CMP
Congestion Management Process

SRTC
SPOKANE REGIONAL TRANSPORTATION COUNCIL

2023 CMP UPDATE

REGIONAL OBJECTIVES + CMP NETWORK

Transportation Advisory Committee

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May 24, 2023

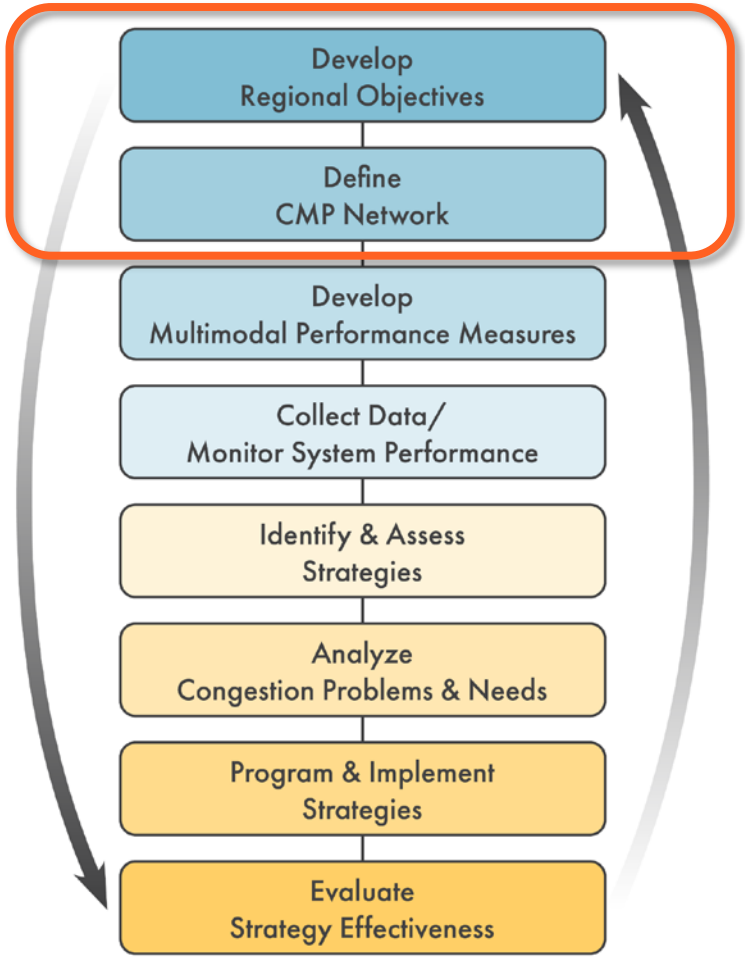
CONGESTION MANAGEMENT PROCESS <CMP>

- Systematic regional approach to managing congestion
  - Data collection & analysis
  - Identifying problems & needs
  - Developing & implementing strategies
  - Ongoing monitoring & evaluation
- Federally required for all urban areas with a population over 200,000
  - One of five federally mandated MPO planning documents (MTP, TIP, UPWP, Public Participation Plan, CMP)
  - Last SRTC update in 2014

PURPOSE OF THE CMP

- Manage regional travel demand
- Reduce single occupancy vehicle (SOV) trips
- Improve the transportation system's efficiency
- Maximize transportation funds
- Justify additional capacity when it's needed
- Ensure regional coordination

CMP STEPS



- FHWA's 8-step Congestion Management Process Model

STEP 1: DEVELOPING REGIONAL OBJECTIVES

MTP Guiding Principles	Emphasis Areas in Associated MTP Policies	CMP Regional Objectives
Economic Vitality	Regional Activity Centers • Areas of Potential Economic Development • Freight Movement	Raise awareness that congestion is related to economic vitality and ensure that the benefits of congestion outweigh the disadvantages
Cooperation & Leadership	Provide a Forum for Transportation Planning & Funding • Public Processes & Involvement • Promote Regional Interests • Data Coordination	Sustain coordination and follow-through with a multijurisdictional CMP working group
Stewardship	Protecting the Environment & Minimizing Negative Impacts • Cost Effective Investments • Fiscal Constraint	Invest in projects that maximize the use of existing facilities across modes in identified CMP corridors

DEVELOPING REGIONAL OBJECTIVES <CONTINUED>

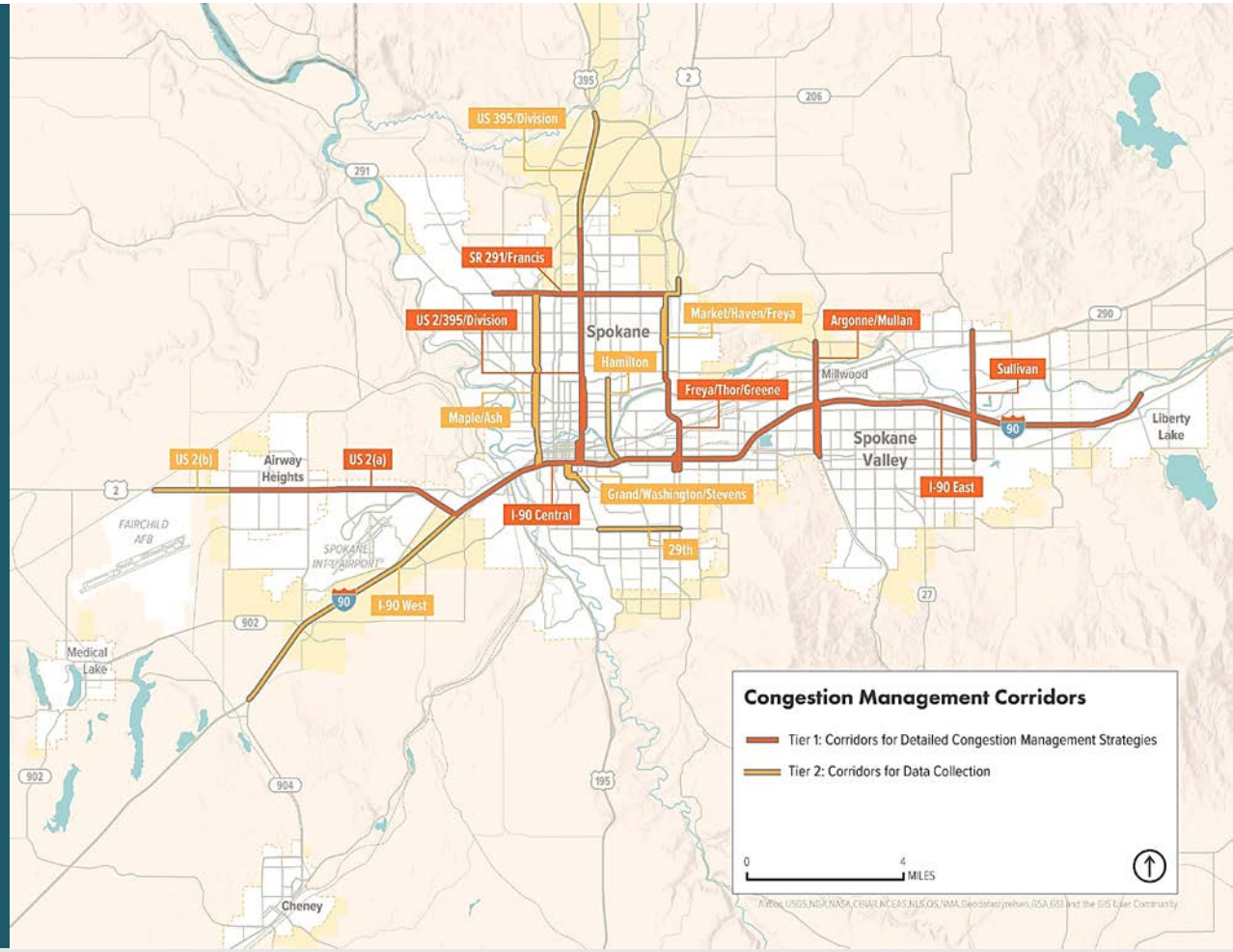
MTP Guiding Principles	Emphasis Areas in Associated MTP Policies	CMP Regional Objectives
System Operations, Maintenance & Preservation	Strategic Investment & Cost-Effective Strategies • Maximizing Operations & Physical Condition of the Transportation Network	Pursuing solutions that are low cost/high benefit toward maintaining and preserving reliable transportation corridors and networks
Quality of Life	Improve Choice & Mobility • Complete Streets & Multimodal Connectivity • Transit Service & Frequency • Reducing SOV Trips • Access for All • Sense of Place	Accessible, multi-modal transportation for all abilities; facilities should blend in with or enhance the human environment (context sensitive design) and limit impacts to the natural environment Prioritize future investments to align with regional priority networks to improve connectivity and mobility
Safety & Security	Improve Existing Safety Deficiencies • Infrastructure & Operational Strategies for Emergency Response • Outreach & Education	Improve safety and reduce non-recurring congestion by reducing collisions

