1613	768	4293	1720	764	4200
1918	1241	600	652	1453	642	551	1442	640	613	1451	638	672

Figure T-1: Transportation Analysis Zone (TAZ) Estimates - Continued

TAZ #	2010			2020			2030			2040		
	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP
1919	3232	1204	1100	3442	1291	1207	3491	1299	1334	3573	1313	1453
1921	1175	617	60	1491	660	109	1480	658	128	1492	656	148
1922	334	145	241	354	155	122	342	150	141	332	143	158
1923	642	272	18	777	292	46	758	283	38	742	273	30
1924	2215	1030	138	2959	1114	148	2953	1114	128	2974	1116	110
1925	1196	529	484	1789	634	789	1730	669	827	1669	701	865
1926	1071	453	205	1199	482	265	1234	482	259	1292	480	260
1927	1106	444	174	1300	475	88	1264	474	118	1220	464	147
1928	1042	413	91	1214	450	212	1229	469	245	1259	487	277
1929	1064	573	1777	1534	691	2348	1484	706	2750	1168	574	3118
1930	954	325	357	1165	367	413	1105	388	488	1047	407	562
1931	1320	435	260	1478	511	292	1419	513	310	1368	515	328
1932	1044	367	124	1227	424	123	1150	415	135	1079	405	149
1933	1487	453	20	1561	539	37	1548	559	47	1534	578	59
1934	1871	478	732	1744	603	673	1874	678	710	2007	758	745
1935	1472	472	638	1695	535	624	1607	568	729	1510	591	828
1936	964	397	351	1188	497	303	1386	596	354	1547	678	405
1937	1572	408	533	1527	502	492	1655	580	470	1800	667	450
1938	1663	451	501	1597	543	533	1673	604	510	1706	654	490
1939	331	120	741	416	141	630	446	150	594	489	161	560
1940	1502	516	630	1678	568	614	1666	568	581	1660	563	550
1941	2584	761	2068	2638	887	2126	2646	947	2042	2650	1005	1970
1942	1599	612	704	1770	694	1555	1823	726	1694	1719	701	1824
1943	484	194	3762	572	232	3370	623	253	3264	658	268	3240
1944	1820	604	77	1607	696	376	1727	786	372	1836	877	370
1945	1307	399	334	1339	445	382	1361	459	394	1388	471	408
1946	2709	847	623	2681	947	437	2746	990	455	2821	1029	476
1947	2254	699	302	2305	775	434	2322	785	411	2351	793	390

Figure T-1: Transportation Analysis Zone (TAZ) Estimates - Continued

TAZ #	2010			2020			2030			2040		
	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP
1948	1696	590	653	1922	651	912	1921	655	870	1928	655	830
1949	931	468	180	1144	487	161	1081	470	176	1042	455	188
1950	1554	644	58	1605	683	99	1570	684	119	1569	687	138
1951	1801	760	18	1889	800	48	1830	793	71	1813	790	98
1952	1322	558	157	1383	588	124	1339	583	142	1326	580	158
1953	4129	1578	126	4276	1689	281	4303	1675	238	4386	1667	200
1954	3004	1305	1527	3552	1392	921	3563	1375	772	3615	1361	639
1955	1376	509	137	1322	556	185	1392	560	181	1467	563	180
1956	867	334	575	867	371	558	932	380	538	1007	390	530
1957	2	1	806	8	4	863	6	1	838	6	0	830
1958	2482	602	83	1690	724	67	2095	856	62	2509	980	60
1959	3970	1288	275	3813	1442	210	3980	1503	195	4169	1562	180
1960	2560	889	542	2581	986	655	2713	1030	630	2858	1068	610
1961	3737	1088	389	3316	1251	499	3604	1357	474	3925	1466	450
1962	4225	1266	548	4252	1448	587	4363	1526	563	4503	1605	550
1963	1975	536	1059	1844	626	970	1969	676	961	2088	722	959
1964	679	201	230	678	230	396	693	237	391	704	241	390
1965	1061	278	358	997	328	362	1067	354	340	1132	379	320
1966	2707	825	428	2845	932	494	2874	956	466	2900	978	440
1967	2512	805	15	2739	908	290	2831	946	507	2910	978	700
1968	1952	800	319	2091	889	356	2191	933	327	2314	971	300
1969	815	277	13	800	303	20	826	309	20	850	310	20
1970	2057	601	114	1767	678	90	1922	731	90	2084	778	90
1971	1759	728	298	2046	795	252	2100	814	255	2165	827	259
1972	2895	1050	42	2933	1150	40	3034	1186	48	3159	1218	59
1973	1368	414	55	1210	463	83	1303	493	81	1416	525	80
1974	4555	1520	735	4634	1650	760	4678	1693	728	4709	1732	710
1975	1755	496	155	1479	567	319	1631	617	339	1831	675	358

