SOUTH METRO FIRE DEPARTMENT
1650 Humboldt Avenue • West St. Paul MN 55118
Phone: (651) 552-4176 • FAX: (651) 552-4195
www.southmetrofire.com

AGENDA

BOARD OF DIRECTORS MEETING

Meeting Date: February 21, 2024, at 6:30 PM
Meeting Place: West St Paul, City Council Chambers

I. Roll Call
Board Members: Berry, Francis, Napier, Seaberg, Wippermann

II. Adopt Agenda

III. Communications/Recognitions
a. Board and City Council Introductions
b. Weise Resignation

IV. Consent Agenda
a. January 17, 2024, Meeting Minutes
b. January 2024 List of Claims
c. January 2024 Bank Reconciliation
d. January 2024 Month End Budget Report
e. January 2024 Run Summary Report

V. Committee Reports
a. None

VI. Agenda Items
a. Standards of Cover Study Presentation

VII. Public Comment

VIII. Adjourn

Next Regular Meeting – March 20, 2024, West St. Paul

Badging Ceremony in the West St. Paul Council Chambers Following the Board Meeting

Chief Mark Juelfs

1650 Humboldt Ave

West St. Paul MN, 55118

02/13/2024

Chief Juelfs,

This is my letter of resignation. My final shift will be on February 28th 2024. I want to thank you for allowing me to work for such a wonderful department. I enjoyed serving both of the communities of West St. Paul and South St. Paul. Even though my time here was short, I learned so much and shared so many great memories with the fellow firefighters. I look forward to seeing all of you in the future.

Zach Weise

X

Zach Weise

MINUTES

SOUTH METRO FIRE DEPARTMENT BOARD OF DIRECTORS

Wednesday, January 17, 2024

West St Paul Lobby Conference Room

Members Present: James Francis, Tom Seaberg, Dennis Wippermann, Dave Napier, Wendy Berry

Also Present: Mark Juelfs, Deb Wheeler, P Noack, T Johnson, M Nelson

The meeting was called to order at 4:30 p.m.

ADOPT AGENDA

Motion was made to adopt the Agenda by Berry; seconded by Seaberg
Motion carried.

COMMUNICATIONS/RECOGNITIONS

A Thank You card from Moreland Elementary was received.

CONSENT AGENDA

Motion was made to approve the Consent Agenda by Seaberg; seconded by Wippermann.
Motion carried.

COMMITTEE REPORTS

None

AGENDA ITEMS

Workers Comp Insurance Renewal

We have received the renewal rates for our worker's compensation policy. The premium rose from $326,490 to $327,939. This increase is the lowest we have seen in years and is within the 2024 budgeted amount.

Motion to remain at the $10,000 deductible level for the Worker's Compensation coverage and authorize staff to make payments in accordance with the premium renewal notices by Berry; seconded by Seaberg.
Motion carried.

AFLAC Supplemental Cancer Insurance Policy
The Board directed staff to work with our broker on a cost estimate for adding supplemental cancer insurance to our benefits package. The cost of the policy will be $33.50 per employee with a yearly cost of $18,492. The Board considers this additional benefit a value for recuitment and the annual cost is more reasonable than expected.

Motion was made to work with both unions to create a memorandum of understanding of adding a supplemental cancer policy to our benefits package by Seaberg; seconded by Francis.
Motion carried.

State Fire Aid
Chief Juelfs stated that the application for 2024 will have no changes and will be similar to our 2023 submission. The State Fire Aid will be payable in early October.

Motion was made to authorize the SMF Board Secretary and the Fire Chief to sign and submit appropriate documents by Berry; seconded by Francis.
Motion carried.

Public Board Member Selection Process
The current two year term for the Public Board Member, Dennis Wipppermann, will expire on March 31, 2024. Dennis has applied for another two-year term.

Motion was made to accept Dennis Wippermann's application to be the SMF Public Board Member and to direct staff to forward his name for consideration by each City Council by Francis; seconded by Berry.
Motion carried.

PUBLIC COMMENT

None

MOTION TO ADJOURN

Motion to adjourn by Seaberg; seconded by Francis.
Motion carried.

The next regular meeting is scheduled on February 21,' 2024 at 6:30 pm in West St. Paul

Respectfully submitted by:

Deb Wheeler

SOUTH METRO FIRE

Summary of List of Claims
Board Meeting of February 21, 2024

PAYROLL CHECK REGISTER:

Payroll Period	1/8 - 1/21		
Date Paid	1/26/2024		
Direct Deposit		$	125,130.97
Payroll Period	1/22 -2/7		
Date Paid	2/9/2024	$	129,648.75
Direct Deposit			
Payroll Period			
Date Paid			
Direct Deposit			
TOTAL NET PAYROLL		$	254,779.72

DISBURSEMENT CHECK REGISTER:

Checks	11187 - 11270	$	417,341.33
EFTS	2764 - 2800	$	530,001.82
TOTAL DISBURSEMENT CHECKS			$947,343.15

TOTAL PAYROLL, DISBURSEMENTS, ACH'S	$1,202,122.87

Payment Register

From Payment Date: 1/5/2024 - To Payment Date: 2/15/2024

Number	Date	Status	Void Reason	Reconciled/ Voided Date	Source	Payee Name	Transaction Amount	Reconciled Amount	Difference
1-ANCHOR BAN - ANCHOR BANK									
Check									
11187	01/12/2024	Open			Accounts Payable	ASPEN MILLS	$279.87	$279.87	$0.00
11188	01/12/2024	Open			Accounts Payable	Citygate Associates, LLC	$1,666.25	$1,666.25	$0.00
11189	01/12/2024	Open			Accounts Payable	Custom Cap / Tire	$7,692.78	$7,692.78	$0.00
11190	01/12/2024	Open			Accounts Payable	EMERGENCY AUTOMOTIVE TECH	$16,786.05	$16,786.05	$0.00
11191	01/12/2024	Open			Accounts Payable	Emergency Technical Decon	$509.50	$509.50	$0.00
11192	01/12/2024	Open			Accounts Payable	First Response Mental Health	$2,399.04		
11193	01/12/2024	Open			Accounts Payable	GALLS, LLC	$313.40	$313.40	$0.00
11194	01/12/2024	Open			Accounts Payable	INT'L ASSN FIREFIGHTERS 1059	$277.50	$277.50	$0.00
11195	01/12/2024	Open			Accounts Payable	INT'L ASSN FIREFIGHTERS 724	$1,731.60	$1,731.60	$0.00
11196	01/12/2024	Open			Accounts Payable	Jefferson Fire & Safety, Inc	$6,991.40	$6,991.40	$0.00
11197	01/12/2024	Open			Accounts Payable	JUELFS/MARK	$46.96	$46.96	$0.00
11198	01/12/2024	Open			Accounts Payable	KREMER SPRING,ALIGNMENT & BODY	$4,321.86	$4,321.86	$0.00
11199	01/12/2024	Open			Accounts Payable	LEAGUE OF MN CITIES INS. TRUST	$33,786.00		
11200	01/12/2024	Open			Accounts Payable	Lexipol	$10,928.27	$10,928.27	$0.00
11201	01/12/2024	Open			Accounts Payable	LOCAL GOVERNMENT INFORMATION	$3,674.00	$3,674.00	$0.00
11202	01/12/2024	Open			Accounts Payable	Locality Media Inc	$31,920.00	$31,920.00	$0.00
11203	01/12/2024	Open			Accounts Payable	MacQueen Emergency Group	$207.17	$207.17	$0.00
11204	01/12/2024	Open			Accounts Payable	Metro Chief Fire Officers Assoc	$400.00	$400.00	$0.00
11205	01/12/2024	Open			Accounts Payable	METRO SALES, INC	$140.06	$140.06	$0.00
11206	01/12/2024	Open			Accounts Payable	MOTOROLA SOLUTIONS, INC	$10,859.76	$10,859.76	$0.00
11207	01/12/2024	Open			Accounts Payable	NAPA	$120.53	$120.53	$0.00
11208	01/12/2024	Open			Accounts Payable	NINTH BRAIN	$118.74	$118.74	$0.00
11209	01/12/2024	Open			Accounts Payable	S ST PAUL/CITY OF	$51,187.19	$51,187.19	$0.00
11210	01/12/2024	Open			Accounts Payable	Target Solutions Learning, LLC	$4,197.60	$4,197.60	$0.00
11211	01/12/2024	Open			Accounts Payable	US Bank Equipment Finance	$245.70	$245.70	$0.00
11212	01/12/2024	Open			Accounts Payable	WEST ST PAUL/CITY OF	$6,031.31	$6,031.31	$0.00
11213	01/12/2024	Open			Accounts Payable	Wheeler, Deb	$152.13		
11214	01/19/2024	Open			Accounts Payable	ANCOM TECHNICAL CENTER	$48.50	$48.50	$0.00
11215	01/19/2024	Open			Accounts Payable	Berry/ Wendy	$100.00	$100.00	$0.00
11216	01/19/2024	Open			Accounts Payable	Dinges Fire Company	$644.59	$644.59	$0.00
11217	01/19/2024	Voided	Vendor Correction	01/30/2024	Accounts Payable	EMERGENCY APPARATUS MAINTENANC	$423.43		
11218	01/19/2024	Open			Accounts Payable	EMERGENCY AUTOMOTIVE TECH	$242.40	$242.40	$0.00
11219	01/19/2024	Open			Accounts Payable	Francis, James	$100.00		
11220	01/19/2024	Open			Accounts Payable	LEAGUE OF MN CITIES INS. TRUST	$179.44		
11221	01/19/2024	Open			Accounts Payable	Linde Gas and Equipment	$463.65	$463.65	$0.00
11222	01/19/2024	Open			Accounts Payable	Napier/ David	$100.00	$100.00	$0.00
11223	01/19/2024	Open			Accounts Payable	OXYGEN SERVICE COMPANY	$110.98	$110.98	$0.00
11224	01/19/2024	Open			Accounts Payable	Seaberg, Thomas	$100.00	$100.00	$0.00
11225	01/19/2024	Open			Accounts Payable	WIPPERMANN/DENNIS	$100.00	$100.00	$0.00
11226	01/30/2024	Open			Accounts Payable	ASPEN MILLS	$159.98		
11227	01/30/2024	Open			Accounts Payable	Blue Peak Consulting, LLC	$9,225.00		
11228	01/30/2024	Open			Accounts Payable	Brandecker, Bill	$59.99		
11229	01/30/2024	Open			Accounts Payable	CARDMEMBER SERVICES	$4,815.92		
11230	01/30/2024	Open			Accounts Payable	DELL MARKETING L.P.	$8,984.89		
11231	01/30/2024	Open			Accounts Payable	Dinges Fire Company	$1,769.37		

Payment Register

From Payment Date: 1/5/2024 - To Payment Date: 2/15/2024

Number	Date	Status	Void Reason	Reconciled/ Voided Date	Source	Payee Name	Transaction Amount	Reconciled Amount	Difference
11232	01/30/2024	Open			Accounts Payable	EMERGENCY APPARATUS MAINTENANC	$1,311.33		
11233	01/30/2024	Open			Accounts Payable	INT'L ASSN FIREFIGHTERS 1059	$277.50		
11234	01/30/2024	Open			Accounts Payable	INT'L ASSN FIREFIGHTERS 724	$1,731.60		
11235	01/30/2024	Open			Accounts Payable	KREMER SPRING,ALIGNMENT & BODY	$224.00		
11236	01/30/2024	Open			Accounts Payable	MacQueen Emergency Group	$1,430.00		
11237	01/30/2024	Open			Accounts Payable	METRO SALES, INC	$324.55		
11238	01/30/2024	Open			Accounts Payable	NAPA	$220.93		
11239	01/30/2024	Open			Accounts Payable	Stryker Sales Corporation	$3,546.55		
11240	02/05/2024	Open			Accounts Payable	ASPEN MILLS	$605.48		
11241	02/05/2024	Open			Accounts Payable	AT&T MOBILITY	$991.10		
11242	02/05/2024	Open			Accounts Payable	BOUND TREE MEDICAL	$1,334.25		
11243	02/05/2024	Open			Accounts Payable	BRANDECKER/WILLIAM	$335.32		
11244	02/05/2024	Open			Accounts Payable	BURNSVILLE/CITY OF	$752.36		
11245	02/05/2024	Open			Accounts Payable	CENTURY COLLEGE	$240.00		
11246	02/05/2024	Open			Accounts Payable	Further	$114.20		
11247	02/05/2024	Open			Accounts Payable	GALLS, LLC	$523.65		
11248	02/05/2024	Open			Accounts Payable	NAPA	$6.92		
11249	02/05/2024	Open			Accounts Payable	NINTH BRAIN	$118.74		
11250	02/05/2024	Open			Accounts Payable	Rihm Kenworth	$98.42		
11251	02/05/2024	Open			Accounts Payable	St Croix Fire and Safety	$562.20		
11252	02/13/2024	Open			Accounts Payable	BOUND TREE MEDICAL	$52.99		
11253	02/13/2024	Open			Accounts Payable	Citygate Associates, LLC	$130.00		
11254	02/13/2024	Open			Accounts Payable	DAKOTA COUNTY TREASURER	$1,819.74		
11255	02/13/2024	Open			Accounts Payable	EMERGENCY APPARATUS MAINTENANC	$2,666.53		
11256	02/13/2024	Open			Accounts Payable	Emergency Technical Decon	$93.00		
11257	02/13/2024	Open			Accounts Payable	GALLS, LLC	$174.80		
11258	02/13/2024	Open			Accounts Payable	Grainger	$185.44		
11259	02/13/2024	Open			Accounts Payable	HENNEPIN COUNTY MEDICAL CENTER	$420.00		
11260	02/13/2024	Open			Accounts Payable	INT'L ASSN FIREFIGHTERS 1059	$277.50		
11261	02/13/2024	Open			Accounts Payable	INT'L ASSN FIREFIGHTERS 724	$1,731.60		
11262	02/13/2024	Open			Accounts Payable	Jefferson Fire & Safety, Inc	$76.72		
11263	02/13/2024	Open			Accounts Payable	LEAGUE OF MN CITIES INS. TRUST	$163,971.00		
11264	02/13/2024	Open			Accounts Payable	LEVANDER, GILLEN & MILLER, P.A	$260.00		
11265	02/13/2024	Open			Accounts Payable	Murillo, Ramon	$246.92		
11266	02/13/2024	Open			Accounts Payable	NAPA	$11.46		
11267	02/13/2024	Open			Accounts Payable	OXYGEN SERVICE COMPANY	$197.61		
11268	02/13/2024	Open			Accounts Payable	Rihm Kenworth	$8.69		
11269	02/13/2024	Open			Accounts Payable	S ST PAUL/CITY OF	$5,574.69		
11270	02/13/2024	Open			Accounts Payable	STANDARD INSURANCE COMPANY	$80.73		
Type Check Totals:					84 Transactions		$417,341.33	$162,557.62	$0.00

1-ANCHOR BAN - ANCHOR BANK Totals

Checks	Status	Count	Transaction Amount	Reconciled Amount
	Open	83	$416,917.90	$162,557.62
	Reconciled	0	$0.00	$0.00
	Voided	1	$423.43	$0.00
	Stopped	0	$0.00	$0.00

S. METRO FIRE

Payment Register

From Payment Date: 1/5/2024 - To Payment Date: 2/15/2024

Number	Date	Status	Void Reason	Reconciled/ Voided Date	Source		Payee Name	Transaction Amount	Reconciled Amount	Difference
					Total	84		$417,341.33	$162,557.62	

All	Status	Count	Transaction Amount	Reconciled Amount
	Open	83	$416,917.90	$162,557.62
	Reconciled	0	$0.00	$0.00
	Voided	1	$423.43	$0.00
	Stopped	0	$0.00	$0.00
	Total	84	$417,341.33	$162,557.62

Grand Totals:

Checks	Status	Count	Transaction Amount	Reconciled Amount
	Open	**83**	**$416,917.90**	**$162,557.62**
	Reconciled	**0**	**$0.00**	**$0.00**
	Voided	**1**	**$423.43**	**$0.00**
	Stopped	**0**	**$0.00**	**$0.00**
	Total	**84**	**$417,341.33**	**$162,557.62**

All	Status	Count	Transaction Amount	Reconciled Amount
	Open	**83**	**$416,917.90**	**$162,557.62**
	Reconciled	**0**	**$0.00**	**$0.00**
	Voided	**1**	**$423.43**	**$0.00**
	Stopped	**0**	**$0.00**	**$0.00**
	Total	**84**	**$417,341.33**	**$162,557.62**