REGIONAL OBJECTIVES CONSIDERATIONS

- Economic Vitality
  - Revise current objective to clarify that congestion is not beneficial in and of itself, however, there are economic benefits that are correlated with congestion
- Resiliency & System Redundancy
  - Add language emphasizing resiliency and system redundancy as a regional objective of the CMP

STEP 2: DEFINING THE CMP NETWORK

- Tier 1 Corridors
  - ➢ Most important corridors selected for detailed congestion management strategies
- Tier 2 Corridors
  - ➢ Regionally important corridors selected for monitoring
  - ➢ Strategies not assigned until conditions worsen



TIER 2 CORRIDOR DATA COLLECTION

CMP TIER 2 CORRIDOR - MAPLE / ASH

Transportation Inventory

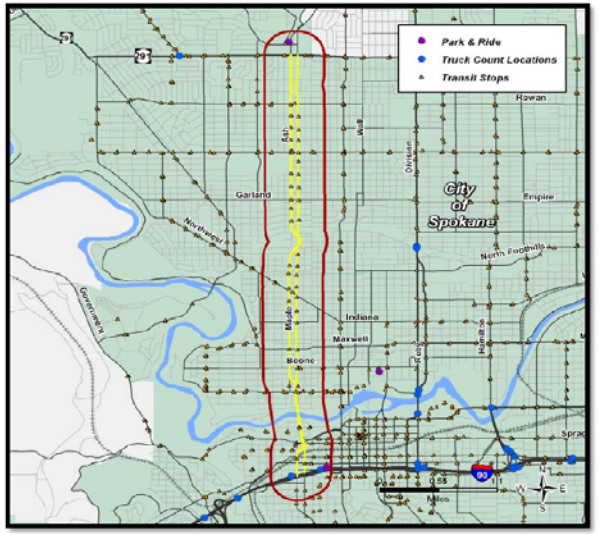
Measure	Statistics	Data Year
AWDT[1] Range	26,200-48,700	2011
AADT[2] Average	34,454	2011
Type of Facility (ies)	Principal Arterial	2013
Peak Period Maximum Load Factor - Bus	0.30	2013
Peak Period Load Factor on Corridor	0.26	2013
Number of Buses per Peak Hour	4 to 8	2013
Number of Park & Rides / % Usage	Jefferson - 100%, Five Mile - 80%	2013
Daily Truck % at Select Locations (FGTS)	NA (T-2)	2011 (2013)
Average Collision Rate/Million VMT[3]	2.13	2010-2012
Avg Travel Time Index NB AM/PM (Peak)[4]	1.13/1.16 (1.18/1.22)	Apr-12
Avg Travel Time Index SB AM/PM (Peak)	1.13/1.12 (1.22/1.20)	Apr-12
Avg Planning Time Index NB AM/PM (Peak)	1.24/1.32 (1.32/1.47)	Apr-12
Avg Planning Time Index SB AM/PM (Peak)	1.24/1.19 (1.43/1.31)	Apr-12
Bike Network	100 % shared roadway	2013
Percent Existing Sidewalk Availability	78.35%	2013
Corridor Length (centerline miles)	4.57	

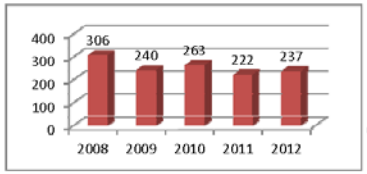
[1]AWDT - Average Weekday Daily Traffic (Bi-Directional)

[2]AADT = Average Annual Daily Traffic (Bi-Directional)

[3]VMT = Vehicle Miles Traveled (3 year collisions/VMT)

[4]Peak Segment w/in Corridor: INRIX Travel Time Index (AM/PM) Tuesday-Thursday





5 Year Collision 2008-2012	
Fatal	5
Serious	16

Source: WSDOT, All Years. Includes all reported crashes along all Arterials/Freeways located within the 150 ft buffer on identified corridor.