Figure T-1: Transportation Analysis Zone (TAZ) Estimates - Continued

TAZ #	2010			2020			2030			2040		
	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP
1976	2450	696	29	2289	784	72	2415	842	108	2561	904	147
1977	1924	574	105	1715	648	120	1846	691	133	1994	728	148
1978	2066	897	310	2587	979	393	2657	994	416	2741	1000	437
1979	1577	509	358	1504	566	580	1595	598	562	1725	633	550
1980	2641	810	310	2411	906	301	2572	961	288	2756	1009	280
1981	1740	578	122	1676	631	138	1718	644	133	1774	651	130
1982	2394	849	366	2578	918	711	2585	934	691	2585	948	680
1983	4959	1764	317	5080	1935	388	6235	2506	382	7389	3076	1380
1984	2527	893	415	2586	988	394	2771	1043	381	2999	1099	370
1987	3088	1218	78	3554	1359	86	3863	1453	77	4225	1547	70
1989	2585	1017	653	2717	1125	577	2902	1195	604	3116	1257	636
1990	2965	1189	355	3315	1320	688	3492	1370	556	3687	1411	430
1991	2482	746	123	2419	826	182	2475	860	226	2520	886	266
1992	1187	465	185	1146	510	35	1253	555	37	1404	614	40
1993	1715	606	1028	1906	670	1183	1968	693	1259	2015	704	1331
1994	35	11	116	36	11	322	25	5	502	9	0	663
1995	511	127	661	526	152	539	618	171	565	717	190	596
1996	1863	598	293	1843	684	439	1904	733	509	1938	775	573
1997	1696	530	1837	1700	607	1751	1741	638	1688	1784	668	1650
1998	353	3	526	366	4	481	385	4	455	353	0	430
1999	0	0	3892	0	0	3923	0	0	3735	0	0	3560
2000	504	28	765	524	28	678	552	19	638	514	8	600
2001	3	1	5258	30	9	5455	129	35	5267	256	70	5180
2002	198	143	110	465	228	188	656	300	245	860	368	295
2003	373	186	52	577	282	127	750	342	164	892	380	197
2004	484	298	560	848	380	975	921	372	1137	957	357	1293
2005	819	585	1332	1451	750	1591	1341	762	1878	1127	773	2150
2006	538	360	322	1042	488	236	1169	513	289	1186	489	345