S. METRO FIRE

Payment Register

From Payment Date: 1/1/2024 - To Payment Date: 2/15/2024

Number	Date	Status	Void Reason	Reconciled/ Voided Date	Source	Payee Name	Transaction Amount	Reconciled Amount	Difference
1-ANCHOR BAN - ANCHOR BANK									
EFT									
2764	01/12/2024	Open			Accounts Payable	I C M A RETIREMENT CORP	$2,225.00	$2,225.00	$0.00
2765	01/12/2024	Open			Accounts Payable	IRS - PR TAXES	$25,360.28	$25,360.28	$0.00
2766	01/12/2024	Open			Accounts Payable	MN CHILD SUPPORT	$355.79	$355.79	$0.00
2767	01/12/2024	Open			Accounts Payable	MN DEPT OF REVENUE	$8,223.37	$8,223.37	$0.00
2768	01/12/2024	Open			Accounts Payable	MN II LIFE -- HSA	$1,087.35	$1,087.35	$0.00
2769	01/12/2024	Open			Accounts Payable	MSRS	$450.00	$450.00	$0.00
2770	01/12/2024	Open			Accounts Payable	MSRS - HCSP	$2,804.21	$2,804.21	$0.00
2771	01/12/2024	Open			Accounts Payable	NATIONWIDE	$2,150.00	$2,150.00	$0.00
2772	01/12/2024	Open			Accounts Payable	PUBLIC EMPLOYEES RETIRE ASSN	$55,955.02	$55,955.02	$0.00
2773	01/29/2024	Open			Accounts Payable	I C M A RETIREMENT CORP	$2,275.00	$2,275.00	$0.00
2774	01/29/2024	Open			Accounts Payable	IRS - PR TAXES	$24,832.26	$24,832.26	$0.00
2775	01/29/2024	Open			Accounts Payable	MN CHILD SUPPORT	$355.79	$355.79	$0.00
2776	01/29/2024	Open			Accounts Payable	MN DEPT OF REVENUE	$8,172.06	$8,172.06	$0.00
2777	01/29/2024	Open			Accounts Payable	MN II LIFE -- HSA	$1,087.35	$1,087.35	$0.00
2778	01/29/2024	Open			Accounts Payable	MSRS	$450.00	$450.00	$0.00
2779	01/29/2024	Open			Accounts Payable	MSRS - HCSP	$2,817.17	$2,817.17	$0.00
2780	01/29/2024	Open			Accounts Payable	NATIONWIDE	$2,250.00	$2,250.00	$0.00
2781	01/29/2024	Open			Accounts Payable	PUBLIC EMPLOYEES RETIRE ASSN	$56,287.79	$56,287.79	$0.00
2782	01/29/2024	Open			Accounts Payable	HEALTHPARTNERS	$42,618.37	$42,618.37	$0.00
2783	01/29/2024	Open			Accounts Payable	Further	$1,023.32	$1,023.32	$0.00
2784	01/29/2024	Open			Accounts Payable	CLOVER	$5.35	$5.35	$0.00
2785	01/29/2024	Open			Accounts Payable	Further	$90,150.00	$90,150.00	$0.00
2786	01/29/2024	Open			Accounts Payable	MSRS - HCSP	$55,067.70	$55,067.70	$0.00
2787	01/31/2024	Open			Accounts Payable	Further	$1,087.35		
2788	01/31/2024	Open			Accounts Payable	I C M A RETIREMENT CORP	$2,275.00		
2789	02/13/2024	Open			Accounts Payable	I C M A RETIREMENT CORP	$2,290.00		
2790	02/13/2024	Open			Accounts Payable	IRS - PR TAXES	$25,847.03		
2791	02/13/2024	Open			Accounts Payable	MN CHILD SUPPORT	$355.79		
2792	02/13/2024	Open			Accounts Payable	MN DEPT OF REVENUE	$8,524.95		
2793	02/13/2024	Open			Accounts Payable	MSRS	$450.00		
2794	02/13/2024	Open			Accounts Payable	MSRS - HCSP	$2,848.88		
2795	02/13/2024	Open			Accounts Payable	NATIONWIDE	$2,250.00		
2796	02/13/2024	Open			Accounts Payable	PUBLIC EMPLOYEES RETIRE ASSN	$58,012.25		
2797	02/13/2024	Open			Accounts Payable	HEALTHPARTNERS	$39,602.51		
2798	02/13/2024	Open			Accounts Payable	HIGHER STANDARDS	$71.20		
2799	02/13/2024	Open			Accounts Payable	CLOVER	$5.35		

Payment Register

From Payment Date: 1/1/2024 - To Payment Date: 2/15/2024

Number	Date	Status	Void Reason	Reconciled/ Voided Date	Source	Payee Name	Transaction Amount	Reconciled Amount	Difference
2800	02/13/2024	Open			Accounts Payable	Further	$378.33		
Type EFT Totals:					37 Transactions		$530,001.82	$386,003.18	$0.00
1-ANCHOR BAN - ANCHOR BANK Totals									

EFTs	Status	Count	Transaction Amount	Reconciled Amount
	Open	37	$530,001.82	$386,003.18
	Reconciled	0	$0.00	$0.00
	Voided	0	$0.00	$0.00
	Total	37	$530,001.82	$386,003.18

All	Status	Count	Transaction Amount	Reconciled Amount
	Open	37	$530,001.82	$386,003.18
	Reconciled	0	$0.00	$0.00
	Voided	0	$0.00	$0.00
	Stopped	0	$0.00	$0.00
	Total	37	$530,001.82	$386,003.18

Grand Totals:

EFTs	Status	Count	Transaction Amount	Reconciled Amount
	Open	**37**	**$530,001.82**	**$386,003.18**
	Reconciled	**0**	**$0.00**	**$0.00**
	Voided	**0**	**$0.00**	**$0.00**
	Total	**37**	**$530,001.82**	**$386,003.18**

All	Status	Count	Transaction Amount	Reconciled Amount
	Open	**37**	**$530,001.82**	**$386,003.18**
	Reconciled	**0**	**$0.00**	**$0.00**
	Voided	**0**	**$0.00**	**$0.00**
	Stopped	**0**	**$0.00**	**$0.00**
	Total	**37**	**$530,001.82**	**$386,003.18**

South Metro Fire Department
BANK RECONCILIATION
January 31, 2024

Old National Bank		
Ending Balance - Checking	**$**	662,316.85
Outstanding Disbursement Checks		(70,698.22)
DIT		225.00
Adjustments:		
RECONCILED BALANCE	**$**	**591,843.63**

CITY TREASURER'S BALANCE:		
Previous Month's Reconciled Balance	**$**	1,315,591.27
Daily Receipts Posted		189,849.60
Disbursement Checks Issued		(660,670.52)
Payroll Checks and Direct Deposits		(249,438.32)
Journal Entries		(146.98)
Rev Prior Month Adj:		
Adjustment needed		(0.02)
CC fees adjustment		20.95
Further/ICMA(Mission Square)		(3,362.35)
RECONCILED BALANCE	**$**	**591,843.63**

CASH ACCOUNT BALANCE:	**$**	595,185.05
Adjustments cc fees adjustment/change		20.93
Further/ICMA(Mission Square)		(3,362.35)
RECONCILED BALANCE	**$**	**591,843.63**

Cash by Fund:

		Beginning Balance	Net Activity	Ending Balance
General Fund	101-10101	580,749.24	(633,076.72)	(52,327.48)
Grant Fund	201-10100	899.44	-	899.44
Fire Assistance Fund			-	
Debt Service Fund	301-10101	45,488.84	(45,612.50)	(123.66)
Capital Fund	401-10101	688,453.75	(41,717.00)	646,736.75
	Total	1,315,591.27	(720,406.22)	595,185.05

Account Classification	Adopted Budget	Current Month Transactions	YTD Transactions	YTD Balance	% used/ Rec'd	Prior Year YTD Balance
Fund **101 - General Fund**						
REVENUE						
Taxes	1,938,696.00	.00	.00	1,938,696.00	0%	57,491.32
Intergovernmental Revenues	243,666.00	.00	.00	243,666.00	0%	(4,892.82)
Charges for Services	6,039,822.00	887.50	887.50	6,038,934.50	0%	657,573.80
Other Revenue	50,000.00	2,969.00	2,969.00	47,031.00	6%	15,668.94
Other Financing Sources	.00	.00	.00	.00	+++	.00
REVENUE TOTALS	$8,272,184.00	$3,856.50	$3,856.50	$8,268,327.50	0%	$725,841.24
EXPENSE						
Personal Services	7,332,449.00	638,294.44	638,294.44	6,694,154.56	9%	565,652.95
Supplies	232,677.00	14,811.07	14,811.07	217,865.93	6%	5,348.48
Contractual Services	446,114.00	51,253.53	51,253.53	394,860.47	11%	55,069.87
Other Charges	260,944.00	65,198.63	65,198.63	195,745.37	25%	53,360.30
Capital Outlay	.00	.00	.00	.00	+++	.00
Debt Service	.00	.00	.00	.00	+++	.00
Other Financing Uses	.00	.00	.00	.00	+++	.00
EXPENSE TOTALS	$8,272,184.00	769,557.67	769,557.67	$7,502,626.33	9%	$679,431.60
Fund **101 - General Fund** Totals						
REVENUE TOTALS	8,272,184.00	3,856.50	3,856.50	8,268,327.50	0%	725,841.24
EXPENSE TOTALS	8,272,184.00	769,557.67	769,557.67	7,502,626.33	9%	679,431.60
Fund **101 - General Fund** Totals	$0.00	($765,701.17)	($765,701.17)	$765,701.17		$46,409.64
Fund **201 - Grant Fund**						
REVENUE						
Intergovernmental Revenues	.00	.00	.00	.00	0%	.00
REVENUE TOTALS	$0.00	$0.00	$0.00	$0.00	+++	$0.00
EXPENSE						
Contractual Services	.00	.00	.00	.00	+++	.00
EXPENSE TOTALS	$0.00	$0.00	$0.00	$0.00	+++	$0.00
Fund **301 - Debt Service**						
REVENUE						
Intergovernmental Revenues	186,650.00	(45,612.50)	(45,612.50)	232,262.50	-24%	.00
REVENUE TOTALS	$186,650.00	(45,612.50)	(45,612.50)	$232,262.50	+++	$0.00
EXPENSE						
Contractual Services	186,650.00	.00	.00	186,650.00	+++	.00
EXPENSE TOTALS	$186,650.00	.00	.00	$186.650.00	+++	$0.00
Fund 301 - Debt Totals						
REVENUE TOTALS	186,650.00	(45,612.50)	(45,612.00)	232,262.00	+++	.00
EXPENSE TOTALS	186,650.00	.00	.00	186,650.00	+++	.00
Fund 301 - Debt Totals	$0.00	($45,612.50)	($45,612.00)	$45,612.00		$0.00
Fund **401 - Capital Projects**						
REVENUE						
Intergovernmental Revenues	.00	.00	.00	.00	0%	.00
Charges for Services	224,684.00	.00	.00	224,684.00	0%	23,404.50
Other Revenue	.00	.00	.00	.00	+++	.00
Other Financing Sources	.00	.00	.00	.00	+++	.00
REVENUE TOTALS	$224,684.00	$0.00	$0.00	$224,684.00		$23,404.50
EXPENSE						
Motor Vehicles	367,000.00	.00	.00	367,000.00	0%	.00
Office Equipment	77,302.00	8,984.89	8,984.80	68,317.20	12%	.00
Other Equipment	208,700.00	5,086.30	5,086.30	203,613.70	2%	26,048.70
EXPENSE TOTALS	$653,002.00	$14,071.19	$14,071.10	$638,930.90	2%	$26,048.70
Fund **401 - Capital Projects**						
REVENUE TOTALS	224,684.00	.00	.00	224,684.00	0%	23,404.50
EXPENSE TOTALS	653,002.00	14,071.19	14,071.19	638,930.81	2%	26,048.70
Fund **401 - Capital Projects**	($428,318.00)	($14,071.19)	($14,071.19)	($414,246.81)		($2,644.20)
Grand Totals						
REVENUE TOTALS	8,683,518.00	(41,756.00)	(41,756.00)	8,725,274.00	0%	749,245.74
EXPENSE TOTALS	9,111,836.00	783,628.86	783,628.86	8,328,207.14	9%	705,480.30
Grand Totals	($428,318.00)	($825,384.86)	($825,384.86)	$397,066.86		$43,765.44

2024 Run Summary

South Metro Fire Department

	January	February	March	April	May	June	July	August	September	October	November	December	YTD TOTAL	2023 YTD TOTAL
FIRE INCIDENTS														
111 Building fire	2												2	1
112 Fire in structure other than in a building													0	
113 Cooking fire, confined to container	1												1	
114 Chimney fire													0	
116 Fuel													0	
118 Trash	1												1	
121 Fire in mobile home used as fixed residence													0	
130 Mobile property (vehicle) fire, other													0	
131 Passenger vehicle fire	1												1	
132 Road Freight or transport vehicle fire													0	
133 Rail vehicle fire													0	
134 Water vehicle fire													0	
135 Aircraft Fire													0	
138 Off-road vehicle or heavy equipment fire													0	
142 Brush or bursh & grass mixture fire													0	
143 Grass Fire													0	
151 Outside rubbish fire													0	
154 Dumpster fire													0	
163 Outside equipment fire													0	
	5	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**5**	1
OVERPRESSURE RUPTURE, EXPLOSION, OVERHEAT (NO FIRE)														
200 Overpressure rupture, explosion, overheat other													0	
243 Fireworks explosion (no fire)													0	
251 Excesive heat, scorch burns with no ignition	6												6	7
	6	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	7
RESCUE & EMERGENCY MEDICAL SERVICE														
311 Medical assist, assist EMS crew													0	
321 EMS call, excluding vehicle accident with injury	525												525	449
322 Motor vehicle accident with injuries	3												3	5
323 Motor vehicle/pedestrian accident (MV Ped)	3												3	
324 Motor vehicle accident with no injuries.	3												3	3
341 Search for person on land													0	
350 Extrication, rescue, other													0	
352 Extrication of victims from vehicle													0	
353 Removal of victim(s) from stalled elevator	1												1	1
355 Confined Space Rescue													0	
357 Extrication of victim(s) from machinery													0	
360 Water & ice related rescue, other													0	
361 Swimming/recreational water areas rescue													0	
362 Ice Rescue													0	
365 Watercraft rescue													0	
372 Trapped by power lines0													0	
381 Rescue or EMS standby													0	
	535	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**535**	458
HAZARDOUS CONDITION (NO FIRE)														
400 Hazardous condition, other													0	
411 Gasoline or other flammable liquid spill													0	
412 Gas leak (natural gas or LPG)	2												2	2
413 Oil spill													1	1
421 Chemical hazard (no spill or leak)													0	
422 Chemical spill or leak													0	
424 Carbon monoxide incident	2												2	3
440 Electrical equipment problem													0	
442 Overheated motor														
444 Power line down	2												2	5
445 Arch, shorted electrical equipment	1												1	1
460 Potential accident													0	1
461 Building or structure weakened or collapsed													0	
462 Aircraft standby													0	
463 Vehicle accident, cleanup													0	
471 Explosive, bomb removal													0	
481 Attempt to burn													0	
	7	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**7**	**13**
SERVICE CALL														
500 Service Call, other													0	
510 Person in distress, other													0	1
519 Person in distress													0	
520 Water problem, other													0	
522 Water or steam leak	1												1	
531 Smoke or odor removal	1												1	2
551 Assist police or other governmental agency	10												10	3
553 Public service	3												3	
554 Assist invalid	41												41	32
561 Unauthorized burning	1												1	
	57	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**57**	38

2024 Run Summary

South Metro Fire Department

	January	February	March	April	May	June	July	August	September	October	November	December	YTD TOTAL	2023 YTD TOTAL
GOOD INTENT CALL														
600 Good intent call, other	3												3	1
611 Dispatched & canceled en route	10												10	9
621 Wrong location													0	
622 No incident found on arrival at dispatch address	6												6	11
631 Authorized controlled burning	2												2	
650 Steam, gas, other mistaken for smoke													0	
651 Smoke scare, odor of smoke													0	6
652 Steam, vapor, fog or dust thought to be smoke	3												3	
653 Smoke from barbeque, tar kettle													0	
661 EMS call, party transported by non-fire agency (661)													0	
671 HazMat release investigation w/no HazMat	2												2	3
	26	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**26**	30
FALSE ALARM & FALSE CALL														
700 False alarm or false call, other	1												1	1
710 Malicious false call													0	
714 Central Station, malicious false alarm													0	2
715 Local alarm system, malicious false call	1												1	9
721 Bomb scare - no bomb													0	
730 System malfunction, other													0	
731 Sprinkler activation due to malfunction	4												4	
732 Extinguishment system activation malfunction													0	
733 Smoke detector activation due to malfunction	3												3	
735 Alarm system sounded due to malfunction	8												8	3
736 CO detector activation due to malfunction	5												5	
740 Unintentional transmission of alarm, other													0	
741 Sprinkler activation, no fire - unintentional													0	2
743 Smoke detector activation, unintentional	8												8	1
744 Detector activation, no fire - unintentional													0	
745 Alarm system activation, no fire - unintentional	1												1	4
7451 False Alarm	8												8	11
746 Carbon monoxide detector activation, no CO	2												2	2
	41	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**41**	35
SEVERE WEATHER & NATURAL DISASTER														
814 Lightning strike (no fire)													0	
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
SPECIAL INCIDENT TYPE														
900 Special type of incident, other													0	
911 Citizen Complaint													0	
	0	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0
Not Reported	1												1	
	1	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	0
MONTHLY RUN TOTAL	**678**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**678**	583
BLS Transports	**168**												**168**	138

SOUTH METRO FIRE DEPARTMENT

1650 Humboldt Avenue • West St. Paul MN 55118
Phone: (651) 552-4176 • FAX: (651) 552-4195
www.smfdmn.org

DATE: February 21, 2024

TO: President and Board

FROM: Mark Juelfs, Fire Chief

RE: Standards of Cover Study

Summary:
At the December 2023 Fire Board meeting the Board adopted the Standards of cover study presented by Citygate and Associates. The next step in the study process is to present the study to both the South St. Paul and West St. Paul City Councils. Members of both City Councils have been invited to the February meeting to view the presentation from Citygate and Associates.

Budget Impact:
Currently this document is information only. Budgetary impacts will be presented to the Board at a later date.

Recommendation:
Receive the study and discuss the findings with the Fire Board and City Councils.

CITYGATE
FIRE & EMS

STANDARDS OF COVERAGE STUDY

VOLUME 1 OF 2: TECHNICAL REPORT

SOUTH METRO FIRE DEPARTMENT, MN

DECEMBER 15, 2023

CITYGATE
FIRE & EMS

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EXECUTIVE SUMMARY

The South Metro Fire Department (Department) retained Citygate Associates, LLC (Citygate) to conduct a Standard of Coverage deployment evaluation based on nationally recognized guidelines and best practices, federal and state mandates, and relevant local and regional operating procedures. This evaluation is intended to establish recommended minimum requirements relative to the deployment of fire suppression operations, emergency medical operations, and special operations for the Department to consider, and to create a template for future deployment and performance analysis.

This study is presented in several parts, including this Executive Summary, which includes all findings and recommendations, and Standards of Coverage (SOC) Assessment supported by maps and response statistics. A separate **Map Atlas** (**Volume 2**) contains all the maps referenced throughout this report. Overall, there are **15** findings and **5** actionable recommendations.

POLICY CHOICES FRAMEWORK

There are no mandatory federal or state regulations directing the level of fire service staffing, response times, or outcomes in the U.S.; however, if services are provided at all, local, state, and federal regulations must be followed for the safety of the public and for the personnel providing the services.

Thus, the level of fire protection services provided is a *local policy decision*. Communities have the level of fire services they can afford and choose to purchase, which may not always be the level desired.

FIRE SERVICES DEPLOYMENT SUMMARY

The Department serves an urban/suburban population with a mixed residential and non-residential land-use pattern typical of other Twin City area cities of similar size and demographics. The open spaces and highways in both Cities, and the more curvilinear road network outside of the older core areas, produce barriers to providing fast response times from the fewest possible fire stations.

Given the risks to be protected and the desire for positive emergency outcomes, the Department's service area will always need both first-due unit and multiple-unit ERF coverage consistent with controlling a building fire to near the room(s) of origin and improving the chance of survival for patients with life-threatening medical emergencies.

The Department's deployment system is stressed in **three key areas**:

1. Dispatch processing and travel time performance
2. The rising rate of emergency medical incidents

3. The travel time coverage *and staffing limitations* of the two current fire stations

Challenge #1 – Dispatch Processing and Travel Time Performance

The following table shows the Department's response performance over the most recent year of complete data compared to best practices for positive outcomes. As the table shows, the weakest components are call processing / dispatch, first-unit travel, and ERF travel performance, although overall call-to-arrival performance was faster than Citygate's 7:30-minute recommended goal by a full minute.