Appendix A - CMP Corridor Profiles LB STA.xlsx

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TIER 1 CORRIDOR DATA COLLECTION

CMP TIER 1 CORRIDOR - ARGONNE / MULLAN

Transportation Inventory

Measure	Statistics	Data Year
AWDT[1] Range	21,000 - 37,900	2011
AADT[2] Average	27,923	2011
Type of Facility (ies)	Principal Arterial	2013
Peak Period Maximum Load Factor - Bus	0.538	2013
Peak Period Load Factor on Corridor	0.467 (two routes)	2013
Number of Buses per Peak Hour	4 to 6	2013
Number of Park & Rides / % Usage	N/A	2013
Average Daily Truck % at Select Locations (FGTS)	5.42 - 8.68% (SV) (T-1 & T-2)	2011 (2013)
Average Collision Rate/Million VMT[3]	2.34	2010-2012
Avg Travel Time Index NB AM/PM (Peak)[4]	1.11/1.15 (1.28/1.22)	Apr-12
Avg Travel Time Index SB AM/PM (Peak)	1.11/1.05 (1.29/1.14)	Apr-12
Avg Planning Time Index NB AM/PM (Peak)[4]	1.35/1.39 (1.42/1.70)	Apr-12
Avg Planning Time Index SB AM/PM (Peak)	1.37/1.28 (1.44/1.42)	Apr-12
Bike Network	100% Shared Roadway	2013
Percent Existing Sidewalk Availability	92.31%	2013
Corridor Length (centerline miles)	3.01	

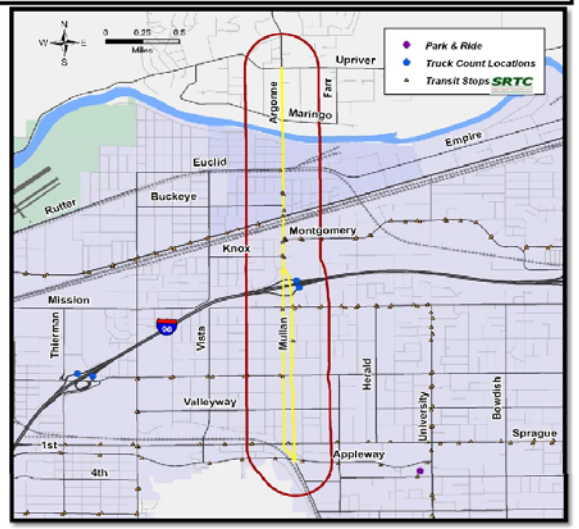
Demographics

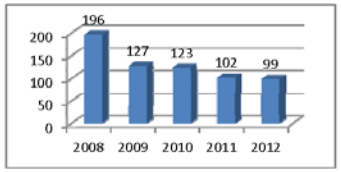
Measure	Statistics	Data Year
Gross Population Density (Sq Mile)	2,320	2010
Gross Employment Density (Sq Mile)	3,558	2010
Est. Pct of Population Below Poverty Level	14.2%	ACS 07-11[5]
Est. Pct of HU w/ No Veh Avail	7.0%	ACS 07-11
Pct of Pop that is Minority	12.1%	2010
Pct of Pop Age 65+	14.8%	2010
Major Activity Center	Transit (1), Freight (1), Mixed (0)	2010

Trends

Measure	Statistics		Data Year
Gross Population Change (2000 - 2010)	170		2000 - 2010
Gross Employment Change (2000 - 2010)	3,004		2000 - 2010
AWDT Change (2003 - 2011)	20,200 21,000 3.96%	35,600 37,900 6.46%	2003 (AM/PM) 2011 (AM/PM) ↑/↑
Average Peak Travel Speed	26.69	26.26	2009 (AM/PM)
	28.94	28.24	2013 (AM/PM)
(Percent change)	8.43%	7.54%	increase
Transit Usage Change			

[1]AWDT - Average Weekday Daily Traffic (Bi-Directional)
[2]AADT = Average Annual Daily Traffic (Bi-Directional)
[3]VMT = Vehicle Miles Traveled (3 year collisions/VMT)
[4]Peak Segment w/in Corridor: INRIX Travel/Planning Time Index-(Tuesday-Thursday)
[5]ACS - American Community Survey 5 year data





5 Year Collision 2008-2012	
Fatal	1
Serious	10

Source: WSDOT, All Years. Includes all reported crashes along all Arterials/Freeways located within the 150 ft buffer on identified corridor.

Appendix A - CMP Corridor Profiles LB STA.xlsx

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TIER 1 CORRIDOR STRATEGIES

Argonne / Mullan

CMP Strategies Recommended for Corridor

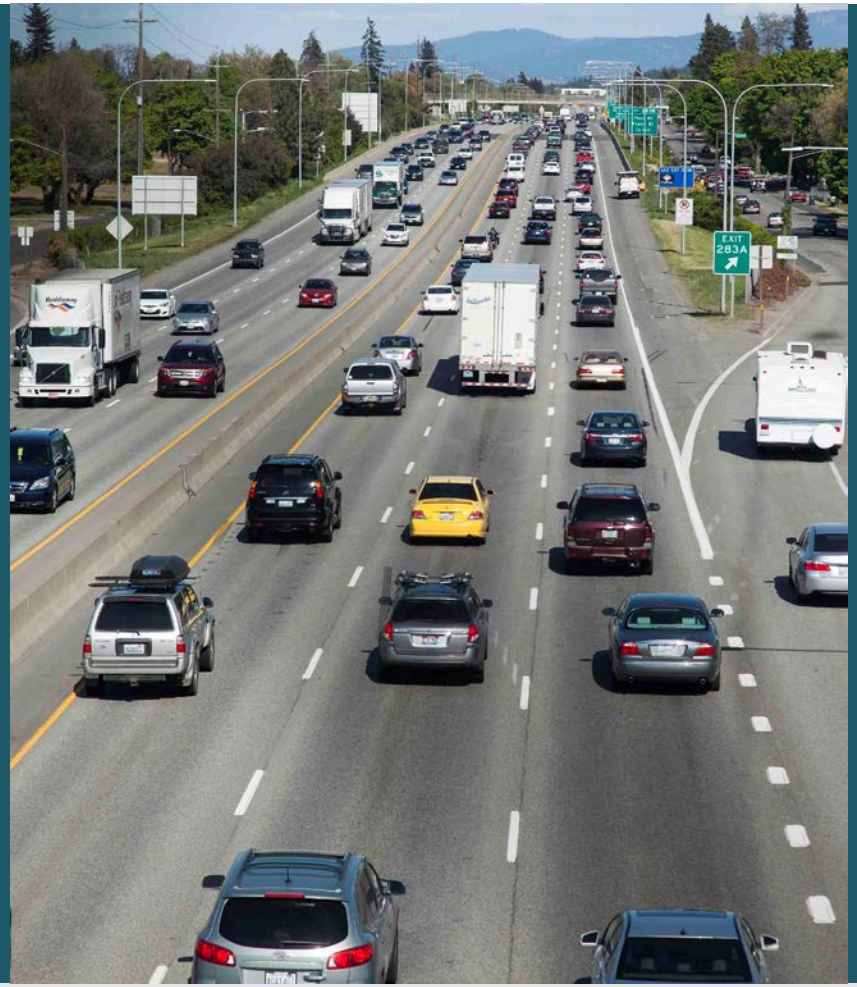
Category	Strategy	Notes
Travel Demand Management (TDM)	Walking Improvements	Sidewalks, crosswalks, paths, crossing signals, ADA accessibility
TDM	Biking Improvements	Bike lanes, shared-use markings, route signage, intersection improvements, Centennial Trail undercrossing
Transit Improvements	Transit Service Expansion	New bus routes, extension of existing service, increased frequency
Transit	General Infrastructure Improvements	Stop improvements, enhanced safety, pedestrian access, improved fare collection
Transit	Park and Ride Facilities – New or Improved	Future Argonne/I-90 Park & Ride
Operational Improvements, ITS, TSM	Signal Improvements	Expanded timing/coordination, modernization, adapt to traffic volumes, cross traffic treatment (at Montgomery, Upriver, and through Millwood)
Operational	Communication Networks	Traffic cameras, base ITS fiber optic
Operational	Turning Movement Enhancements	Left-turn lights, channelization, center turn lane, left-turn pockets, roundabouts
Operational	Limited Intersection Improvements	Lane restriping/reassignment, intersection widening
Roadway Capacity	Adding Capacity/Widening	Add a land on southbound Argonne I-90 Overpass