Figure T-1: Transportation Analysis Zone (TAZ) Estimates - Continued

TAZ #	2010			2020			2030			2040		
	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP
2007	8	0	3536	61	14	4112	97	25	4220	150	40	3802
2008	522	364	4394	1287	512	4628	1221	561	4660	784	527	4830
2009	251	174	3743	607	241	3775	560	254	3720	337	226	3415
2010	0	0	3302	72	23	2795	302	83	2813	650	172	2852
2011	586	411	1868	1188	615	2683	1315	777	3156	1405	950	3601
2012	366	257	2373	775	347	1903	905	365	2350	1024	381	2775
2013	0	0	4878	67	21	5116	276	76	5143	588	155	5206
2014	126	111	1980	374	158	2304	360	180	2316	199	176	2344
2015	893	740	934	1389	818	984	1257	829	1160	994	789	1321
2016	918	641	1137	1748	1003	2276	1407	901	2459	1159	959	2280
2017	45	1	3275	53	0	3488	41	0	3532	28	1	3597
2018	0	0	2023	0	0	2201	0	0	2240	0	0	2292
2019	0	0	407	0	0	319	0	0	283	0	0	250
2020	500	144	2285	728	185	3062	898	247	3555	1094	320	4018
2021	22	15	5797	29	19	6662	28	19	6906	24	15	7183
2022	1	1	2509	119	42	2537	168	55	2765	57	12	2994
2023	1037	608	18	1451	651	43	1509	631	41	1572	612	40
2024	866	377	1595	1239	455	1302	1426	496	1419	1600	529	1543
2025	763	352	412	984	384	600	1037	376	956	1089	369	1315
2026	206	161	6035	405	205	6030	492	244	5838	567	273	5780
2027	861	464	655	1024	489	728	1038	478	720	1063	468	719
2028	1654	701	951	1574	742	769	1611	733	761	1669	725	759
2029	1991	817	91	2278	856	228	2235	838	222	2212	823	220
2030	1568	572	49	1618	602	33	1589	588	31	1573	576	30
2031	1447	565	406	1661	594	385	1631	581	373	1614	569	370
2032	1727	797	401	2219	835	285	2177	817	274	2153	801	270
2033	3170	1873	1149	3777	1958	1237	3563	1911	1222	3343	1581	1218
2034	3107	1604	1269	3532	1679	1271	3457	1629	1204	3440	1592	1140

Figure T-1: Transportation Analysis Zone (TAZ) Estimates - Continued

TAZ #	2010			2020			2030			2040		
	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP
2035	1543	635	496	1822	706	449	1871	721	468	1927	732	488
2036	2371	1056	477	2696	1122	706	2699	1108	710	2755	1095	718
2037	2586	1240	972	2696	1306	1235	2652	1277	1176	2657	1257	1120
2038	881	484	1225	1147	514	1674	1127	506	1584	1121	499	1500
2039	1310	502	45	1229	550	40	1271	569	35	1328	589	30
2040	1021	272	700	1106	289	669	1091	282	623	1092	274	580
2041	363	172	647	411	184	580	399	178	544	392	172	510
2042	1405	662	141	1506	694	175	1452	679	191	1420	666	208
2043	1942	842	478	1960	901	542	1947	909	574	1965	920	606
2044	989	473	283	1070	497	321	1031	485	340	1007	475	358
2045	2008	996	182	2268	1043	167	2147	1014	188	2079	991	208
2046	2192	980	202	2290	1055	240	2247	1065	264	2253	1080	287
2047	2192	953	474	2407	1010	458	2350	1007	449	2358	1005	450
2048	2192	912	209	2273	973	182	2221	980	190	2234	987	199
2049	2337	512	1376	2499	548	1428	2624	560	1377	2709	569	1350
2050	1642	701	194	1592	755	165	1619	767	176	1664	779	188
2051	1381	591	520	1348	635	743	1366	642	769	1397	649	796
2052	1239	537	97	1233	571	149	1232	569	143	1245	567	140
2053	697	256	63	631	281	85	653	290	81	689	299	80
2054	908	392	209	948	435	210	976	455	203	1009	469	200
2055	3514	644	2162	3940	714	2360	4015	708	2247	4118	701	2170
2056	2069	838	228	1953	908	219	2010	935	207	2095	963	200
2057	2090	962	191	2135	1020	169	2103	1016	159	2105	1014	150
2058	1759	543	89	1695	586	131	1709	581	125	1730	577	120
2059	1728	677	100	1701	721	94	1709	737	91	1741	754	90
2060	2258	940	259	2377	977	266	2304	970	261	2248	964	260
2061	2043	458	1578	2120	481	1546	2177	477	1488	2221	472	1450
2062	2643	1322	969	3122	1384	1042	3074	1372	939	3097	1361	850