Table 1—90th Percentile Response Performance Summary (RY 22/23)

Response Component	Recommended Best Practice		90th Percentile Performance	Performance Compared to Best Practice
	Time	Reference		
Call Processing / Dispatch	1:30 1:04 Critical	Citygate NFPA	**2:40**	**+ 1:10**
Crew Turnout	2:00 1:00	Citygate NFPA	**1:38**	**- 0:22**
First-Unit Travel	4:00	Citygate NFPA	**5:10**	**+ 1:10**
First-Unit Call to Arrival	7:30	Citygate	**6:30**	**- 1:00**
ERF Travel	8:00	Citygate NFPA	**9:53**	**+ 1:53**

Challenge #2 – Rising EMS Demand

The state of health care coverage in the United States has created an ever-increasing EMS demand on America's fire service—which is exacerbated by the unhoused crisis, thus creating a high demand for low-acuity EMS responses for patients that seldom need immediate emergency room care. The Department and regional paramedic system are also facing this challenge. Citygate submits that adding more BLS ambulance transport capacity via the Department is not the best way forward. There needs to be a subregional, non-9-1-1, non-sworn firefighter response team jointly funded by local government and the health care system to respond to mental health and low-acuity medical incidents that do not require emergency room care.

Challenge #3 – Fire Station Travel Time Coverage and Staffing Limitations

The service area is simply too large for only one fire station to provide response times that achieve desired urban/suburban community outcomes. The excellent *Department-wide* total response time performance over the three-year study period is due only to many incidents being close to *both* fire

stations. Any reduction in station coverage will appreciably lengthen travel times beyond those associated with desired positive outcomes in urban areas—even more so in the northwest and southwest sections of the service area that have higher population densities.

Ideally, if both stations could be moved and a third station added, the service area needs the added station to form an "inverted triangle" of coverage, with two stations in the upper half of the service area and one in the southeast to serve that area.

In addition, the Department's current daily staffing provides an Effective Response Force (ERF or First Alarm) of only 8 personnel at minimum staffing and 13 (including a chief officer, when available) at full staffing, which is less than the recommended ERF of 16–17 personnel[1] to safely accomplish the critical tasks for a low to moderate-risk building fire in time to achieve positive outcomes. Citygate recommends the JPA consider increasing the minimum daily staffing to at least 12 personnel plus a chief officer as funding allows. This would provide an ERF meeting recommended best practice with a single automatic aid resource from an adjacent fire agency. A reduction from the current two-station model to a one-station model would not reduce the minimum daily staffing required to provide an ERF.

Considering the limited projected growth, Citygate recommends the Department adopt a 5:00-minute travel time and, when that measure cannot be substantially met, a third station should be considered.

FINDINGS AND RECOMMENDATIONS

Deployment Findings

Based on the technical analysis of this assessment, Citygate makes the following deployment findings.

Finding #1: The Department's response unit types and quantities are appropriate to protect against the hazards likely to impact the service area.

Finding #2: The Department has not established response performance goals as recommended by the CFAI and the NFPA.

Finding #3: The Department's deployment model provides a minimum of eight personnel and a maximum of 12 personnel on duty daily.

[1] NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments (2020 Edition)

Finding #4: The Department does not have 27/7/365 incident command (chief officer) coverage. The four chief officers must respond from the office or home and are not always immediately available.

Finding #5: The Department has a standard response plan that considers risk and establishes an appropriate initial response for each incident type; each type of call for service receives the combination of engines, ladder trucks, specialty units, and command officers customarily needed to effectively control the type of incident based on Department experience.

Finding #6: The Department's current fire station locations can be expected to deliver 5:00-minute first-due travel time coverage to 85.7 percent of the service area's total public road miles, which is good coverage to achieve desired outcomes.

Finding #7: The service area is too large to cover from either current station location even at the fifth minute of travel, leaving large areas of the other City well beyond 5:00-minute coverage.

Finding #8: Two simultaneous calls for service occur 39 percent of the time in 22/23.

Finding #9: Simultaneous incidents are increasing annually in Station 1's response area.

Finding #10: Simultaneous incidents predominantly draw Station 2 west to the middle of the shared service area.

Finding #11: Call processing performance, at 2:40 minutes in RY 22/23, is substantially slower than the 1:30-minute best practice goal.

Finding #12: Crew turnout performance in RY 22/23 was 22 seconds *faster* than a recommended 2:00-minute best practice goal. Turnout time is not part of the slower call-to-arrival total response times.

Finding #13: At 5:10 minutes in RY 22/23, first-unit travel time performance to fire and EMS incidents was 1:10 minutes *slower* than a recommended 4:00-minute best practice goal to facilitate desired outcomes in urban/suburban areas. The longer measures hold constant across the districts and years measured. The service area is too large to deliver 4:00-minute travel coverage from only two stations.

Finding #14: Department-wide first-unit call-to-arrival performance, at 6:30 minutes for RY 22/23, was *better* than a 7:30-minute Citygate-recommended best practice goal by 1:00 minute. Total response time performance is good overall and overcomes weak travel time performance due to the excellent crew turnout time and that many of the incidents are close to the two fire station locations.

Finding #15: Multiple-unit building fire travel time performance exceeded recommended best practice in 22/23 by 1:15 minutes primarily due to only two stations in the service area.

Deployment Recommendations

Based on the technical analysis and findings contained in this assessment, Citygate makes the following deployment recommendations.

Recommendation #1: Adopt a 5:00-minute travel time goal for fire station spacing.

Recommendation #2: Continue to work with the appropriate County health, regional hospitals, and other first responder agencies to implement a non-9-1-1 care team for behavorial and non-acute medical issues

Recommendation #3: **Adopt Updated Deployment Policies:** The JPA should adopt complete response performance measures to aid deployment planning and to monitor response performance. The measures of time should be designed to deliver outcomes that will prevent death or more serious injury for EMS patients upon arrival when possible and keep small fires from becoming more serious. With this in mind, Citygate recommends the following measures.

3.1 **First-Due Unit:** To treat pre-hospital medical emergencies and control small fires, the first-due unit should arrive within 8:30 minutes, 90 percent of the time, from receipt of the 9-1-1 call at County dispatch. This equates to a 1:30-minute call processing / dispatch time, a 2:00-minute crew turnout time, and a 5:00-minute travel time.

3.2 **Multiple-Unit Effective Response Force for Serious Emergencies:** To confine building fires near the room or rooms of origin, keep vegetation fires under one acre in size, and treat multiple medical patients at a single incident, a multiple-unit ERF of at least 15 personnel, including at least one chief officer, should arrive within 11:30 minutes from the time of call receipt at County dispatch at 90 percent or better reliability. This equates to a 1:30-minute call processing / dispatch time, a 2:00-minute crew turnout time, and an 8:00-minute travel time respectively.

3.3 **Hazardous Materials Response:** To protect the service area from hazards associated with uncontrolled release of hazardous and toxic materials, the fundamental mission of the Department's response is to isolate the hazard, deny entry into the hazard zone, and minimize impacts on the community. This can be achieved with a first-due total response

time of 8:30 minutes or less to provide initial hazard evaluation and mitigation actions. After the initial evaluation is completed, a determination can be made whether to request additional resources to mitigate the hazard.

3.4 **Technical Rescue:** To respond to technical rescue emergencies as efficiently and effectively as possible with enough trained personnel to facilitate a successful rescue, a first-due total response time of 8:30 minutes or less is required to evaluate the situation and initiate rescue actions. Additional resources should assemble as needed within a total response time of 11:30 minutes or less to safely complete rescue/extrication and delivery of the victim to the appropriate emergency medical care facility.

Recommendation #4: Maintain the current two-station deployment model until the recommended 5:00-minute first-unit travel time measure cannot be substantially met, then a third station should be considered.

Recommendation #5: As funding allows, consider increasing minimum daily staffing from 8 to 12 plus a Battalion Chief on each shift to meet recommended best practice multiple-unit staffing to serious emergencies with one automatic aid resource from an adjacent fire agency. A reduction in the number of stations will not reduce the recommended increase in daily staffing.

NEXT STEPS

- Review and absorb the content, findings, and recommendations of this report.
- Adopt updated response performance goals as recommended.
- Work with the County agencies and regional health providers to field a non-9-1-1 behavioral and low-acuity medical response team.
- Consider increasing minimum daily staffing as funding allows.

SECTION 1—INTRODUCTION AND BACKGROUND

The South Metro Fire Department (Department) is a Joint Powers Authority (JPA) Fire Department formed in 2008 to provide fire, emergency medical, hazardous materials response, and rescue services to the Cities of South St. Paul and West St. Paul (Cities). The Department retained Citygate Associates, LLC (Citygate) to conduct a Standards of Coverage (SOC) Study fully compliant with nationally recognized guidelines and best practices, federal and state mandates, and relevant local and regional operating procedures. This study is intended to determine whether the Department is appropriately deployed to meet its communities' risks and service level expectations. A review of the current two-station response model was also requested to determine the effectiveness in providing current and future fire services, with comparative response model alternatives evaluated in parallel. These study goals are intended to provide a template for future deployment and performance planning and evaluation.

Citygate's fire service deployment assessments are performed in accordance with the methodology outlined in *Standards of Cover* (Fifth and Sixth Editions) as published by the Commission on Fire Service Accreditation (CFAI). Our studies also incorporate guidelines and best practices in the field of fire service deployment and risk assessment from the National Fire Protection Association (NFPA), the Insurance Services Office (ISO), other recognized industry best practices, and stakeholder interests.

1.1 REPORT ORGANIZATION

This report is organized into the following sections. **Volume 2** (**Map Atlas**) is separately bound.

Executive Summary	A summary of current services and significant challenges, including key findings and recommendations.
Section 1	**Introduction and Background:** An introduction to the study and background information about the City and Department.
Section 2	**Standards of Coverage Assessment:** An overview of the SOC process and detailed analysis of the Department's existing deployment model, values to be protected, emergency outcome expectations, staffing needed for different emergency incident types (critical tasks), geographical distribution and concentration effectiveness of fire crew locations, reliability and historical response measures' effectiveness, and a concluding overall deployment evaluation.
Appendix A	**Community Risk Assessment:** A comprehensive assessment of the values at risk to be protected within the community and

evaluation of the fire and non-fire hazards likely to impact the service area as related to services provided by the Department.

1.1.1 Goals of the Report

This report cites findings and makes recommendations, as appropriate, related to each finding. Findings and recommendations throughout this report are sequentially numbered.

This document provides technical information about how fire services are provided and legally regulated, and how the Department is currently deployed and providing services to the Cities' residents, businesses, and visitors. This information is presented in the form of recommendations and policy choices for the JPA and Department to consider. The result is a solid technical foundation upon which to understand the advantages and disadvantages of the choices JPA and Department leadership face regarding fire service delivery, and more specifically, at what level of desired outcome and expense.

1.1.2 Limitations of the Report

There are no federal or state regulations requiring a specific minimum level of fire services. Through the public policy process, each community is expected to understand local fire and non-fire risks and its ability to pay for its chosen level of fire services. *If* fire services are provided at all, federal and state regulations specify how to safely provide them for the public and for the personnel providing the services.

While this report and technical explanation can provide a framework for the discussion of Department services, neither this report nor the Citygate team can make the final decisions or cost out every possible alternative in detail. Once final policy choices receive JPA direction, Department staff can conduct any final cost and fiscal analyses as typically completed in the JPA's normal operating and capital budget preparation cycle.

1.2 Project Approach and Scope of Work

1.2.1 Project Approach and Research Methods

Citygate utilized multiple sources to gather, understand, and model information about the Cities and Department. Citygate requested a large amount of background data and documentation to better understand current costs, service levels, the history of service level decisions, and other prior studies.

In virtual meetings, Citygate performed focused interviews with the Department's project team members and other project stakeholders. Citygate reviewed information about the Cities' demographics and potential for future growth and development. Citygate also obtained map and response data from which to model current and projected fire service deployment, with the goal of

identifying the location(s) of stations and crew quantities required to best serve the Cities as they currently exist, and to facilitate future deployment planning.

Once Citygate gained an understanding of the Department's service area and its fire and non-fire risks, Citygate developed a model of fire services that was tested against the travel time mapping and prior response data to ensure an appropriate fit. Citygate also evaluated future growth and service demand and evaluated potential alternative emergency service delivery models. Subsequently, Citygate proposed an approach to address both current and longer-term needs. The result is a framework for enhancing Department services while meeting reasonable community expectations and fiscal realities.

1.2.2 Project Scope of Work

Citygate's approach to this assessment involved:

- Reviewing data and information provided by the Department and Cities and conducting listening sessions with project stakeholders.
- Utilizing Esri ArcGIS, a Geographic Information System (GIS) software mapping program, to model fire station travel time coverage.
- Using StatsFD™, an incident response time analysis program, to analyze prior incident performance and plot the results on graphs and geographic mapping exhibits.
- Identifying and evaluating future population and related development growth.
- Recommending appropriate, risk-specific response performance goals.

1.3 Service Area Overview

The City of South St. Paul, located in north-central Dakota County immediately south and southeast of St. Paul and east of West St. Paul, was incorporated in 1887 and encompasses six square miles with a population of approximately 21,000 residents. The City operates under the Council-Administrator form of government with six council members and a Mayor elected at large to staggered four-year terms. The City provides a full range of municipal services, including police, economic development, planning and zoning, building permits and inspections, code enforcement, engineering, housing, parks and recreation, public works, recycling, and library services. Fire protection services are provided by the South Metro Fire Department, a joint venture between the Cities of West and South St. Paul. The City's adopted Fiscal Year 2023 budget is $23.68 million.

The City of West St. Paul, located in north-central Dakota County immediately adjacent to the State Capital of St. Paul, was incorporated in 1889 and encompasses five square miles with a

population of approximately 21,000 residents. The City operates under the Council-Manager form of government with six council members elected by Ward to staggered four-year terms, and the Mayor elected at large for a two-year term. The City provides a full range of municipal services, including police, construction and maintenance of streets and other infrastructure, recreation, and community development activities. Fire protection services are provided by the South Metro Fire Department, a joint venture between the Cities of West and South St. Paul. The City's adopted Fiscal Year 2023 budget is $42.67 million.

1.3.1 Future Growth and Development

The Twin Cities regional plan[2] projects South St. Paul's population will increase slightly to 22,000 by 2040, and West St. Paul's to 23,100 over the same period.

With very few vacant, developable properties remaining in the City, South St. Paul will likely only experience limited development growth through 2040, with land use changes predominantly achieved through redevelopment.[3]

With physical expansion impossible due to being a fully developed inner-ring urban center community of the greater Minneapolis / St. Paul metroplex with coterminous City boundaries on all sides, future development in West St. Paul will be predominantly limited to redevelopment of existing land uses.[4]

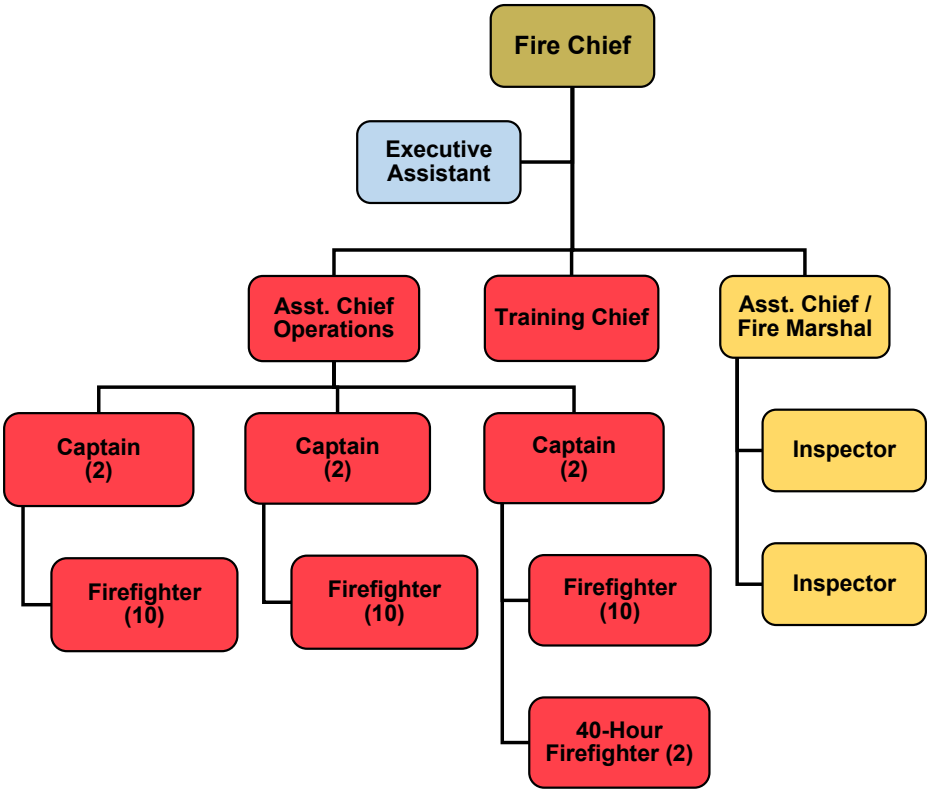
1.4 Fire Department Overview

1.4.1 Organization

Operating under the authority of a joint powers agreement between the Cities of South St. Paul and West St. Paul, the South Metro Fire Department provides fire suppression, rescue, Basic Life Support (BLS) pre-hospital emergency medical, initial hazardous materials response, fire prevention, and public education services with a staff of 38 full-time operational response and seven administrative personnel organized as shown in the following figure.

[2] Thrive MSP 2040.
[3] Reference: 2040 South St. Paul Comprehensive Plan, Section 4 – Land Use.
[4] Reference: West St. Paul 2040 Comprehensive Plan.

Figure 1—Organizational Chart – South Metro Fire Department



1.4.2 Facilities, Response Resources, and Staffing

The Department provides services from two fire stations as summarized in the following table.