CMP Strategies Recommended for Regional Implementation

Category	Strategy	Notes
Transportation Demand Management (TDM)	Public Education Campaigns	Mode shift or safety campaigns
TDM	Universal Transit Access Pass Program	Cooperative pass among businesses, school, colleges or corridor pass program
TDM	Promotion of Regional Commute Trip Reduction (CTR) Program	Continued support of CTR or improved or targeted CTR program
Transit Improvements	Transit Vehicles and Traveler Information Services	Vehicle detection and monitoring devices, communications infrastructure, GPS, mobile device apps and online public info sources
Operational Improvements, ITS, TSM	Communications networks with roadway surveillance connecting to SRTMC	Roadway surveillance and control system, base ITS infrastructure (fiber, telemetry)

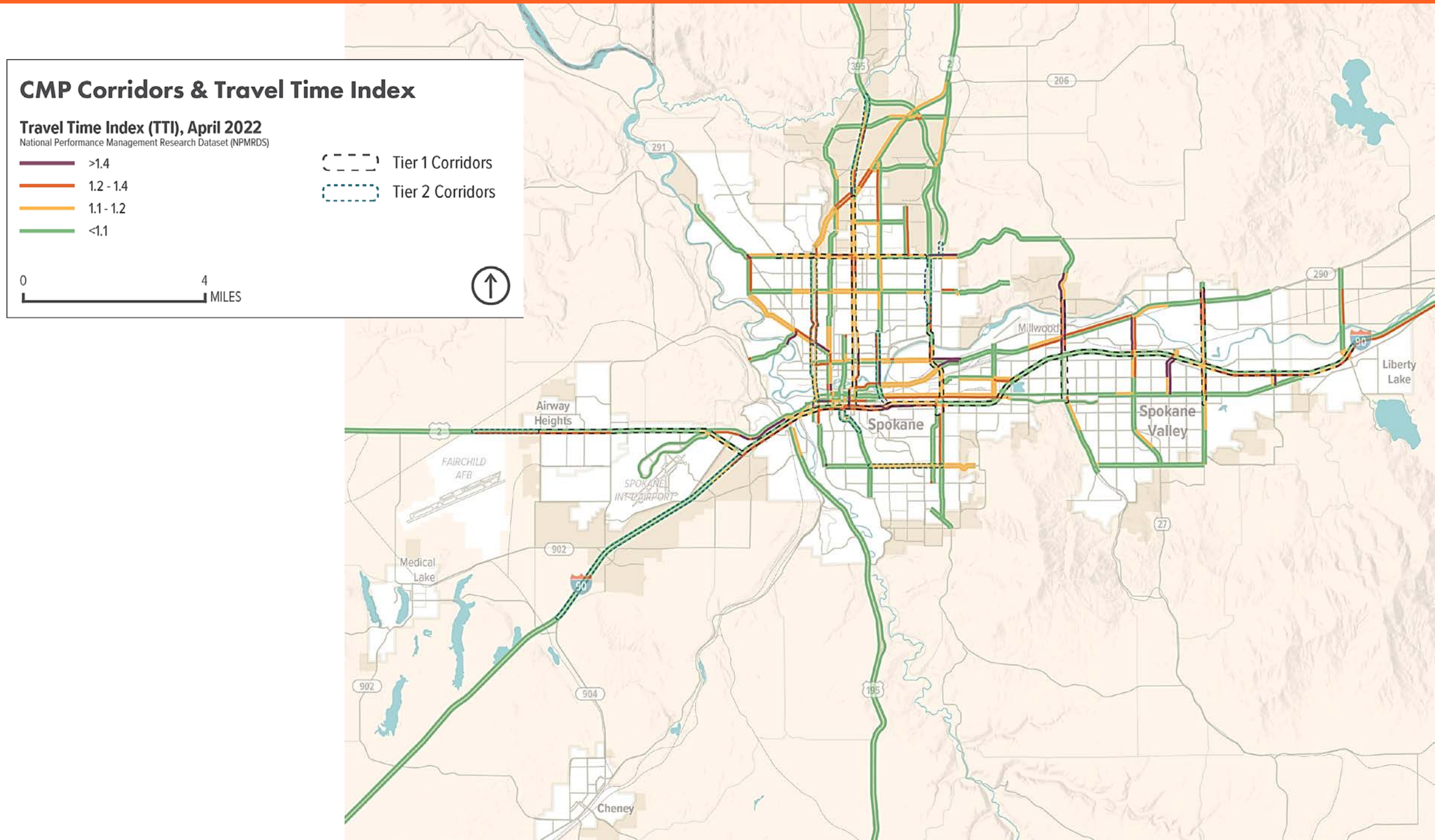
ANALYZING THE NETWORK

- Existing Congestion & Travel Reliability
  - Travel Time Index (TTI)
  - Planning Time Index (PTI)
  - Level of Travel Time Reliability (LOTTR)
- Travel Demand
- Crash Rates
- Regional Connectivity