Figure T-1: Transportation Analysis Zone (TAZ) Estimates - Continued

TAZ #	2010			2020			2030			2040		
	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP
2063	636	464	1312	2068	1031	2271	5317	2850	3254	8763	4770	3019
2064	380	166	2	635	316	91	811	397	162	790	377	243
2065	842	360	1952	973	382	952	940	367	981	923	352	1010
2066	736	337	26	831	356	113	793	341	133	773	326	156
2067	993	534	42	1305	564	120	1249	543	137	1223	525	156
2068	562	223	3	560	242	55	547	237	70	544	231	88
2069	1042	466	256	1143	494	693	1096	476	709	1073	460	728
2070	1187	474	115	1313	508	145	1330	512	157	1349	510	169
2071	1234	466	332	1364	505	289	1421	522	312	1497	540	337
2072	789	352	359	974	379	420	998	386	440	1030	391	458
2073	2835	1336	306	2874	1510	502	3238	1619	872	3662	1732	1230
2074	1561	1033	796	2070	1169	934	2092	1262	1272	2145	1360	1609
2075	116	45	40	110	51	47	101	47	43	92	42	40
2076	1612	759	474	1780	808	454	1702	800	426	1665	795	400
2077	2675	1146	615	2696	1254	592	2695	1300	555	2747	1351	520
2078	797	512	966	1161	557	1352	1255	570	1733	1359	581	2102
2079	253	136	752	1005	383	1173	1203	484	1561	1451	557	1937
2080	2372	1002	319	2389	1073	342	2412	1086	339	2465	1096	339
2081	874	360	273	1480	623	559	1304	544	975	1167	481	1377
2082	1155	464	92	1309	500	104	1334	512	97	1379	521	90
2083	82	50	1120	139	72	1108	176	94	980	200	108	860
2084	0	0	2009	772	242	2177	874	273	2238	633	191	2309
2085	0	0	2942	0	0	3287	0	0	3485	0	0	3685
2086	1517	459	1848	1490	524	1871	1537	574	1915	1582	615	1962
2087	626	172	560	566	203	629	657	228	651	766	247	677
2088	1731	683	615	2222	726	609	2276	729	650	2349	732	685
2089	1072	409	8	1128	435	14	1141	434	21	1171	433	29
2090	2328	833	129	2288	881	146	2307	877	171	2350	871	198

Figure T-1: Transportation Analysis Zone (TAZ) Estimates - Continued

TAZ #	2010			2020			2030			2040		
	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP	POP	HH	EMP
2093	2589	957	215	2635	1016	161	2675	1020	188	2755	1024	217
2097	3121	1010	142	3322	1105	163	3425	1135	222	3549	1160	284
2098	738	239	1299	815	282	873	897	313	575	978	335	290
2099	1348	529	404	1354	569	480	1395	574	444	1451	578	410
2100	1687	649	259	1742	701	260	1786	710	250	1847	716	240
2101	1148	417	728	1240	502	628	1496	585	655	1737	654	685
2102	1996	1053	206	2260	1118	210	2220	1105	224	2149	1079	238
2105	2722	946	129	2744	1008	39	2786	1015	24	2807	1005	10
2106	485	183	2	493	213	15	557	234	13	618	250	10
2107	0	0	134	0	0	297	0	0	186	0	0	80
2108	0	0	500	0	0	600	0	0	230	0	0	130
2109	2938	1005	289	2965	1080	153	2999	1094	100	3035	1103	50
2113	625	213	132	1189	384	94	1848	596	97	2349	754	99