Table 2—Fire Department Facilities, Response Resources, and Daily Response Staffing

Station Number	Address	Year Built	Response Resources	Minimum On-Duty Staffing
1	1650 Humboldt Ave. West St. Paul	1974 (remodeled in 1999)	**Engine 1** **Ambulance 1** Ladder 1 Ambulance 3	**2** **2** ** ***
2	310 Marie Ave. South St. Paul	1956 (remodeled in 2005)	**Engine 2** **Ambulance 2** Ladder 2 Boat 2 Rescue 2 UTV 2	**2** **2** ** **** **** ****
			Total	**8**

** Cross-staffed as needed by the full-time ambulance crew
*** Staffed 40 hours/week
**** Staffed as need depending on incident type by on-duty or call-back personnel

The Department uses a typical three-platoon rotating shift system. Each platoon is budgeted for 12 personnel per day. The table above shows the minimum staffing of eight on duty (four per station) when personnel are off on earned leave or away at out-of-city training. For incident command chief officer coverage, the 40-hour schedule chief officers provide command coverage when available from the office or home. South Metro also staffs a third ambulance with two personnel working a 40-hour week.

1.4.3 Service Capacity

Service capacity refers to the Department's available response force; the size, type, and condition of its response fleet and any specialized equipment; core and specialized performance capabilities and competencies; resource distribution and concentration; availability of automatic or mutual aid; and any other agency-specific factors influencing its ability to meet current and prospective future service demand relative to the values to be protected. The Department provides services with two engines, two aerial ladder trucks, three ambulances, one rescue, one boat and one all-terrain vehicle. All response personnel are minimally trained to the Emergency Medical Technician (EMT) level. The Department also has several pharmacological and non-pharmacological medical variances to provide enhanced pre-hospital emergency medical services. The Department also provides BLS ground ambulance service within its service area.

Response personnel are also trained to the U.S. Department of Transportation Hazardous Material First Responder Operational (FRO) level to provide initial hazardous material incident assessment, hazard isolation, and support for a technical hazardous material response team. Hazardous material

emergency response is provided by the Dakota County Special Operations Team (DCSOT). The Department is a participating member of the DCSOT, which includes fire, police, and EMS personnel and provides hazardous materials and technical rescue services across the entire county.

The Department has automatic-aid agreements with its bordering city departments and mutual-aid agreements with all of Dakota County.

Finding #1:	The Department's response unit types and quantities are appropriate to protect against the hazards likely to impact the service area.

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SECTION 2—STANDARDS OF COVERAGE ASSESSMENT

This section provides a detailed report of the Department's current ability to deploy and mitigate emergency hazards within its service area. The response analysis uses prior response statistics and geographic mapping to help the Department and the community visualize the capabilities and limitations of the current response system.

2.1 STANDARDS OF COVERAGE PROCESS OVERVIEW

The core methodology used by Citygate in the scope of its deployment analysis work is *Standards of Cover*, Fifth and Sixth Editions, which is a systems-based approach to fire department deployment published by the CFAI. This approach uses local risk factors and demographics to determine the level of protection best fitting a community's needs.

The SOC method evaluates deployment as part of a fire agency's self-assessment process. This approach uses risks and community expectations on outcomes to help elected officials make informed decisions on fire and emergency medical services deployment levels. Citygate has adopted this multiple-part systems approach as a comprehensive tool to evaluate fire station locations. Depending on the needs of the study, the depth of the components may vary.

Such a systems-based approach to deployment, rather than a one-size-fits-all prescriptive formula, allows for local determination. In this comprehensive approach, each agency can match local needs (risks and expectations) with the costs of various levels of service. In an informed public policy debate, a governing board "purchases" the fire and emergency medical service levels the community needs and can afford.

While working with multiple components to conduct a deployment analysis is admittedly more work, it yields a much better result than using only a singular component. For instance, if only travel time is considered and frequency of multiple calls is not, the analysis could miss over-worked companies. If a risk assessment for deployment is not considered and deployment is based only on travel time, a community could under-deploy to incidents.

The following table describes the eight elements of the SOC process.

Table 3—Standards of Coverage Process Elements

SOC Element		Description
1	Existing Deployment	Describing the current deployment model and response performance goals the agency has in place today.
2	Community Outcome Expectations	Reviewing the expectations of the community for responses to emergencies.
3	Community Risk Assessment	Identifying and quantifying the assets at risk to fire and non-fire hazards likely to impact the community. (For this report, see **Appendix A—Community Risk Assessment**.)
4	Critical Task Analysis	Reviewing the tasks that must be performed and the personnel required to deliver the stated outcome expectation.
5	Distribution Analysis	Reviewing the spacing of first-due response resources (typically engines) to control routine emergencies.
6	Concentration Analysis	Reviewing the spacing of fire stations so that more complex emergencies can receive sufficient resources and personnel in a timely manner (First Alarm Assignment or ERF).
7	Reliability and Historical Response Effectiveness Analysis	Using prior response statistics to determine the percent of compliance the existing system delivers.
8	Overall Evaluation	Proposing Standard of Coverage statements by risk type, as necessary.

Source: CFAI, *Standards of Cover*, Fifth Edition

Simply summarized, fire service deployment is about the ***speed*** and ***weight*** of the response.

Speed refers to initial response (first-due), all-risk intervention resources (engines, ladder trucks, and ambulances) strategically deployed across a jurisdiction for response to emergencies within a specified time interval to control routine-to-moderate emergencies to achieve desired outcomes and prevent the incident from escalating to greater size or severity.

Weight refers to multiple-unit responses for more serious emergencies, such as building fires, multiple-patient medical emergencies, vehicle collisions with extrication required, or technical rescue incidents where enough firefighters must be assembled within a reasonable time interval to safely control the emergency and prevent it from escalating into a more serious event. The following table illustrates this deployment paradigm.

Table 4—Fire Service Deployment Paradigm

Element	Description	Purpose
Speed of Response	Travel time of initial response of all-risk intervention units strategically located across a jurisdiction.	Controlling a routine-to-moderate emergency without the incident escalating in size or complexity.
Weight of Response	Number of firefighters in a multiple-unit response for serious emergencies.	Assembling enough firefighters within a reasonable time interval to safely control a more complex emergency without escalation.

Thus, smaller fires and less complex emergencies require a single-unit or two-unit response (*fully staffed* engine or specialty resource) within a relatively short response time. Larger or more complex incidents require more units and personnel to control. In either case, if the crews arrive too late or the total number of personnel is too few for the emergency, they are drawn into an escalating and more dangerous situation. The science of fire crew deployment is to spread crews out across a community or jurisdiction for quick response to keep emergencies small with positive outcomes without spreading resources so far apart that they cannot assemble quickly enough to effectively control more serious emergencies.

2.2 Current Deployment

SOC Element 1 of 8
Existing Deployment Policies

Nationally recognized standards and best practices suggest using several incremental measurements to define response time. Ideally, the clock starts when the Dakota County Communication Center (DCC) 9-1-1 dispatcher receives the emergency call. For South Metro, the response time clock starts when the DCC receives the 9-1-1 call into its computer-aided dispatch (CAD) system. Response time increments include the DCC call processing, crew alerting and response unit boarding (commonly called crew turnout), and actual driving (travel) time.

Best practice response time includes three distinct components of response: 9-1-1 call processing / dispatch, crew turnout, and travel, which combined equal Total Response Time. Goals should also address response performance to other risks within the service area, such as hazardous materials and technical rescue, as recommended by the CFAI. While the Department has not adopted a response performance goals other than crew turnout, it has a service-level history that can be documented in response times, number of response units and staffing, which will be reviewed and evaluated in this study.

Currently, NFPA Standard 1710, a recommended deployment standard for career fire departments in urban/suburban areas, recommends initial (first-due) intervention unit arrival within a 4:00-

minute *travel* time, and recommends arrival of all resources comprising the multiple-unit Effective Response Force (ERF or First Alarm) within 8:00 minutes' travel at 90 percent or better reliability.[5]

If the travel time measures recommended by the NFPA and Citygate are added to dispatch processing and crew turnout times recommended by Citygate and best practices, then a realistic 90 percent first-unit total response time goal for urban response zones is 7:30 to 8:30 minutes from DCC receiving the call. This includes 1:30 minutes for call processing / dispatch, 2:00 minutes for crew turnout, and 4:00-5:00 minutes for travel.

Finding #2:	The Department has not established response performance goals as recommended by the CFAI and the NFPA.

2.2.1 Current Deployment Model

The Department staffs one engine and one ambulance at each station daily, each staffed with a minimum of two personnel. An additional 40-hour ambulance is staffed with two personnel at Station 1 8:00 am to 5:00 pm Monday through Friday. If needed, the aerial ladder truck at each station is cross staffed by the ambulance crew. Additional response resources are staffed as needed by on-duty or call-back personnel. This deployment model provides a minimum daily staffing of 8 personnel and a maximum of 12 personnel.

Finding #3:	The Department's deployment model provides a minimum of eight personnel and a maximum of 12 personnel on duty daily.
Finding #4:	The Department does not have 27/7/365 incident command (chief officer) coverage. The four chief officers must respond from the office or home and are not always immediately available.

2.2.2 Response Plan

The Department is an all-risk fire agency providing the people it protects with services that include fire suppression, pre-hospital BLS emergency medical, and initial hazardous material and technical rescue services. Given these risks, the Department utilizes a tiered response plan calling for different types and numbers of resources depending on incident or risk type. The DCC CAD system selects and dispatches the most appropriate resource types pursuant to the Department's response plan, as shown in the following table.

[5] Source: NFPA 1710 – Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments (2020 Edition).

Table 5—Response Plan by Incident Type

Incident Type	Resources Dispatched	Minimum Personnel
Low-Acuity EMS	1 Ambulance	**2**
Critical EMS Incident	1 Engine, 1 Ambulance	**4**
Vehicle Collision	1 Engine, 1 Ambulance	**4**
Vehicle Collision with Extrication	2 Engines, 1 Ambulance	**6**
Vehicle Fire	1 Engine, 1 Ambulance	**4**
Building Fire	2 Engines, 2 Ladder Trucks, 1 Ambulance, 1 Chief Officer	**8**
Vegetation Fire	1 Engine, 1 Ambulance	**4**
Water Incident	1 Rescue, 1 Boat, 1 Engine, 1 Chief Officer	**6**
Hazardous Material Release	1 Engine, 1 Ambulance	**4**
Technical Rescue	2 Engines, 2 Ambulances, 1 Chief Officer	**8**

Finding #5: The Department has a standard response plan that considers risk and establishes an appropriate initial response for each incident type; each type of call for service receives the combination of engines, ladder trucks, specialty units, and command officers customarily needed to effectively control the type of incident based on Department experience.

2.3 Outcome Expectations

SOC Element 2 of 8
Community Outcome Expectations

The SOC process begins by reviewing existing emergency services outcome expectations. This includes determining for what purpose the response system exists and whether the governing body has adopted any response performance measures. If it has, the time measures used must be understood and sound data must be available to evaluate performance.

Current national best practice is to measure percent completion of a goal (e.g., 90 percent of responses) instead of utilizing an average measure. Mathematically, this is called a fractile

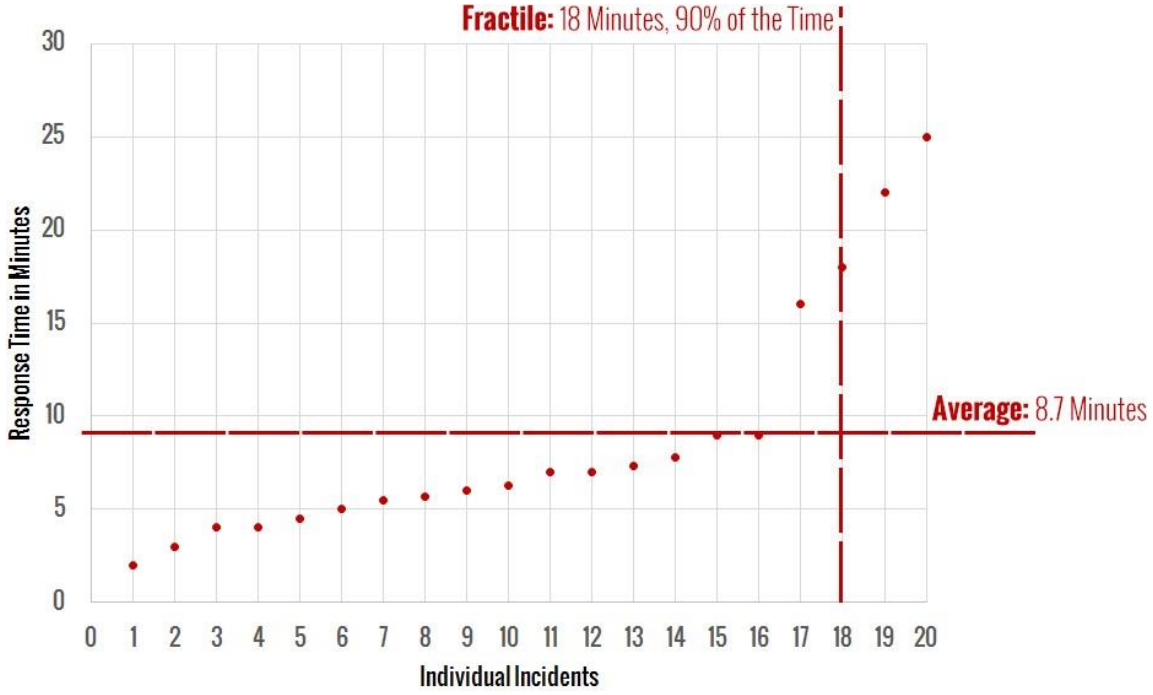
measure.[6] Measuring the average only identifies the central or middle point of response time performance for all calls for service in the data set. Using an average makes it impossible to know how many incidents had response times that were far above or just above the average.

For example, the following figure shows response times for a fictitious fire department. This small agency receives 20 calls for service each month, and each response time has been plotted on the following graph from shortest response time to longest response time.

The graph shows the average response time is 8.7 minutes. However, the average response time fails to properly account for four calls for service with response times far exceeding a threshold in which positive outcomes could be expected. In fact, it is evident in that 20 percent of responses are far too slow and that this jurisdiction has a potential life-threatening service delivery problem. Average response time as a measurement tool for fire services is simply not sufficient. This is a significant issue in larger cities if hundreds or thousands of calls are answered far beyond the average point.

By using the fractile measurement with 90 percent of responses in mind, this small example jurisdiction has a response time of 18:00 minutes, 90 percent of the time. This fractile measurement is far more accurate at reflecting the service delivery situation of this small fictitious agency.

Figure 2—Fractile versus Average Response Time Measurements



[6] A *fractile* is that point below which a stated fraction of the values lie. The fraction is often given in percent; the term percentile may then be used.

More importantly, within the SOC process, positive outcomes are the goal. From that goal, crew size and response time can be calculated to allow appropriate fire station spacing (distribution and concentration).

> **Emergency medical incidents include situations with the most severe time constraints.** The human brain can only survive 4:00 to 6:00 minutes without oxygen. Cardiac arrest and other events can cause oxygen deprivation to the brain. While cardiac arrests make up a small percentage, drowning, choking, trauma constrictions, or other similar events have the same effect. In a building fire, a small incipient fire can grow to involve the entire room in a 6:00 to 8:00-minute time frame. If fire service response is to achieve positive outcomes in severe emergency medical situations and incipient fire situations, *all* responding crews must arrive, assess the situation, and deploy effective measures before brain death occurs or the fire spreads beyond the room of origin.

Thus, from the time the 9-1-1 call is received by the dispatch center, an effective deployment system is *beginning* to manage the problem within a 7:00 to 8:00-minute total response time. This is right at the point that brain death is becoming irreversible, and the fire has grown to the point of leaving the room of origin and becoming very serious. Thus, the Department needs a first-due response goal that is within a range to give hope for a positive outcome. It is important to note that the fire or medical emergency continues to deteriorate from the time of inception, not from the time the fire engine starts to drive the response route. Ideally, the emergency is noticed immediately, and the 9-1-1 system is activated promptly. In the best of circumstances, this step of awareness—calling 9-1-1 and giving the dispatcher accurate information—takes 1:00 minute. Crew notification and travel time take additional minutes. Upon arrival, the crew must approach the injured party or emergency, assess the situation, and appropriately deploy its skills and tools. Even in easy-to-access situations, this step can take 2:00 minutes or more. This time frame may be increased considerably due to long driveways, apartment buildings with limited access, multiple-story buildings or office complexes, or shopping centers.

Unfortunately, there are times when the emergency has become too severe, even before the 9-1-1 notification or fire department response, for the responding crew to reverse; however, when an appropriate response time policy is combined with a well-designed deployment system, then only anomalies like bad weather, poor traffic conditions, or multiple emergencies slow down the response system. Consequently, a properly designed system will give the public hope of a positive outcome for their tax dollar expenditure.

For this report, total response time is the sum of 9-1-1 call processing / dispatch, crew turnout, and travel time, which is consistent with CFAI and NFPA best practice recommendations.

2.4 COMMUNITY RISK ASSESSMENT

The third element of the SOC process is a community risk assessment. Within the context of an SOC study, the objectives of a community risk assessment are to:

SOC ELEMENT 3 OF 8
COMMUNITY RISK ASSESSMENT

- Identify the values at risk to be protected within the community or service area.
- Identify the specific hazards with the potential to adversely impact the community or service area.
- Quantify the overall risk associated with each hazard.
- Establish a foundation for current/future deployment decisions and risk-reduction / hazard-mitigation planning and evaluation.

A hazard is broadly defined as a situation or condition that can cause or contribute to harm. Examples include fire, medical emergency, vehicle collision, earthquake, flood, etc. Risk is broadly defined as the *probability of hazard occurrence* in combination with the *likely severity* of *resultant impacts* to people, property, and the community.

2.4.1 Risk Assessment Methodology

The methodology employed by Citygate to assess community risks as an integral element of an SOC study incorporates the following elements:

- Identification of geographic planning sub-zones (risk planning zones) appropriate to the community or jurisdiction.
- Identification and quantification, to the extent data is available, of the values at risk to various hazards within the community or service area.
- Identification of the fire and non-fire hazards likely to impact the community or service area relative to services provided by the fire agency.
- Determination of the probability of occurrence for each identified hazard based on prior historical occurrences.
- Determination of *likely* impact severity of a hazard occurrence by type and risk planning zone.
- Determination of overall risk by hazard and risk planning zone.

2.4.2 Values at Risk to Be Protected

Broadly defined, *values at risk* are those tangibles of significant importance or value to the community or jurisdiction that are potentially at risk of harm or damage from a hazard occurrence. Values at risk typically include people, critical facilities/infrastructure, buildings, and key economic, cultural, historic, and natural resources.