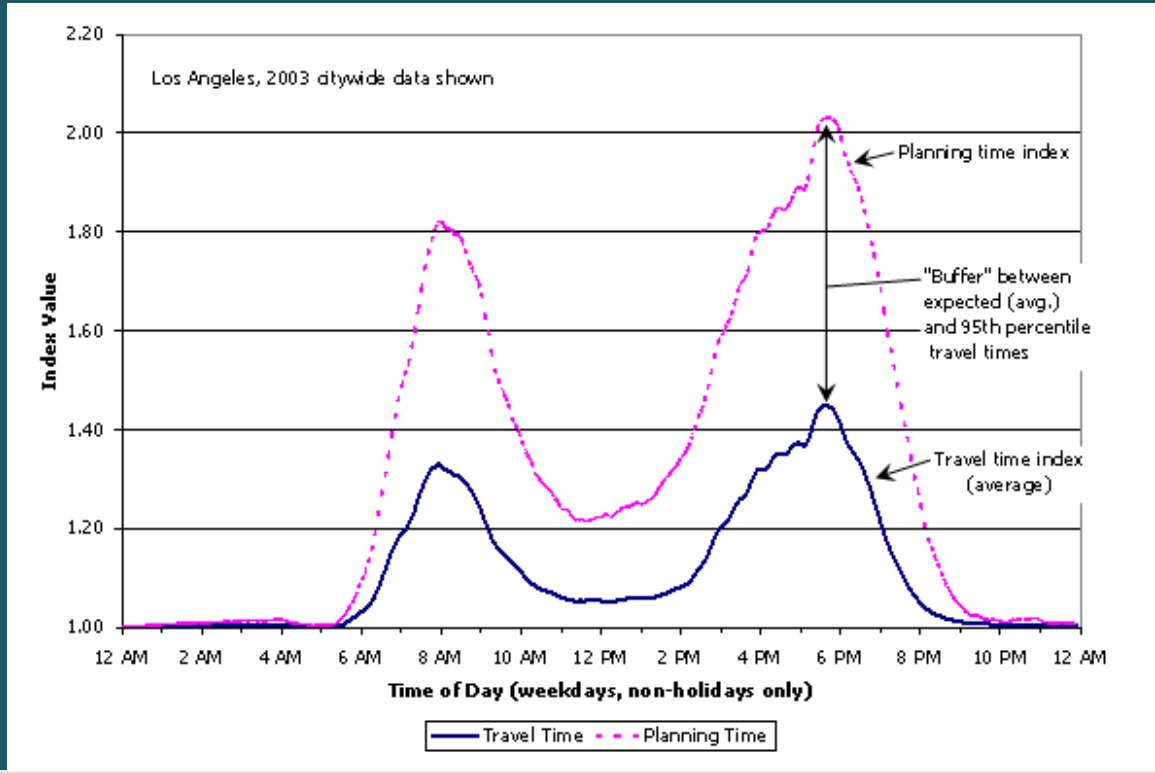
TRAVEL TIME INDEX <TTI>

- TTI = Congested Travel Time ÷ Free Flow Travel Time
- Current CMP Methodology:
  - Average TTI for AM & PM Peaks (7-9 AM & 4-6 PM) along corridor
  - A threshold TTI value of 1.2 was used to identify congested corridors


CMP Corridors & Travel Time Index
Travel Time Index (TTI), April 2022
National Performance Management Research Dataset (NPMRDS)
>1.4
1.2 - 1.4
1.1 - 1.2
<1.1
Tier 1 Corridors
Tier 2 Corridors
0
4
MILES
Airway Heights
FAIRCHILD AFB
SPOKANE INTL AIRPORT
Medical Lake
Cheney
Spokane
Millwood
Spokane Valley
Liberty Lake
395
2
206
291
290
90
902
904
195
27

PLANNING TIME INDEX <PTI>

- PTI = 95th Percentile Travel Time ÷ Free Flow Travel Time
  - ➢ Indicates how much extra travel time one should account for (i.e., reliability)



LEVEL OF TRAVEL TIME RELIABILITY <LOTTR>

- Comparable to PTI—indicates how much extra time is needed to arrive on time 80% of the time
- LOTTR = Longer Travel Times (80th Percentile) ÷ Normal Travel Times (50th Percentile)
- Used in calculation of MAP 21 PM3 Federal performance measure for congestion
  - Percent of person miles on National Highway System (NHS) that are considered reliable
  - Defines unreliable as a LOTTR over 1.5

CMP Corridors & Travel Time Reliability

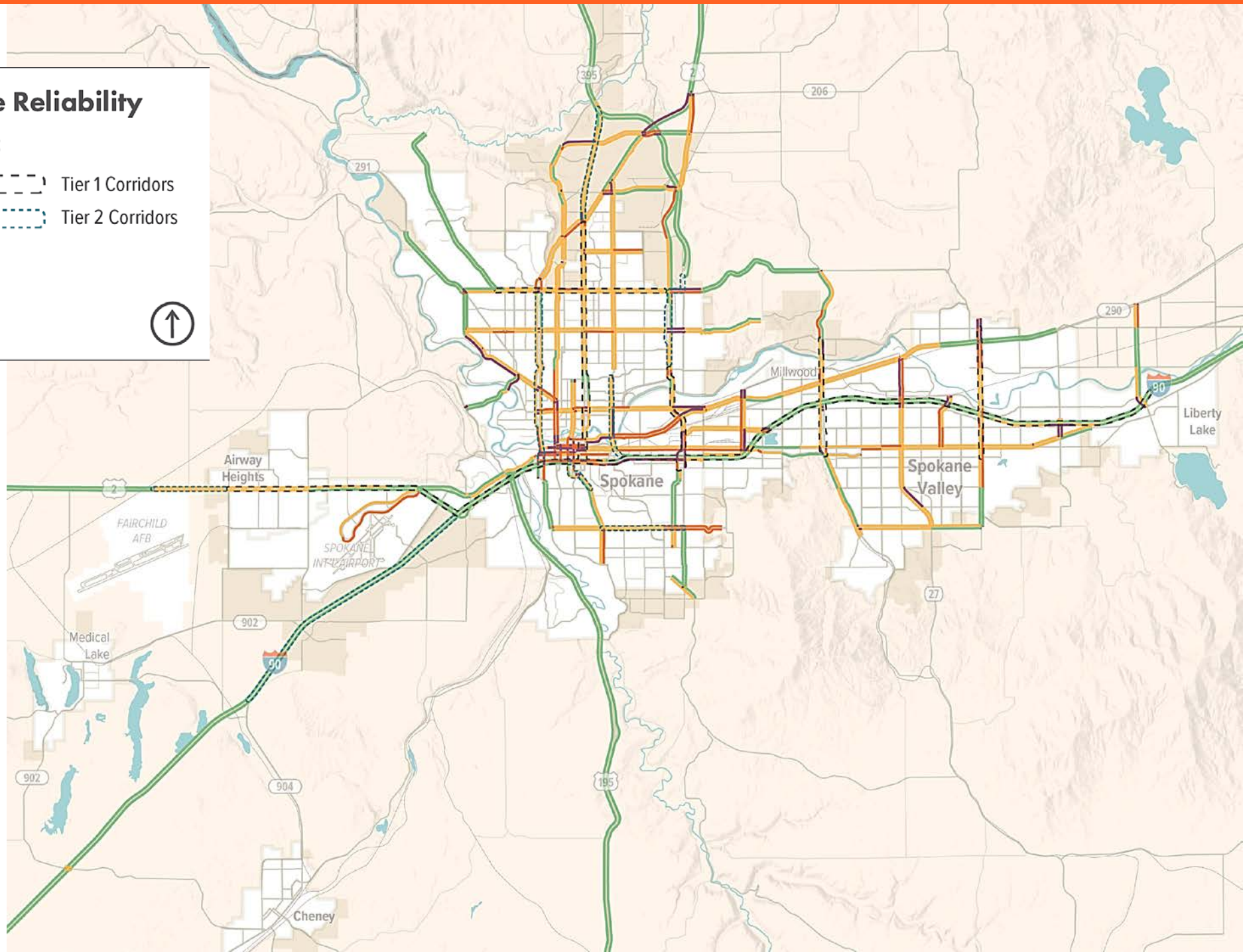
Level of Travel Time Reliability (LOTTR), 2022

National Performance Management Research Dataset (NPMRDS)

- >1.6
- 1.4 - 1.6
- 1.2 - 1.4
- <1.2

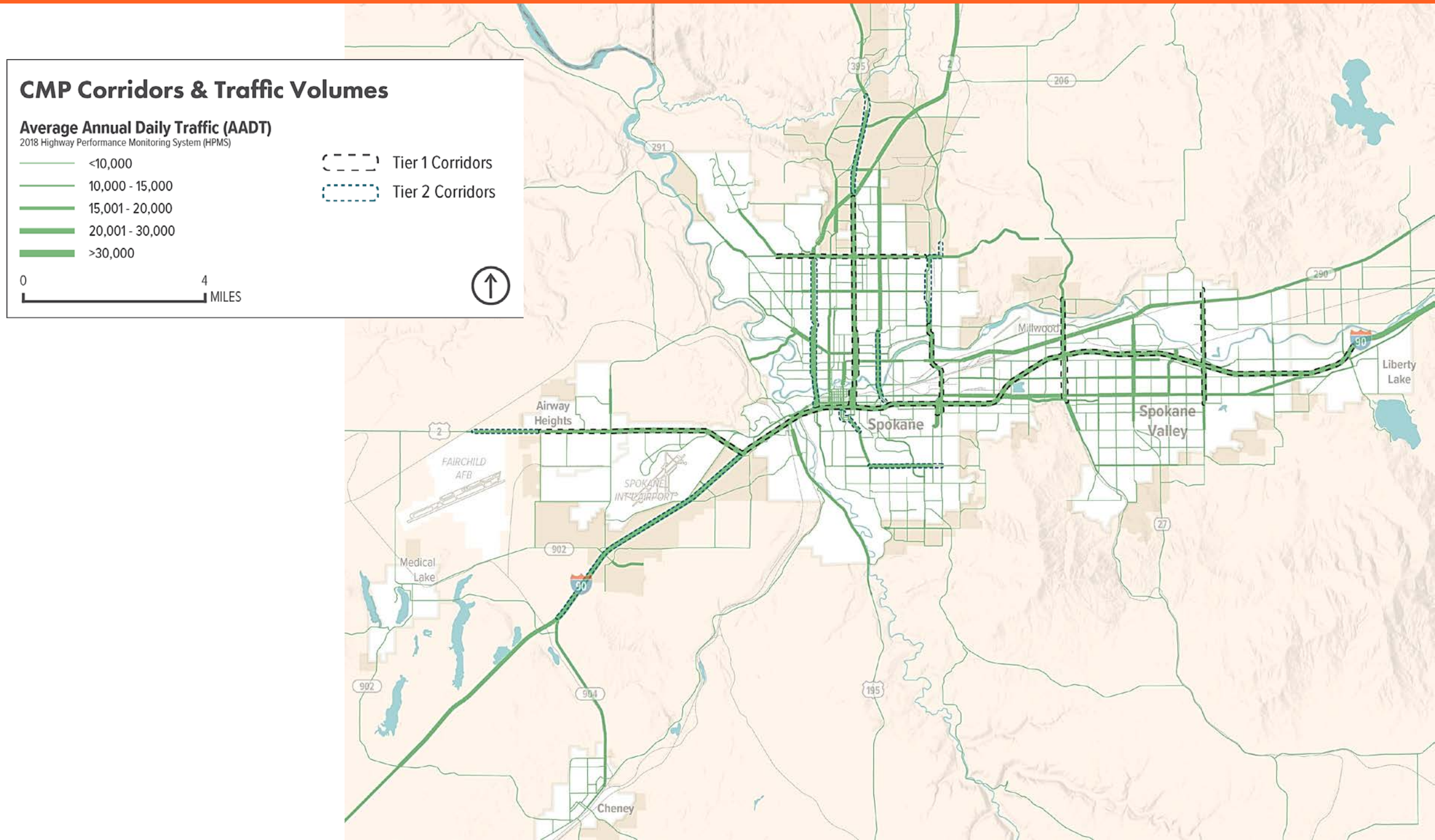
- Tier 1 Corridors
- Tier 2 Corridors

0 4 MILES



TRAVEL DEMAND

- Current CMP Travel Demand Measures:
  - Average Annual Daily Traffic (AADT)
  - Average Weekday Daily Traffic (AWDT)
- Typical CMP Corridor Volumes
  - Highways & I-90: >30,000 AADT
  - Other Principal Arterials: >20,000 AADT