People

Residents, employees, visitors, and travelers through a community or jurisdiction are vulnerable to harm from a hazard occurrence. Particularly vulnerable are specific at-risk populations, including those unable to care for themselves or self-evacuate in the event of an emergency. Key demographic data for the Department's service area includes:

- Slightly more than 31 percent of the population is under 10 years or over 65 years of age.
- Of the population over 24 years of age, almost 94 percent has completed high school or equivalency.
- Of the population over 24 years of age, nearly 33 percent has an undergraduate degree, and slightly more than 10 percent has a graduate or professional degree.
- Of the population 15 years of age or older, more than 93 percent is in the workforce; of those, nearly 7 percent are unemployed.
- Median household income is nearly $69,000.
- The population below the federal poverty level is slightly more than 11 percent.
- Nearly 7 percent of the population does not have health insurance coverage.

Critical Infrastructure / Key Resources

The U.S. Department of Homeland Security defines critical infrastructure and key resources (CIKR) as those physical assets essential to the public health and safety, economic vitality, and resilience of a community, such as lifeline utilities infrastructure, telecommunications infrastructure, essential government services facilities, public safety facilities, schools, hospitals, airports, etc. The two Cities have numerous critical facilities, and a hazard occurrence with significant impact severity affecting one or more of these facilities would likely adversely impact critical public or community services.

Buildings

The service area includes nearly 19,000 residential housing units, and approximately 1,280 businesses, including offices, professional services, retail sales, restaurants/bars, motels, churches, schools, government facilities, healthcare facilities, and other business types as described in **Appendix A**.

2.4.3 Hazard Identification

Citygate utilized prior risk studies where available, fire and non-fire hazards as identified by the CFAI, and agency/jurisdiction-specific data and information to identify the hazards to be evaluated for this study.

Following an evaluation of the hazards identified in the 2021 Dakota County All Hazard Mitigation Plan,[7] and the fire and non-fire hazards as identified by the CFAI as they relate to services provided by the Department, Citygate evaluated the following six hazards for this assessment:

- Building fire
- Vegetation/wildland fire
- Medical emergency
- Hazardous material release/spill
- Technical rescue
- Marine Incident

Because building fires and medical emergencies have the most severe time constraints if positive outcomes are to be achieved, the following is a brief overview of building fire and medical emergency risk. **Appendix A** contains the full risk assessment for all seven hazards.

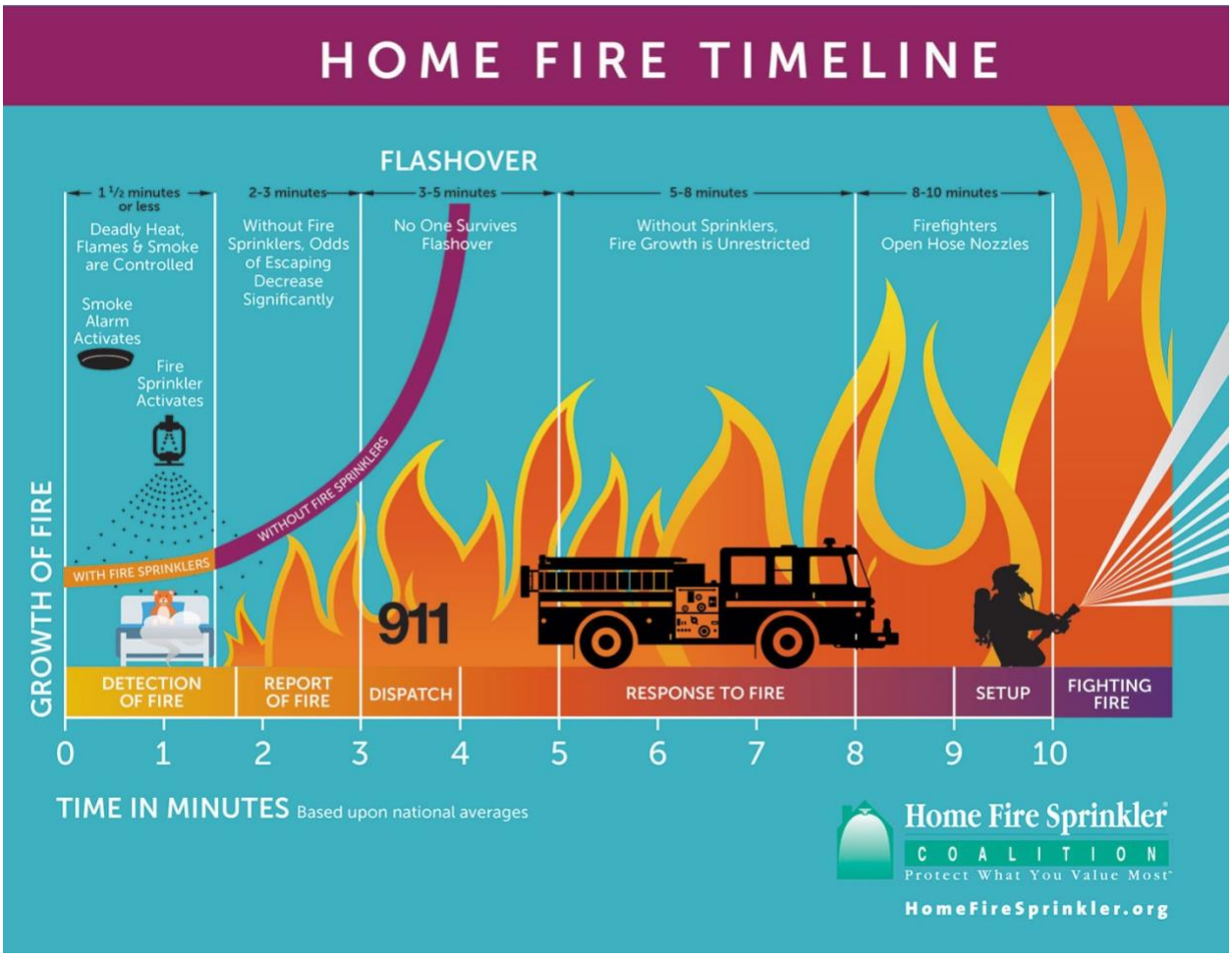
Building Fire Risk

One of the primary hazards in any community is building fire. Building fire risk factors include building density, size, age, occupancy, and construction materials and methods, as well as the number of stories, the required fire flow, the proximity to other buildings, built-in fire protection/alarm systems, an available fire suppression water supply, building fire service capacity, fire suppression resource deployment (distribution/concentration), staffing, and response time.

[7] Source: Dakota County 2021 All Hazard Mitigation Plan Table 4.1 Hazards Profiled.

The following figure illustrates the building fire progression timeline and shows that flashover, which is the point at which the entire room erupts into fire after all the combustible objects in that room reach their ignition temperature, can occur as early as 3:00 to 5:00 minutes from the initial ignition. Human survival in a room after flashover is extremely improbable.

Figure 3—Building Fire Progression Timeline

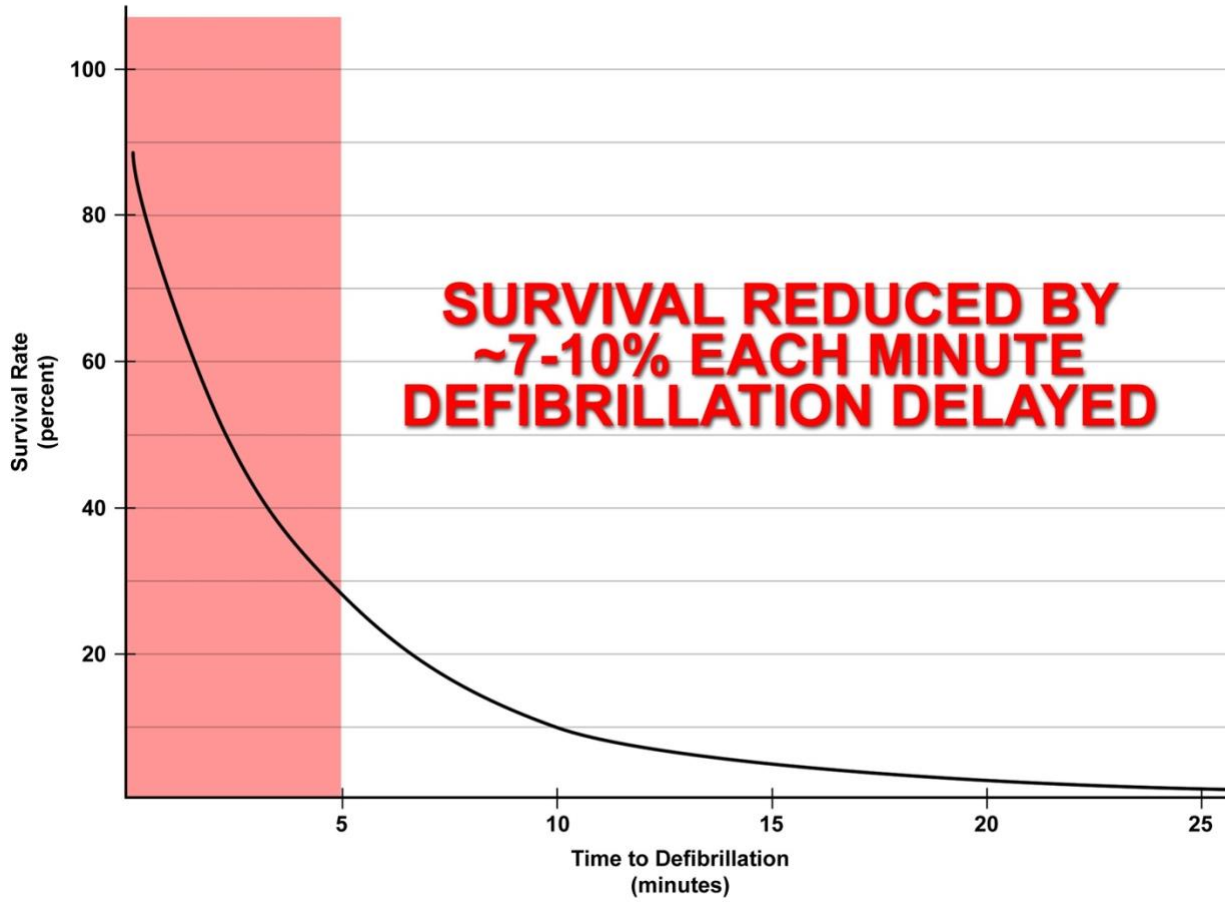


Source: http://www.firesprinklerassoc.org

Medical Emergency Risk

Fire agency service demand in most jurisdictions is predominantly for medical emergencies. The following figure illustrates the reduced survivability of a cardiac arrest victim as time to defibrillation increases.

Figure 4—Survival Rate versus Time of Defibrillation



The Department currently provides BLS pre-hospital emergency medical services, with operational personnel trained to the EMT-A level.

2.4.4 Risk Assessment Summary

The City's overall risk for six hazards related to emergency services provided by the Department range from **Low** to **High**, as summarized in the following table. See **Appendix A** for the full risk assessment.

Table 6—Overall Risk by Hazard

Hazard	Planning Zone	
	Station 1	Station 2
Building Fire	*Moderate*	*Moderate*
Vegetation/Wildland Fire	*Low*	*Low*
Medical Emergency	*High*	*High*
Hazardous Materials	*Moderate*	*Moderate*
Technical Rescue	*Low*	*Low*
Marine Incident	*Low*	*Low*

2.5 Critical Task Time Measures—What Must Be Done over What Time Frame to Achieve the Stated Outcome Expectation?

SOC Element 4 of 8
Critical Task Time Study

SOC studies use critical task information to determine the number of firefighters needed within a time frame to achieve desired objectives for fire and emergency medical incidents. Table 7 and Table 8 illustrate critical tasks typical of building fire and medical emergency incidents, including the minimum number of personnel required to complete each task. These tables are composites from Citygate clients in urban/suburban departments, with units staffed with three or four personnel per engine or ladder truck. It is important to understand the following relative to these tables:

- It can take a considerable amount of time after a task is ordered by command to complete the task and achieve the desired outcome.
- Task completion time is usually a function of the number of personnel that are *simultaneously* available. The fewer firefighters available, the longer some tasks will take to complete. Conversely, with more firefighters available, some tasks are completed concurrently.
- Some tasks must be conducted by a minimum of two firefighters to comply with safety regulations. For example, two firefighters are required to search a smoke-filled room for a victim.

2.5.1 Critical Firefighting Tasks

Table 7 illustrates the critical tasks required to control a typical single-family dwelling fire with six response units (two engines, two ladder trucks, one ambulance, and one chief officer, all from South Metro for a total ERF of 8–13 personnel depending on daily staffing level). These tasks are

taken from typical fire departments' operational procedures, which are consistent with the customary findings of other agencies using the SOC process. No conditions exist to override the Occupational Safety and Health Administration (OSHA) two-in/two-out safety policy, which requires that firefighters enter atmospheres such as building fires that are immediately dangerous to life and health in teams of two, while two more firefighters are outside and immediately ready to rescue them should trouble arise.

Scenario: *Simulated approximately 2,000 square-foot, two-story, single-family residential fire with unknown rescue situation. Responding companies receive dispatch information typical for a witnessed fire. Upon arrival, they find approximately 50 percent of the second floor involved in fire.*

Table 7—First Alarm Residential Fire Critical Tasks – 11–13 Personnel

	Critical Task Description	Personnel Required
First-Due Engine (2–4 Personnel)		
1	Conditions report	1
2	Establish supply line to hydrant	2
3	Deploy initial fire attack line to point of building access	2
4	Operate pump and charge attack line	1
5	Establish incident command	1
First-Due Truck (2 Personnel)		
1	Conduct primary search	2
2	Deploy ground ladders to roof and upper story windows	2
3	Establish horizontal or vertical building ventilation	2
Second-Due Engine (2–4 Personnel)		
1	Conduct initial search and rescue, if not already completed	2
2	Shut off utilities	1-2
3	Deploy back-up attack line	2
4	Establish Initial Rapid Intervention Crew (IRIC)	2
Second-Due Truck (2 Personnel) if at Max Staffing or via Mutual Aid		
1	Open concealed spaces as required	2
2	Support other companies as assigned	1-2
Chief Officer (limited availability with current model)		
1	Transfer of incident command	1
2	Establish exterior command and scene safety	1
Ambulance (2 Personnel)		
1	Establish Rehab	1–2
2	Support other companies as assigned	1–2

Grouped together, these tasks form an Effective Response Force (ERF), or First Alarm Assignment. These distinct tasks must be performed to effectively achieve the desired outcome; arriving on-scene does not stop the emergency from escalating. While firefighters accomplish these tasks, the incident progression clock keeps running.

Many studies have shown that a small fire can spread to engulf an entire room in fewer than 4:00 to 5:00 minutes after free burning has started. Once the room is completely superheated and involved in fire (known as flashover), the fire will spread quickly—both vertically and

horizontally—throughout the structure. For this reason, it is imperative that fire suppression and search/rescue operations commence before the flashover point occurs if the goal is to keep fire damage in or near the room of origin and to rescue persons unable to self-evacuate. In addition, flashover presents a life-threatening situation to both firefighters and any occupants of the building. Fire fatalities typically include persons under 10 and over 65 years of age and those unable to self-evacuate, with slightly more than 31 percent of the service area population within those age groups.

2.5.2 Critical Medical Emergency Tasks

The Department responds to more than 5,800 EMS incidents annually, including vehicle accidents, strokes, heart attacks, difficulty breathing, falls, childbirths, and other medical emergencies.

For comparison, the following table summarizes the critical tasks required for a cardiac arrest patient.

Table 8—Cardiac Arrest Critical Tasks – One Engine + One Ambulance (4–6 Personnel)

Critical Task		Personnel Required	Critical Task Description
1	Chest compressions	**1–2**	Compression of chest to circulate blood
2	Ventilate/oxygenate	**1–2**	Mouth-to-mouth, bag-valve-mask, apply O_2
3	Airway control	**1–2**	Manual techniques/intubation/cricothyroidotomy
4	Defibrillate	**1–2**	Electrical defibrillation of dysrhythmia
5	Establish I.V.	**1–2**	Peripheral or central intravenous access
6	Control hemorrhage	**1–2**	Direct pressure, pressure bandage, tourniquet
7	Splint fractures	**2–3**	Manual, board splint, HARE traction, spine
8	Interpret ECG	**2**	Identify type and treat dysrhythmia
9	Administer drugs	**2**	Administer appropriate pharmacological agents
10	Spinal immobilization	**2–3**	Prevent or limit paralysis to extremities
11	Extricate patient	**3**	Remove patient from vehicle entrapment
12	Patient charting	**1–2**	Record vitals, treatments administered, etc.
13	Hospital communication	**1–2**	Receive treatment orders from physician
14	Treat en route to hospital	**2–3**	Continue to treat/monitor/transport patient

2.5.3 Critical Task Analysis and Effective Response Force Size

What does a deployment study derive from a critical task analysis? The time required to complete the critical tasks necessary to stop the escalation of an emergency (as shown in Table 7 and Table 8) must be compared to outcomes. As stated, after approximately 3:00 to 5:00 minutes of free

burning in an enclosed room, fire will escalate to the point of flashover. At this point, the entire room is engulfed in fire, the entire building becomes threatened, and human survival near or in the room of a fire's origin becomes impossible. Additionally, brain death begins to occur within 4:00 to 6:00 minutes of the heart stopping. Thus, the ERF must arrive in time to prevent these emergency events from becoming worse.

The Department's daily on-duty response staffing is only sufficient to deliver an ERF of two engines, two ladder trucks, one ambulance, and one chief officer totaling 12–13 personnel to a medium-or high hazard building fire, if all the authorized personnel are on duty. If the minimum staffing of 8 plus one chief officer (if available) has to respond, a total of 9 personnel is *insufficient* for a serious house fire. Or if the ambulance crews are committed to EMS incidents at peak hours of the day, a maximum of 12 on duty falls to 8. The Department augments its multiple-unit responses as needed by requesting a second engine or ladder truck with two or more personnel via mutual aid. However, two of the three closest departments' staffs—with a mix of career and paid-on-call firefighters and the closest units—do not respond as quickly to the Northern part of the response area as the City of St. Paul could.

Mitigating an emergency event is a team effort once the units have arrived. This refers to the *weight* of response analogy: if too few personnel arrive too slowly, the emergency will escalate instead of improving. The outcome times, of course, will be longer and yield less-desirable results if the arriving force is later or smaller.

The number of personnel and the arrival timeframe can be critical in a serious fire. Fires in older or multiple-story buildings could require the initial firefighters to rescue trapped or immobile occupants. If the ERF is too small, rescue and fire suppression tasks *cannot* be conducted simultaneously. Thus, achieving good performance requires *adequate staffing* (and training).

Fires and complex medical incidents require additional units to arrive in time to complete an effective intervention. Time is one factor that comes from *proper station placement and the staffing model used*. When fire stations are spaced too far apart and one unit must cover another unit's area or multiple units are needed, the units can be too far away, and the emergency will escalate and result in a less-than-desirable outcome. Thus, some overlapping coverage between fire stations is needed.