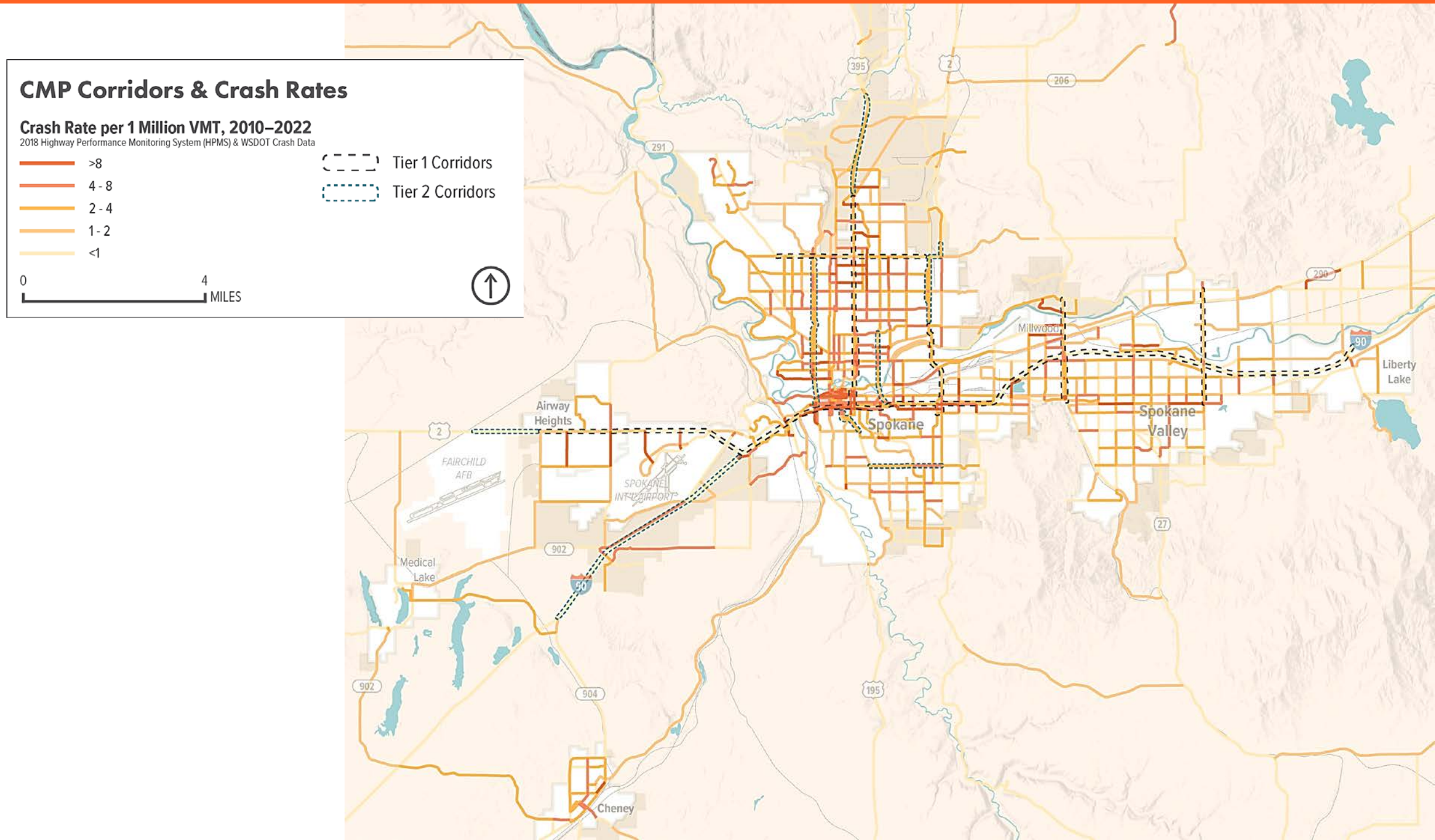

CMP Corridors & Traffic Volumes
Average Annual Daily Traffic (AADT)
2018 Highway Performance Monitoring System (HPMS)
<10,000
10,000 - 15,000
15,001 - 20,000
20,001 - 30,000
>30,000
Tier 1 Corridors
Tier 2 Corridors
0
4
MILES
Airway Heights
FAIRCHILD AFB
SPOKANE INTL AIRPORT
Medical Lake
Cheney
Spokane
Millwood
Spokane Valley
Liberty Lake
395
2
206
291
290
90
27
902
904
195

CRASH RATE

- Significant source of nonrecurring congestion
- Number of crashes per million vehicle miles traveled (VMT)
  - 2014 CMP found I-90 crash rates were low due to high traffic volumes
- Considering crash severity
  - Do more severe crashes generally cause more delay?

CRASH SEVERITY RATE

- Crash severity rates are like crash rates but give extra weight to crashes resulting in injuries or fatalities
  - Fatal or serious injury crash = 76.8 equivalent property damage only (EPDO) crashes
  - Evident or possible injury crash = 8.4 EPDO crashes