Previous critical task studies conducted by Citygate and NFPA Standard 1710 identify that all units need to arrive at a building fire with a minimum of **16-17** firefighters within 11:30 minutes (from the time of a 9-1-1 call) to *simultaneously and effectively* perform the tasks of rescue, fire suppression, and ventilation.

If fewer firefighters arrive, all tasks may not be completed. Most likely, the search team would be delayed, as would ventilation. The attack lines would only consist of two firefighters, which does not allow for rapid movement of the hose line above the first floor in a multiple-story building. Because rescue is conducted with at least two two-person teams, when rescue is essential, other tasks are not completed in a simultaneous, timely manner. Therefore, effective deployment is about the **speed** *(travel time)* and the **weight** *(number of firefighters)* of the response.

The fact that the Department's 90th percentile ERF call-to-arrival performance over the three years of data for a moderate to serious incident was11:31 to 14:35 minutes, which is past a best practices recommendation of 11:30 minutes. The Department's plan for building fires does reflect a commitment to confining building fires to the building of origin and prevent the spread of fire to adjoining buildings if the "weight of attack" can respond promptly.

2.6 Distribution and Concentration Studies—How the Location of First-Due and First Alarm Resources Affects Emergency Incident Outcomes

SOC Element 5 of 8
Distribution Study

SOC Element 6 of 8
Concentration Study

The joint service area is currently served by two fire stations staffed 24 hours a day with at least eight full-time personnel plus one chief officer when available for incident command. More serious incidents rely on response from adjoining agencies via mutual aid.

When using geographic mapping tools, it is appropriate to understand what the existing stations do and do not cover within travel time goals; if there are any coverage gaps needing one or more stations; and what, if anything, to do about them.

In brief, there are two geographic perspectives to fire station deployment:

- **Distribution** – the spacing of first-due fire units to control routine emergencies before they escalate and require additional resources.
- **Concentration** – the spacing of fire stations sufficiently close to each other so that more complex emergency incidents can quickly receive sufficient resources from multiple fire stations. As indicated, this is known as the Effective Response Force (ERF) or, more commonly, the First Alarm Assignment—the collection of a sufficient number of firefighters on-scene, delivered within the concentration time goal to stop the escalation of the problem.

To analyze first-due fire unit travel time coverage, Citygate used a geographic mapping tool that measures theoretical travel time over a street network. For this calculation, Citygate used the base map and street travel speeds calibrated to actual fire apparatus travel times from previous responses to simulate real-world travel time coverage. Using these tools, Citygate ran several deployment

tests and measured their impact on various parts of the Cities. A 4:00-minute first-due and 8:00-minute ERF *travel* time were used, consistent with best practice response performance goals for positive outcomes in urban areas.

2.6.1 Deployment Baselines

Map #1 – General Geography, Station Locations, and Response Resource Types

Map #1 shows the Department's service area boundaries and the two fire station locations. This is a reference map for other maps that follow. Station symbols denote the types of response apparatus available at each station.

Map #2 – Risk Assessment: Planning Zones

Map #2 shows the two risk planning zones used for this study, as recommended by the CFAI, which are the same as each station's initial (first-due) response area.

Map #2a – Risk Assessment: Population Density

This map shows the resident population density across the two cities. People drive EMS incident demand; thus, the higher population density areas are typically the higher EMS demand locations. The highest population density areas are northern West St. Paul and central to southwest South St. Paul.

Map #2b – 4:00-Minute and 5:00-Minute Travel Time Coverage over Population Density

Map #2b shows the two stations coverage of public road segments, over population density, that a fire engine should be expected to reach within 4:00 or 5:00 minutes of *travel time* assuming the respective engine is in station and encounters no traffic congestion. As can be seen, some of northern West St. Paul is beyond 4:00 or even 5:00 minutes of travel time from the existing station. Similarly, some of the northern and southern areas of South St. Paul are also not covered in 4:00 or 5:00 minutes' travel time. In these areas of both Cities, the longer travel times make it less probable that desired outcomes can be achieved. It should also be noted that neither station is central to the population density of *either* City.

The purpose of response time modeling is to determine response time coverage across a jurisdiction's geography and station locations. This geo-mapping design is then validated against dispatch time data to reflect actual response times. Ideally, there should be some overlap between station areas so that a second-due unit can have the chance of an acceptable response time when it responds to a call in a different station's first-due response area.

Map #3 – Distribution: 4:00-Minute First-Due Travel Time Coverage

This map shows in green the 63 percent of public road segments that can be expected to be reached by a fire engine within 4:00-minute travel time from the existing two fire stations. This is the essentially Map #2b without the population density and 5:00-minute coverage layers.

Map #3a – Distribution: 5:00-Minute First-Due Travel Time Coverage

This map shows the nearly 23 percent increase in coverage by adding just one minute to the travel time goal. As can be seen, even with two stations, the outer edges of both Cities are still beyond the 5:00-minute coverage.

Map #3b – Distribution: 4:00 and 5:00-Minute First-Due Travel Time Coverage with Incidents Beyond the fourth and fifth Minute of Coverage

This map shows the incidents, not just the street segments, beyond the reach of both stations at both 4:00 minutes (green shaded areas) and 5:00 minutes of travel (brown shaded areas). As the map illustrates, there are many incidents in both Cities beyond the 4:00-minute travel band, and in West St. Paul beyond the 5:00-minute band as well.

This perspective also shows that if the deployment model were to be modified to only a single station, much of southern South St. Paul would be beyond the fourth and fifth minute of travel.

Map #4 – Insurance Services Office (ISO) 1.5-Mile Coverage Areas

Map #4 displays the former ISO recommendation that urban stations cover a 1.5-mile *distance* response area. Depending on a jurisdiction's road network, the 1.5-mile measure usually equates to a 3:30- to 4:00-minute *travel*; however, just two fire stations only provide core area coverage. One station could not begin to cover both Cities in best outcome response times.

Map #5 – Concentration: ERF 8:00-Minute Travel Time Coverage

Map #5 shows the public street segments where the Department's current response plan should deliver the initial ERF of two engines, one ladder truck, one ambulance, and one chief officer within 8:00 minutes' travel time. A larger response force must be delivered via mutual aid in a longer travel time. As can be seen, this ERF coverage for more serious incidents only occurs between the two stations, and both the northwest and southeast corners are well beyond 8:00-minute travel time coverage for the last needed unit to arrive.

Map #6 – 8:00-Minute Ladder Truck Travel Time Coverage

Map #6 shows, in green, 8:00-minute travel time coverage for a ladder truck from either station. As can be seen, coverage extends to most built-up sections of the two Cities within the desired 8:00-minute travel time goal. However, the two ladder trucks are cross-staffed with the ambulances

and, if the ambulances are committed to EMS incidents, the ladder(s) will not be available to respond.

Map #7 – 8:00-Minute Chief Officer Travel

This map shows 8:00-minute travel time coverage for a chief officer from Station 1.

Map #8 – All Incident Locations

Map #8 shows the location of all incidents from July 1, 2020, through June 30, 2023. As can be seen, calls for service occur on nearly all street segments of the service area, even where population density if the lightest in south and east South S. Paul.

Map #9 – Emergency Medical Services and Rescue Incident Locations

Map #9 shows the emergency medical and rescue incident locations over the three-years studied. With most calls for service being EMS-related, this map illustrates the need for pre-hospital emergency medical services.

Map #10 – All Fire Locations

Map #10 shows the location of all fires within the Cities over the three-year period. All fires include any type of fire call, from vehicle to dumpster to building. While there are obviously fewer fires than medical or rescue calls, this map illustrates that fires occur throughout the service area.

Map #11 – Building Fire Locations

Map #11 displays the location of all building fire incidents over the three-year study. While the number of building fires is a smaller subset of all fires, building fires do occur beyond the 4:00- and 5:00-minute first-due travel time coverage area, as shown in Maps #3 and #3a.

Map #12 – Emergency Medical Services and Rescue Incident Location Densities

Map #12 shows, by mathematical density, where clusters of EMS and rescue incident activity occurred over the three data years. The darker density color plots the highest concentration of EMS/rescue incidents. This type of map makes the location of frequent workload more meaningful than simply mapping the locations of all EMS/rescue incidents, as was shown in Map #9.

This perspective is important because the deployment system needs an overlap of units to ensure the delivery of multiple units when needed for more serious incidents or to handle simultaneous calls for service.

Map #13 – All Fire Location Densities

Map #13 is like Map #12 but shows the hot spots of activity for all types of fires. The density of these incidents is greater in the higher building and population density areas of both Cities and the two fire stations are well positioned near the center of the higher density areas.

Map #14 – Structure Fire Location Densities

Map #14 is like Map #11 but shows the hot spot locations for structure fires only.

2.6.2 Travel Time Road Mile Coverage Measures

In addition to the visual displays of travel time coverage the maps provide, GIS software also calculates the miles of public streets covered at 4:00 and 8:00 minutes, as shown in the following table.

Table 9—Travel Time Coverage Summary

Map No.	Travel Time Measure	Total Public Road Miles	Miles Covered	Percent of Total Miles Covered
3	**4:00-Minute First-Due Engine**	175	**110**	**63.0%**
3a	**5:00-Minute First-Due Engine**	175	**150**	**85.7%**
4	**ISO 1.5-Mile Station Spacing**	175	**105**	**60.1%**
5	**8:00-Minute Overlapping Coverage from Sta. 1 and Sta. 2**	175	**109**	**62.3%**
6	**8:00-Minute Truck from Sta. 1 and Sta. 2**	175	**175**	**100.0%**
7	**8:00-Minute Chief Officer from Sta. 1**	175	**150**	**85.7%**

As the previous table shows, only 63 percent of the two Cities' public road network can be reached from the current two fire station locations within 4:00 minutes of travel time. This increases to 85.7 percent by the fifth minute, which is very good coverage in a suburban density city with a low structure fire rate. The two stations combined can also cover only 62.3 percent of the service area at an ERF travel time of 8:00 minutes.

2.6.3 Mapping Coverage Findings

Finding #6:	The Department's current fire station locations can be expected to deliver 5:00-minute first-due travel time coverage to 85.7 percent of the service area's total public road miles, which is good coverage to achieve desired outcomes.
Finding #7:	The service area is too large to cover from either current station location even at the fifth minute of travel, leaving large areas of the other City well beyond 5:00-minute coverage.

2.7 STATISTICAL ANALYSIS

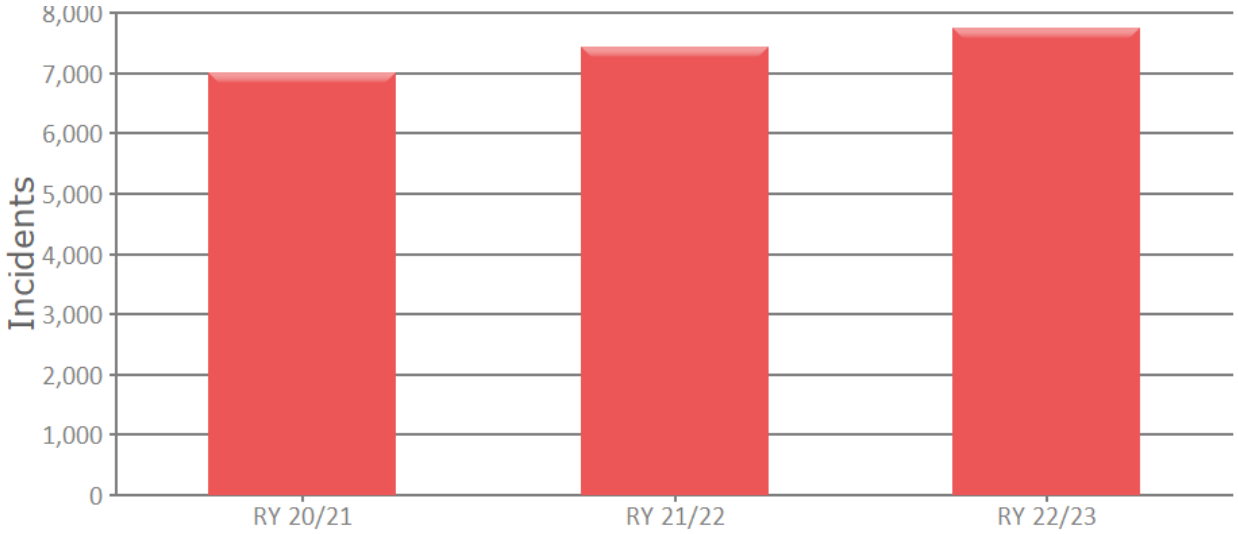
SOC ELEMENT 7 OF 8
RELIABILITY AND HISTORICAL RESPONSE EFFECTIVENESS STUDIES

The maps described in **Section 2.6** and presented in **Volume 2** show the ideal situation for response times and the response effectiveness given perfect conditions with no competing calls, units out of place, or simultaneous calls for service. Examination of the actual response time data provides a picture of actual response performance with simultaneous calls, rush hour traffic congestion, units out of position, and delayed travel time for events such as periods of severe weather. The following subsections provide summary statistical information regarding the Department and its services.

2.7.1 Demand for Service

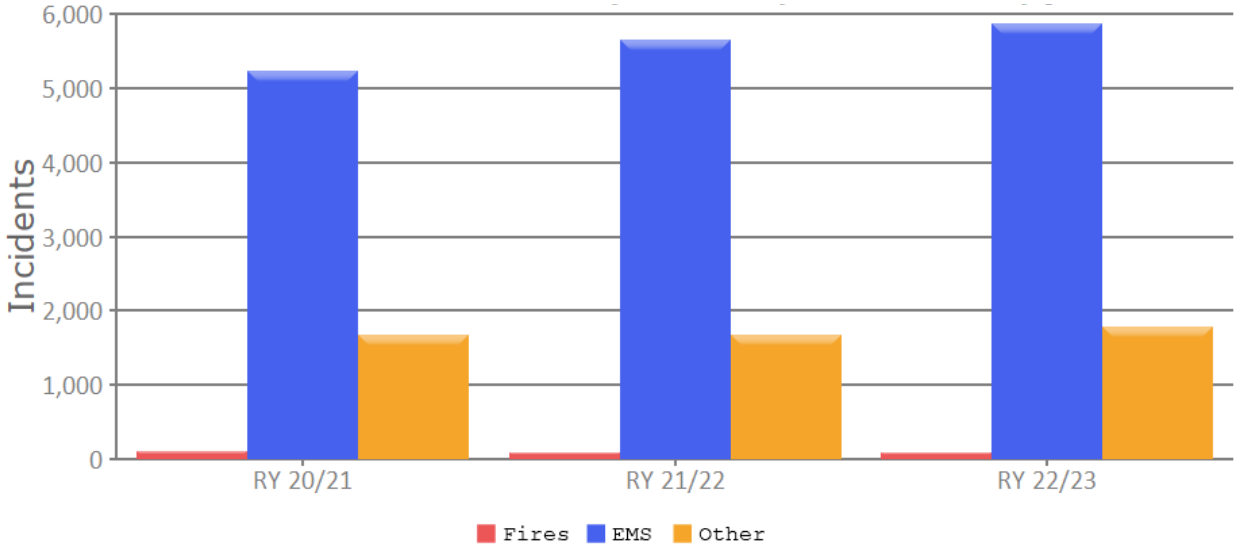
The Department provided both National Fire Incident Record system (NFIRS) 5 incident and dispatch computer apparatus response time data for the period from July 1, 2020, through June 30, 2023. These two data sets were merged to provide 22,182 incidents and 28,338 apparatus response records. The following figure shows overall service demand increased 10.5 percent over the three-years studied.

Figure 5—Service Demand by Year



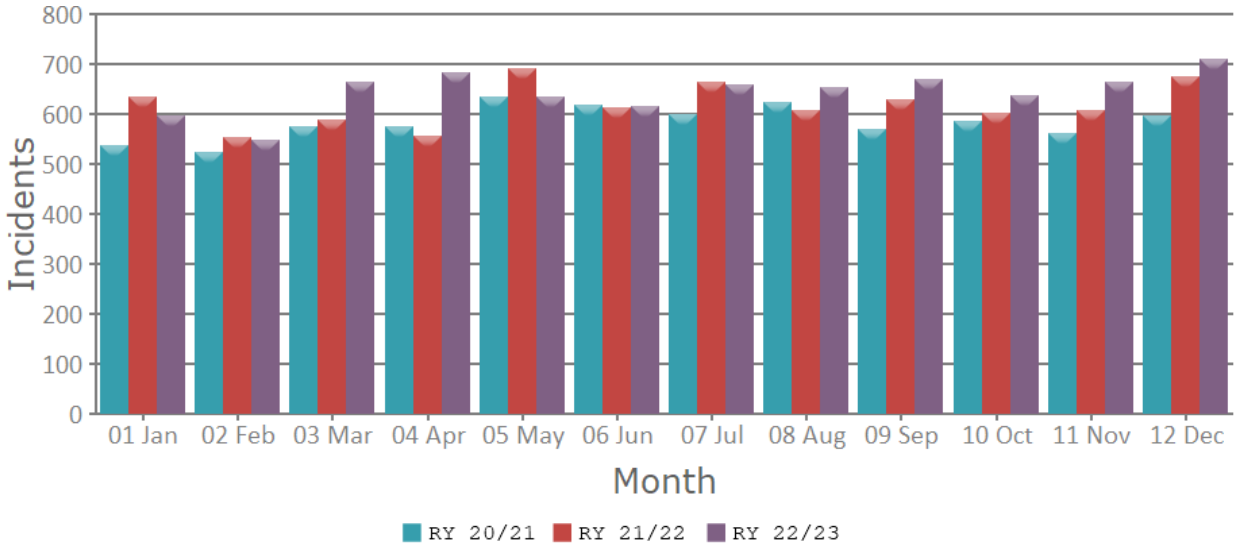
The following figure illustrates annual service demand by incident type with EMS incidents increasing steadily and fire and other incident types remaining fairly constant over the three-year period.

Figure 6—Annual Service Demand by Incident Type



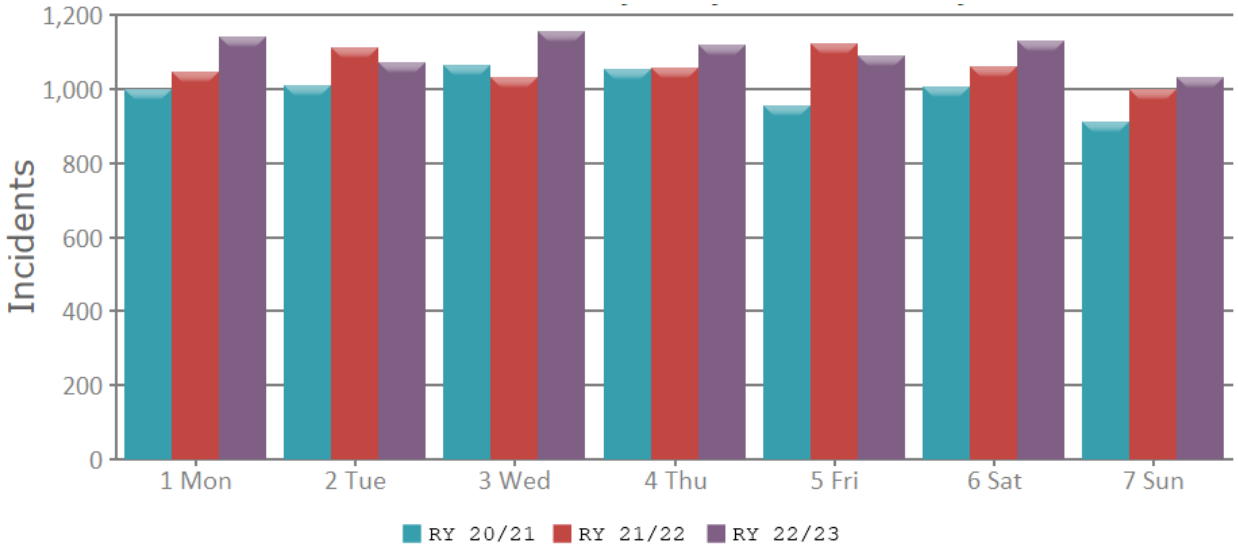
The following figure illustrates fairly consistent incident demand by month and year.

Figure 7—Service Demand by Month and Year



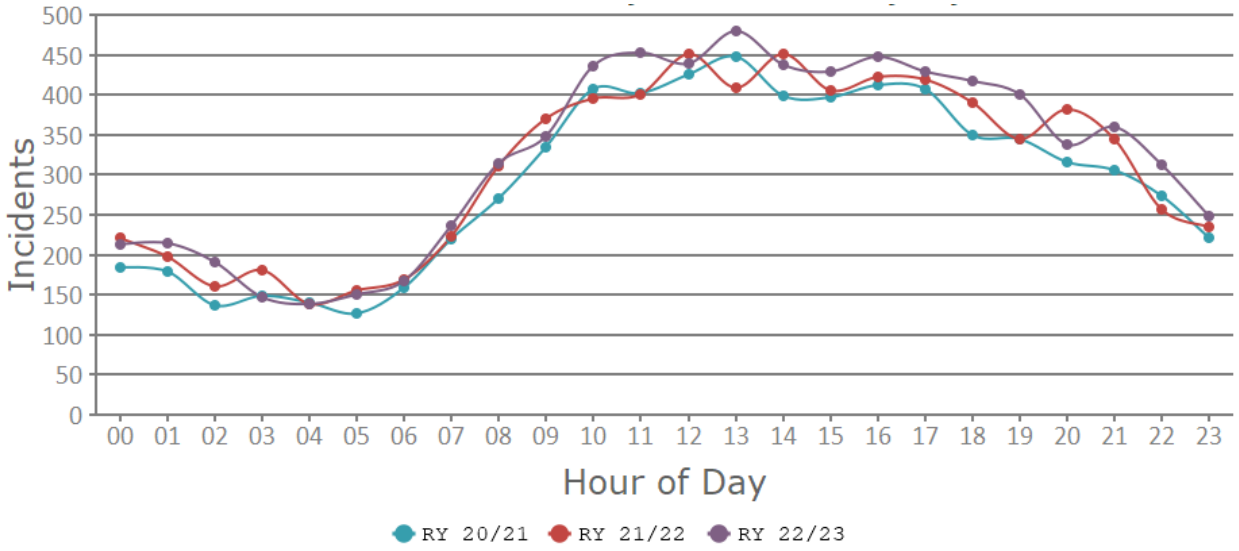
The following illustrates service demand by day of week, showing minimal variation.

Figure 8—Service Demand by Day of Week



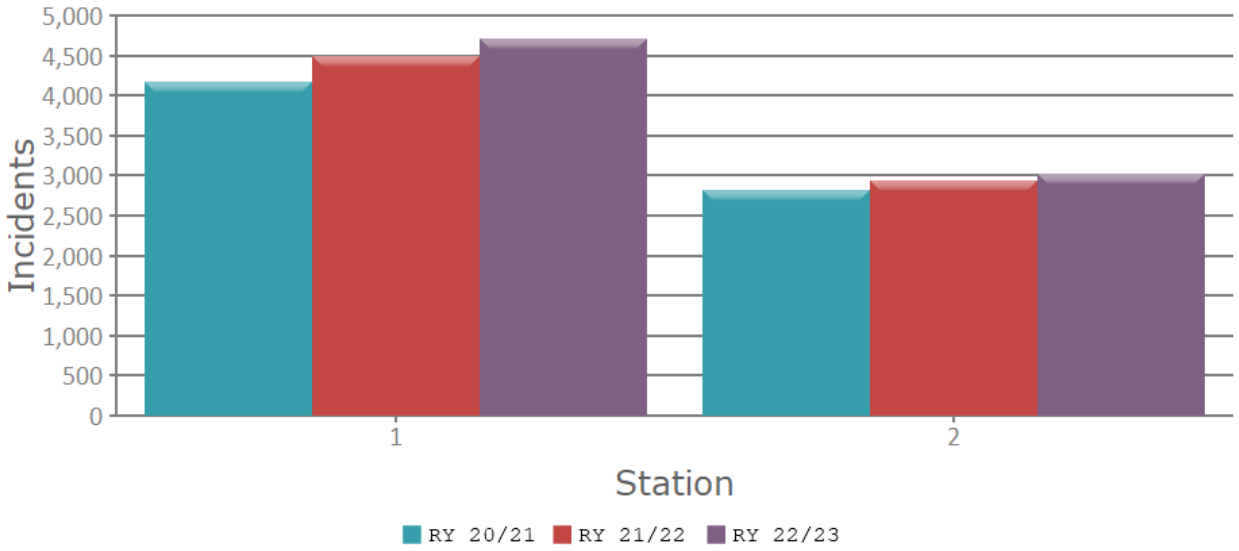
The following figure shows service demand by hour of day with hourly activity fairly consistently distributed year to year.

Figure 9—Service Demand by Hour of Day and Year



The following graph is a breakdown of the number of incidents by station area by year with activity in both station areas increasing slightly each year.

Figure 10—Service Demand by Station by Year



The following table ranks service demand by incident type for those with more than 12 occurrences in RY 22/23. Note the high ranking of EMS-related incidents and incidents cancelled en route. Building fires rank 16th by volume.

Table 10—Service Demand by Incident Type (RY 22/23)

Incident Type	RY 22/23
321 EMS call, excluding vehicle accident with injury	5,689
554 Assist invalid	426
611 Dispatched & canceled en route	197
552 Police matter	145
745 Alarm system sounded, no fire – unintentional	140
322 Vehicle accident with injuries	108
622 No incident found on arrival of incident address	101
251 Excessive heat, scorch burns with no ignition	68
444 Power line down	68
743 Smoke detector activation, no fire – unintentional	48
561 Unauthorized burning	47
735 Alarm system sounded due to malfunction	43
412 Gas leak (natural gas or LPG)	38
324 Motor vehicle accident no injuries	37
651 Smoke scare, odor of smoke	37
111 Building fire	**31**
553 Public service	30
445 Arcing, shorted electrical equipment	30
551 Assist police or another governmental agency	29
671 Hazmat release investigation w/ no hazmat	29
733 Smoke detector activation due to malfunction	27
424 Carbon monoxide incident	27
715 Local alarm system, malicious false alarm	22
746 Carbon monoxide detector activation, no CO	21
736 CO detector activation due to malfunction	20
550 Public service assistance, other	19
600 Good intent call, other	16
353 Removal of victim(s) from stalled elevator	14

The following table ranks service demand by property use type for those with more than 25 occurrences in RY 2022/23. Note the high rankings of residential dwellings, streets, and highways.

Table 11—Service Demand by Property Use

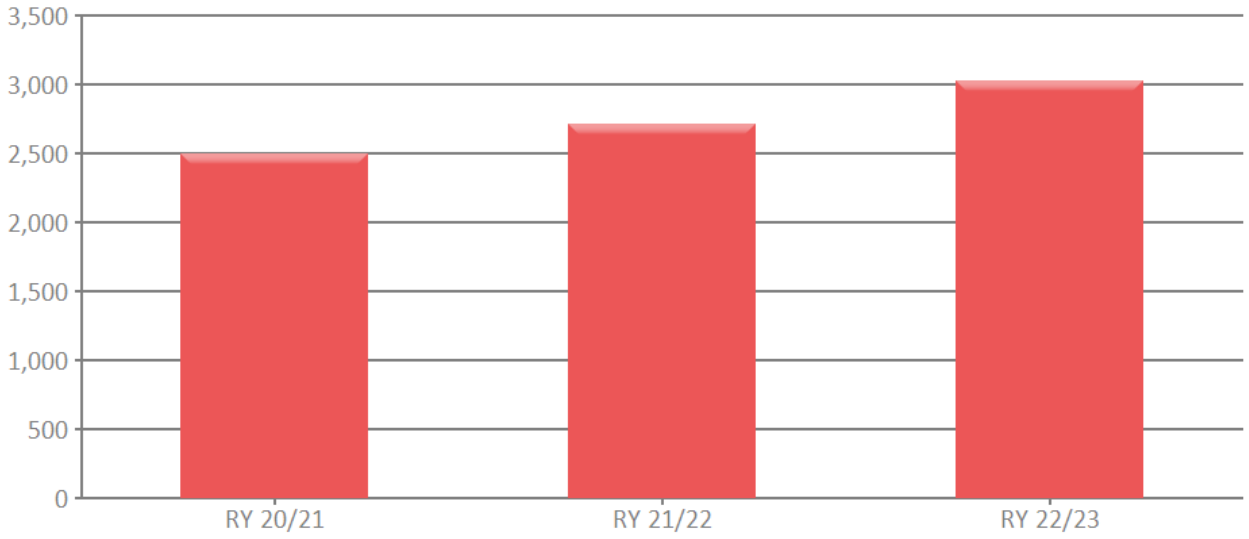
Property Use	RY 22/23
429 Multifamily dwellings	2,800
419 1 or 2 family dwelling	2,263
311 24-hour care Nursing homes, 4 or more persons	1,038
962 Residential street, road or residential driveway	243
963 Street or road in commercial area	129
340 Clinics, Doctors offices, hemodialysis centers	107
961 Highway or divided highway	89
459 Residential board and care	78
965 Vehicle parking area	60
161 Restaurant or cafeteria	58
150 Public or government, other	54
500 Mercantile, business, other	46
960 Street, other	41
519 Food and beverage sales, grocery store	39
581 Department or discount store	29
571 Service station, gas station	25
580 General retail, other	25

2.7.2 Simultaneous Incident Activity

Simultaneous incidents occur when other incidents are underway at the time a new incident begins. During RY 22/23, 39.12 percent of the Departments incidents occurred while one or more other incidents were underway. The following is the percentage of simultaneous incidents broken down by number of simultaneous incidents.

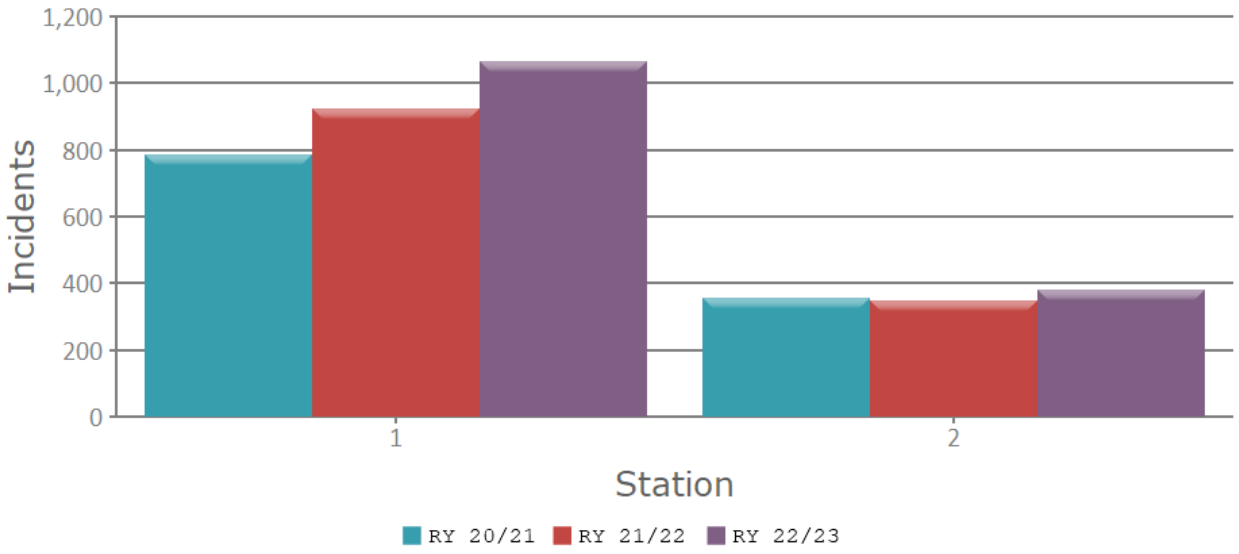
- 39.12 percent for 2 or more simultaneous incidents.
- 09.83 percent for 3 or more simultaneous incidents.
- 01.73 percent for 4 or more simultaneous incidents.

Figure 11—Simultaneous Incident Activity by Year



In larger jurisdictions, simultaneous incidents in different station areas have very little operational consequence. However, when simultaneous incidents occur within a single station area there can be significant delays in response times. The following figure illustrates the number of single-station simultaneous incidents by station area by reporting year. Station 1 has the greatest number of single-station area simultaneous incidents.

Figure 12—Single-Station Simultaneous Incidents by Station and Year



Finding #8:	Two simultaneous calls for service occur 39 percent of the time in 22/23.
Finding #9:	Simultaneous incidents are increasing annually in Station 1's response area.
Finding #10:	Simultaneous incidents predominantly draw Station 2 west to the middle of the shared service area.

2.7.3 Station Workload Demand

The following table summarizes station response area workload by hour of day for reporting year 2022/2023. The percentage shown is the percent probability of a station area having an active incident during that hour of day. The percentage considers both the number and the duration of incidents. Station 1's response area had the highest workload over most hours of the day.

Table 12—Station-Hour-Demand (RY 22/23)

Hour of Day	Sta. 1	Sta. 2
00:00	15.77%	11.32%
01:00	14.65%	12.98%
02:00	15.49%	10.94%
03:00	12.39%	7.22%
04:00	11.43%	7.35%
05:00	12.67%	7.70%
06:00	14.18%	7.54%
07:00	20.28%	10.53%
08:00	30.22%	14.20%
09:00	28.32%	17.39%
10:00	35.02%	23.84%
11:00	39.66%	22.78%
12:00	39.45%	20.52%
13:00	42.64%	22.64%
14:00	39.46%	21.22%
15:00	38.23%	23.20%
16:00	38.36%	21.05%
17:00	33.62%	21.09%
18:00	30.09%	20.57%
19:00	29.67%	24.18%
20:00	29.32%	16.61%
21:00	25.43%	19.43%
22:00	23.94%	17.57%
23:00	20.44%	13.02%

2.7.4 Unit-Hour Utilization

The unit-hour utilization (UHU) percentage for apparatus is calculated by two primary factors: the number of responses and duration of responses. The following table is a UHU summary for South Metro engine and ladder companies. The busiest companies are listed first.

Table 13—Unit-Hour Utilization – Engines

Hour of Day	Engine 1	Engine 2	Ladder 2
00:00	3.21%	3.13%	0.66%
01:00	2.69%	2.70%	0.26%
02:00	2.48%	3.77%	1.13%
03:00	3.65%	2.94%	1.35%
04:00	1.71%	1.51%	0.73%
05:00	2.69%	2.18%	0.14%
06:00	2.90%	1.79%	0.44%
07:00	4.27%	3.22%	0.99%
08:00	5.51%	3.21%	0.27%
09:00	4.33%	4.46%	0.34%
10:00	4.91%	6.46%	1.06%
11:00	6.50%	4.14%	0.48%
12:00	6.89%	5.05%	0.67%
13:00	6.66%	6.07%	1.61%
14:00	8.93%	5.81%	1.54%
15:00	8.07%	7.23%	0.74%
16:00	7.36%	5.17%	0.54%
17:00	8.07%	5.22%	1.02%
18:00	7.86%	5.46%	1.54%
19:00	7.26%	7.40%	1.06%
20:00	7.23%	4.56%	1.13%
21:00	6.87%	5.61%	1.29%
22:00	4.24%	4.42%	1.41%
23:00	4.01%	1.90%	0.56%

In Citygate's experience, a unit-hour utilization of 30 percent or higher over multiple consecutive hours becomes the point at which other responsibilities including training; coaching; mentoring subordinates; completing chores/cleaning; maintaining equipment; working on committees and projects; delivering fire prevention; conducting tours; major incident pre-planning; attending community events; plus desirable public relations at festivals, grand openings, birthday parties, and parades, do not get completed. No engine companies are nearing the 30 percent saturation rate. However, as with the simultanous demand rate, Engines 1 is busy during midday to early evening hours.

The next table illustrates UHU for South Metro's BLS ambulances. The busiest unit, Ambulance 1, stays below 30 percent utilization all hours of the day, but should be watched and not allowed to significantly exceed 30 percent for long hour after hour periods. Ambulance 4 is the reserve unit, and its workload occurs when a frontline unit is down for repair. Thus, Ambulance 4's workload is added to that of the overall hour of day as being *in lieu of* another unit.