CMP Corridors & Crash Rates
Crash Rate per 1 Million VMT, 2010–2022
2018 Highway Performance Monitoring System (HPMS) & WSDOT Crash Data
>8
4 - 8
2 - 4
1 - 2
<1
Tier 1 Corridors
Tier 2 Corridors
0
4
MILES
Airway Heights
Spokane
Millwood
Spokane Valley
Liberty Lake
Medical Lake
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FAIRCHILD AFB
SPOKANE INTL AIRPORT
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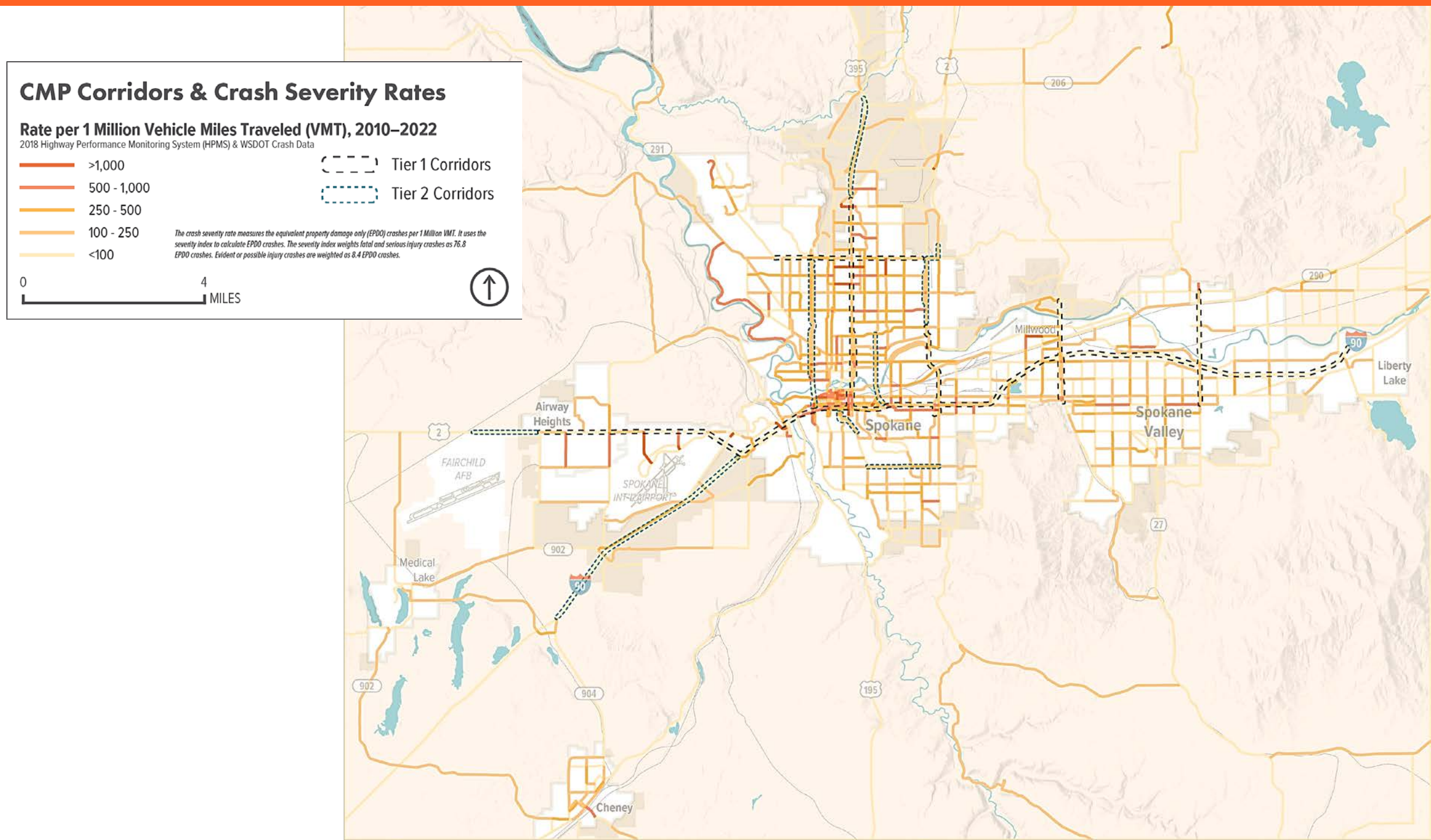
CMP Corridors & Crash Severity Rates
Rate per 1 Million Vehicle Miles Traveled (VMT), 2010–2022
2018 Highway Performance Monitoring System (HPMS) & WSDOT Crash Data
>1,000
500 - 1,000
250 - 500
100 - 250
<100
Tier 1 Corridors
Tier 2 Corridors
The crash severity rate measures the equivalent property damage only (EPDO) crashes per 1 Million VMT. It uses the severity index to calculate EPDO crashes. The severity index weights fatal and serious injury crashes as 76.8 EPDO crashes. Evident or possible injury crashes are weighted as 8.4 EPDO crashes.
0
4
MILES
Airway Heights
FAIRCHILD AFB
SPOKANE INT'L AIRPORT
Medical Lake
Cheney
Spokane
Millwood
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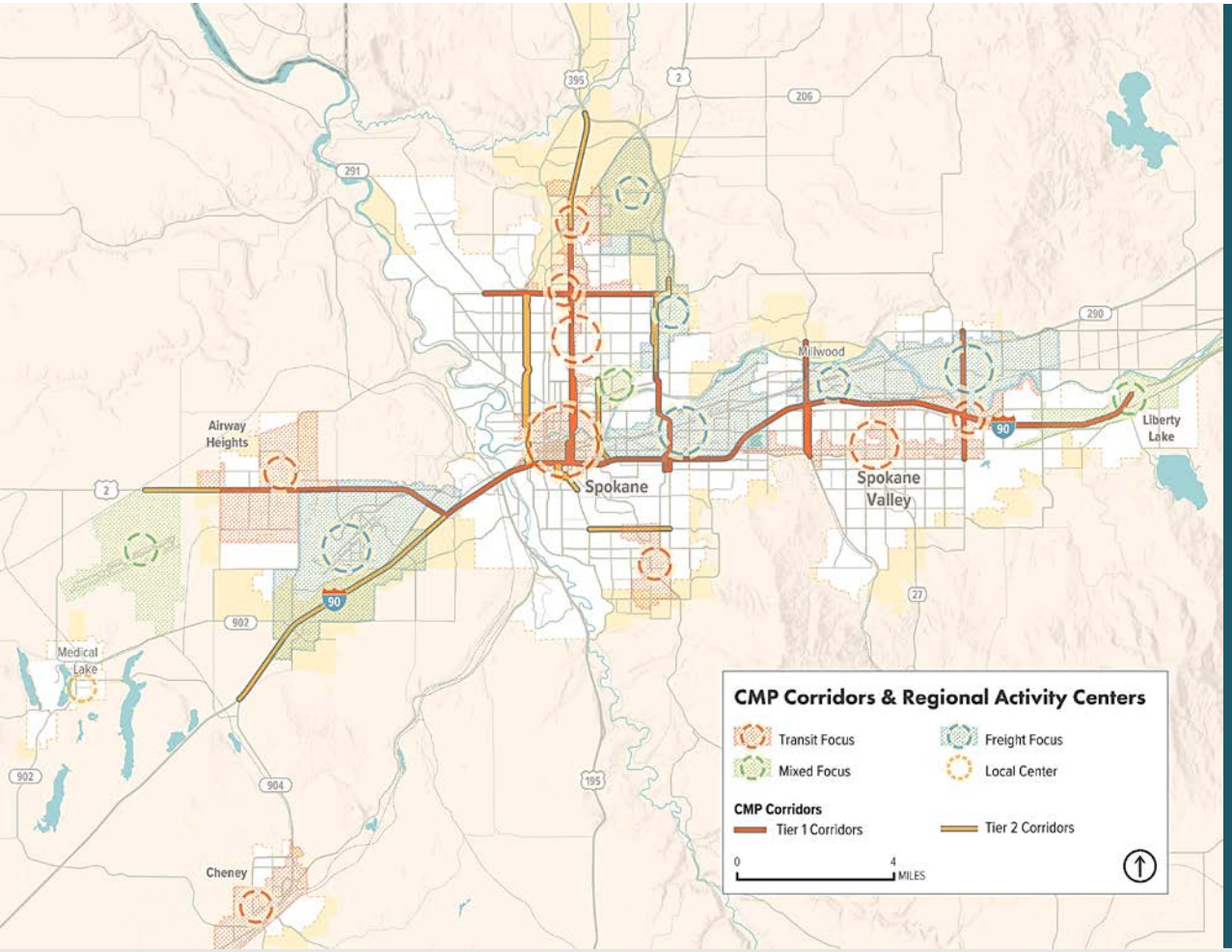
REGIONAL CONNECTIVITY



- Regional connectivity considerations
  - Regional Activity Centers & other key destinations
  - High Performance Transit network
  - Areas with high projected population & employment growth

NEXT STEPS

- Return to TTC / TAC in June to request recommendation of draft regional objectives + draft CMP network

CMP
Congestion Management Process

SRTC
SPOKANE REGIONAL TRANSPORTATION COUNCIL

QUESTIONS?

Transportation Advisory Committee
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