Table 14—Unit-Hour Utilization – EMS

Hour of Day	Amb. 1	Amb. 2	Amb. 3	Amb. 4 Reserve
00:00	13.21%	9.99%	0.16%	0.52%
01:00	12.48%	11.23%	0.14%	0.04%
02:00	12.57%	10.07%	0.75%	0.00%
03:00	9.41%	7.19%	0.31%	0.11%
04:00	9.38%	6.56%	0.40%	0.39%
05:00	12.13%	7.26%	3.31%	0.00%
06:00	11.93%	7.13%	0.00%	0.10%
07:00	16.41%	9.38%	0.60%	0.54%
08:00	13.95%	13.25%	12.50%	0.00%
09:00	14.33%	14.02%	11.75%	0.96%
10:00	21.75%	20.60%	12.07%	0.73%
11:00	24.56%	19.29%	12.35%	1.48%
12:00	23.08%	17.64%	13.76%	0.45%
13:00	25.57%	19.58%	14.46%	0.44%
14:00	20.07%	18.61%	13.96%	0.31%
15:00	23.50%	19.16%	11.24%	0.37%
16:00	25.74%	18.70%	7.73%	0.06%
17:00	22.49%	18.53%	5.75%	0.00%
18:00	23.86%	18.20%	0.91%	0.05%
19:00	23.15%	20.76%	0.81%	0.36%
20:00	24.11%	13.67%	0.19%	0.00%
21:00	19.65%	16.61%	0.96%	0.32%
22:00	20.01%	16.02%	0.19%	0.51%
23:00	17.43%	12.28%	0.39%	0.19%

2.7.5 Operational Performance

This section reports performance for the first apparatus to arrive on the scene of emergency incidents. "Emergency" is defined by data received which includes "Emergency," "Non-Emergency, Upgraded to Emergency," and excludes "Emergency, Downgraded to Non-Emergency."

- Call processing
- Crew turnout
- Travel
- Call to arrival

Call Processing

Call processing measures the time from the first incident timestamp until apparatus are notified of the request for assistance.

Call processing performance varies depending on the timestamps utilized. If the first incident timestamp takes place at the time dispatch receives a 9-1-1 call, then call processing includes PSAP time as well as dispatch handling time. Otherwise, the performance represents only a portion of the entire processing operation.

In addition, not all requests for assistance are received via 9-1-1. Generally, there will be a mix of "channels" for receiving requests for assistance. Each "channel" will have a timestamp at a different point in the processing operation. This is not as much of a factor if most requests are received via 9-1-1 PSAP.

Most of the incidents provided in the CAD data have matching timestamps for both *Time of Alarm* and *Time of Dispatch*. However, 10 percent of the incidents do have a distinct *Time of Alarm*. When distinct *Time of Alarm* and *Time of Dispatch* timestamps occur, the following table shows 90 percent call processing performance.

Table 15—90th Percentile Call Processing/Dispatch Performance

Station	Overall	RY 20/21	RY 21/22	RY 22/23
Department-Wide	**02:47**	**02:47**	**02:56**	**02:40**
Station 1	02:39	02:39	02:45	02:27
Station 2	03:14	03:06	03:00	03:22

Finding #11: Call processing performance, at 2:40 minutes in RY 22/23, is substantially slower than the 1:30-minute best practice goal.

Crew Turnout

Crew turnout measures the time interval from completion of the dispatch notification until the start of vehicle movement to the emergency incident. While NFPA recommends 1:00 to 1:20 minutes for turnout depending on the type of protective clothing that must be donned, Citygate has found that few (if any) agencies can meet that performance standard and has thus long recommended 2:00 minutes as an achievable goal for on-duty station personnel. The following table summarizes crew turnout performance by year.

Table 15—90th Percentile Crew Turnout Performance

Station	Overall	RY 20/21	RY 21/22	RY 22/23
Department-Wide	**01:48**	**01:59**	**01:41**	**01:38**
Station 1	01:46	02:00	01:41	01:35
Station 2	01:50	01:59	01:42	01:48

As the table shows, best practice for turnout performance was met consistently.

Finding #12: Crew turnout performance in RY 22/23 was 22 seconds *faster* than a recommended 2:00-minute best practice goal. Turnout time is not part of the slower call-to-arrival total response times.

First-Unit Travel

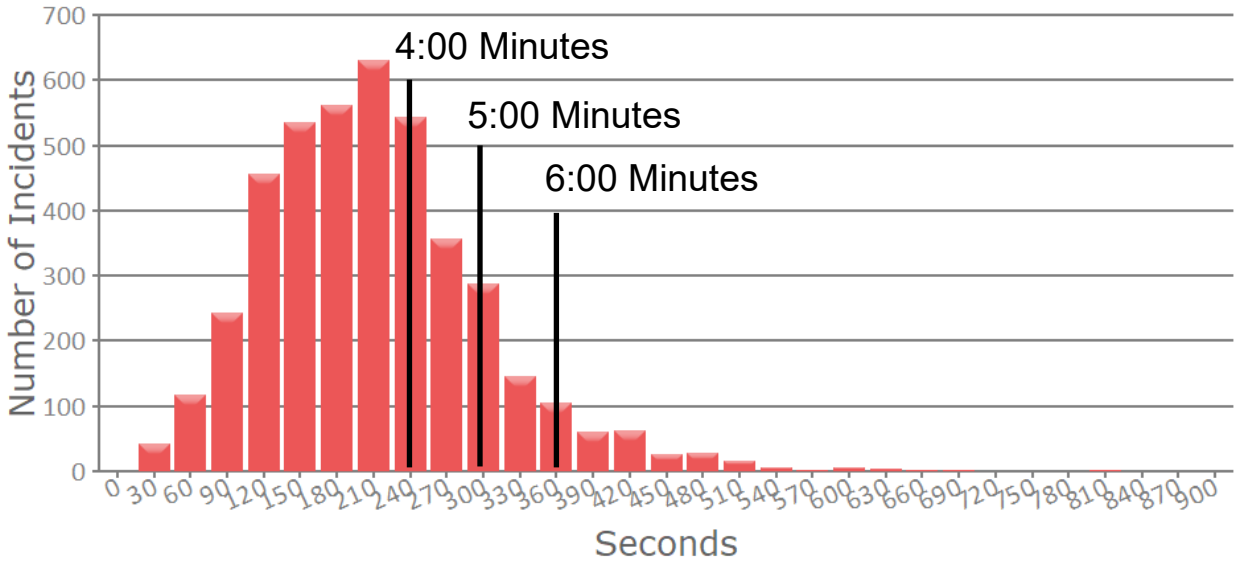
Travel time measures the time to travel to the scene of the emergency. In most urban and suburban fire jurisdictions, a 4:00-minute travel time with a compliance of 90 percent would be considered highly desirable. No stations achieve the 4:00-minute standard; however, Station 1 is consistently less than 5:00 minutes while Station 2 takes well into the fifth minute.

Table 16—Travel Analysis by Year

Station	Overall	RY 20/21	RY 21/22	RY 22/23
Department-Wide	**04:56**	**04:45**	**04:52**	**05:10**
Station 1	04:42	04:33	04:43	04:45
Station 2	05:23	05:01	05:09	05:47

The following graph illustrates fractile travel time performance with 210 seconds (or 3.5 minutes) the peak segment. There is, however, a slow drop-off in volume after the 210-second mark, indicating that while many incidents can be reached within the first 4:00 minutes, there are still a significant number of incidents that received much longer response times.

Figure 13—Travel Fractile Analysis



Finding #13: At 5:10 minutes in RY 22/23, first-unit travel time performance to fire and EMS incidents was 1:10 minutes *slower* than a recommended 4:00-minute best practice goal to facilitate desired outcomes in urban/suburban areas. The longer measures hold constant across the districts and years measured. The service area is too large to deliver 4:00-minute travel coverage from only two stations.

Call to Arrival

Call to arrival measures time from receipt of the request for assistance in the fire dispatch center until the first apparatus arrives at the incident. Typical best practice based and Citygate goals are 90 seconds for call processing, 2:00 minutes for turnout, and 4:00 minutes for travel. This adds up 450 seconds or 7:30 minutes.

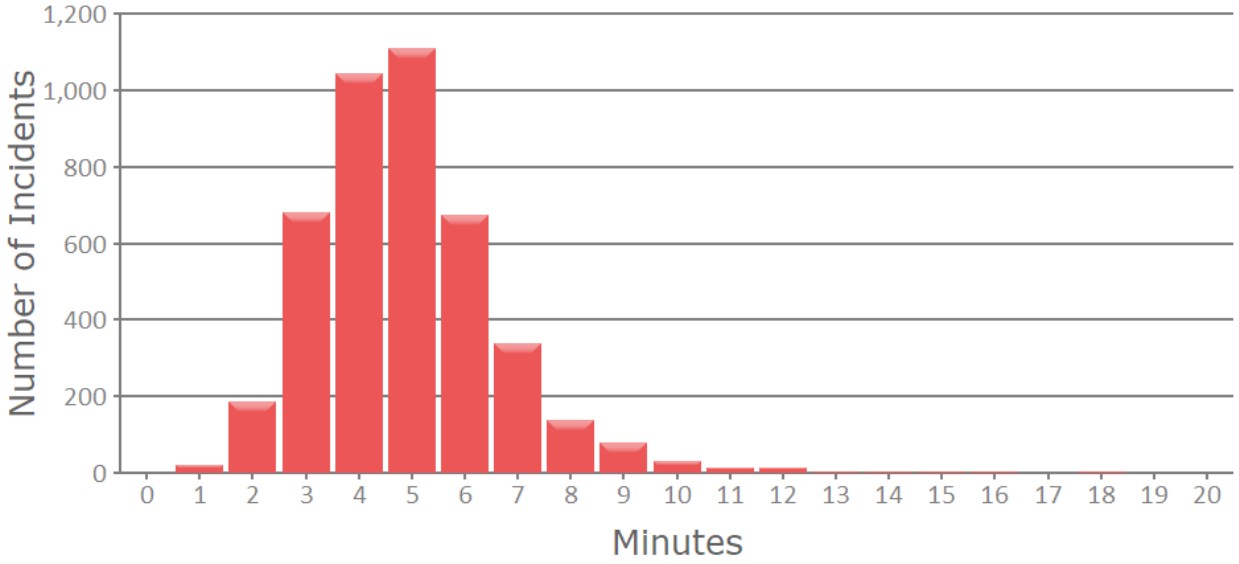
The Department meets this goal in both the Station 1 and Station 2 station area; however, it should be noted that call-to-arrival performance for Station 2 in RY 22/23 increased by 30 seconds.

Table 17—Call to Arrival Analysis by Year

Station Area	Overall	RY 20/21	RY 21/22	RY 22/23
Department-Wide	**06:18**	**06:12**	**06:13**	**06:30**
Station 1	06:03	06:05	06:01	06:03
Station 2	06:44	06:24	06:30	07:03

The following graph illustrates fractile call to arrival performance with 5:00 minutes the peak segment. The right-shifted graph indicates several incidents with longer call to arrival times; however, the total response times are good overall and overcome weak travel time due to the excellent crew turnout time and that many of the incidents are fairly close to the two fire station locations.

Figure 14—Call to Arrival Fractile Analysis



Finding #14: Department-wide first-unit call-to-arrival performance, at 6:30 minutes for RY 22/23, was *better* than a 7:30-minute Citygate-recommended best practice goal by 1:00 minute. Total response time performance is good overall and overcomes weak travel time performance due to the excellent crew turnout time and that many of the incidents are close to the two fire station locations.

2.7.6 Effective Response Force (ERF) Concentration *Travel* Time Measurements

The Department's ERF for a medium-risk building fire is two engines, one ladder truck, one ambulance, and one chief officer (if available) for a total of 8–13 South Metro personnel. Over the

three-year study period, there were only 10 out of 142 building fires where the *entire* ERF arrived at the incident. The following table displays the travel time for 90th percentile performance:

Table 18—Medium Risk Building Fire Distribution – ERF Response Group Travel

Station Area	Overall	RY 20/21	RY 21/22	RY 22/23
Department-Wide	**10:15 (53)**	**10:15 (26)**	**08:32 (15)**	**09:53 (12)**
Station 1	09:22 (32)	08:50 (14)	08:32 (8)	09:53 (10)
Station 2	10:19 (21)	11:40 (12)	06:28 (7)	05:47 (2)

Best practices and Citygate's recommendations are for an ERF *travel* time of 8:00 minutes for the last-due unit to arrive. It should be noted, however, that the performance is based on only 10 incidents over the three-year study period, and small data sets can be very volatile as some incidents can occur far from the fire stations.

Finding #15: Multiple-unit building fire travel time performance exceeded recommended best practice in 22/23 by 1:15 minutes primarily due to only two stations in the service area.

2.8 Overall Evaluation

SOC Element 8 of 8
Overall Evaluation

The Department serves an urban/suburban population with a mixed residential and non-residential land-use pattern typical of other Twin City area cities of similar size and demographics. The open spaces and highways in both Cities, and the more curvilinear road network outside of the older core areas, produce barriers to providing fast response times from the fewest possible fire stations.

Given the risks to be protected and the desire for positive emergency outcomes, the Department's service area will always need both first-due unit and multiple-unit ERF coverage consistent with controlling a building fire to near the room(s) of origin and improving the chance of survival for patients with life-threatening medical emergencies.

The Department's deployment system is stressed in **three key areas**:

1. Dispatch processing and travel time performance
2. The rising rate of emergency medical incidents
3. The travel time coverage *and staffing limitations* of the two current fire stations

Challenge #1 – Dispatch Processing and Travel Time Performance

The following table shows the Department's response performance over the most recent year of complete data compared to best practices for positive outcomes. As the table shows, the weakest components are call processing / dispatch, first-unit travel, and ERF travel performance, although overall call-to-arrival performance was faster than Citygate's 7:30-minute recommended goal by a full minute.

Table 18—90th Percentile Response Performance Summary (RY 22/23)

Response Component	Recommended Best Practice		90th Percentile Performance	Performance Compared to Best Practice
	Time	Reference		
Call Processing / Dispatch	1:30 1:04 Critical	Citygate NFPA	**2:40**	**+ 1:10**
Crew Turnout	2:00 1:00	Citygate NFPA	**1:38**	**- 0:22**
First-Unit Travel	4:00	Citygate NFPA	**5:10**	**+ 1:10**
First-Unit Call to Arrival	7:30	Citygate	**6:30**	**- 1:00**
ERF Travel	8:00	Citygate NFPA	**9:53**	**+ 1:53**

Challenge #2 – Rising EMS Demand

The state of health care coverage in the United States has created an ever-increasing EMS demand on America's fire service—which is exacerbated by the unhoused crisis, thus creating a high demand for low-acuity EMS responses for patients that seldom need immediate emergency room care. The Department and regional paramedic system are also facing this challenge. Citygate submits that adding more BLS ambulance transport capacity via the Department is not the best way forward. There needs to be a subregional, non-9-1-1, non-sworn firefighter response team jointly funded by local government and the health care system to respond to mental health and low-acuity medical incidents that do not require emergency room care.

Challenge #3 – Fire Station Travel Time Coverage and Staffing Limitations

The service area is simply too large for only one fire station to provide response times that achieve desired urban/suburban community outcomes. The excellent *Department-wide* total response time performance over the three-year study period is due only to many incidents being close to *both* fire stations. Any reduction in station coverage will appreciably lengthen travel times beyond those

associated with desired positive outcomes in urban areas—even more so in the northwest and southwest sections of the service area that have higher population densities.

Ideally, if both stations could be moved and a third station added, the service area needs the added station to form an "inverted triangle" of coverage, with two stations in the upper half of the service area and one in the southeast to serve that area.

In addition, the Department's current daily staffing provides an ERF of only 8 personnel at minimum staffing and 12 at full staffing (13 when a chief officer is available), which is 3–8 personnel *less* than the recommended ERF of 16–17 personnel[8] to safely accomplish the critical tasks for a low to moderate-risk building fire in time to achieve positive outcomes. As funding allows, Citygate recommends the JPA consider increasing minimum daily staffing to at least 12 personnel plus a Battalion Chief on each shift. This would provide a stronger ERF which meets recommended best practice and requires only a single mutual-aid resource from an adjacent fire agency. A reduction from the current two-station model to a one-station model would not reduce the minimum daily staffing required to provide an ERF.

Considering the limited projected growth, Citygate recommends the Department adopt a 5:00-minute travel time and, when that measure cannot be substantially met, a third station should be considered.

2.8.1 Deployment Recommendations

Based on the technical analysis and findings contained in this assessment, Citygate makes the following deployment recommendations.

Recommendation #1:	Adopt a 5:00-minute travel time goal for fire station spacing.
Recommendation #2:	Continue to work with the appropriate County health, regional hospitals, and other first responder agencies to implement a non-9-1-1 care team for behavioral and non-acute medical issues.

[8] NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments (2020 Edition).

Recommendation #3: **Adopt Updated Deployment Policies:** The JPA should adopt complete response performance measures to aid deployment planning and to monitor response performance. The measures of time should be designed to deliver outcomes that will prevent death or more serious injury for EMS patients upon arrival when possible and keep small fires from becoming more serious. With this is mind, Citygate recommends the following measures.

3.1 **First-Due Unit:** To treat pre-hospital medical emergencies and control small fires, the first-due unit should arrive within 8:30 minutes, 90 percent of the time, from receipt of the 9-1-1 call at County dispatch. This equates to a 1:30-minute call processing / dispatch time, a 2:00-minute crew turnout time, and a 5:00-minute travel time.

3.2 **Multiple-Unit Effective Response Force for Serious Emergencies:** To confine building fires near the room or rooms of origin, keep vegetation fires under one acre in size, and treat multiple medical patients at a single incident, a multiple-unit ERF of at least 15 personnel, including at least one chief officer, should arrive within 11:30 minutes from the time of call receipt at County dispatch at 90 percent or better reliability. This equates to a 1:30-minute call processing / dispatch time, a 2:00-minute crew turnout time, and an 8:00-minute travel time respectively.

3.3 **Hazardous Materials Response:** To protect the service area from hazards associated with uncontrolled release of hazardous and toxic materials, the fundamental mission of the Department's response is to isolate the hazard, deny entry into the hazard zone, and minimize impacts on the community. This can be achieved with a first-due total response time of 8:30 minutes or less to provide initial hazard evaluation and mitigation actions. After the initial evaluation is completed, a determination can be made whether to request additional resources to mitigate the hazard.

3.4	**Technical Rescue:** To respond to technical rescue emergencies as efficiently and effectively as possible with enough trained personnel to facilitate a successful rescue, a first-due total response time of 8:30 minutes or less is required to evaluate the situation and initiate rescue actions. Additional resources should assemble as needed within a total response time of 11:30 minutes or less to safely complete rescue/extrication and delivery of the victim to the appropriate emergency medical care facility.
Recommendation #4:	Maintain the current two-station deployment model until the recommended 5:00-minute first-unit travel time measure cannot be substantially met, then a third station should be considered.
Recommendation #5:	As funding allows, consider increasing minimum daily staffing from 8 to 12 plus a Battalion Chief on each shift to meet recommended best practice multiple-unit staffing to serious emergencies with one automatic aid resource from an adjacent fire agency. A reduction in the number of stations will not reduce the recommended increase in daily staffing.

2.9 NEXT STEPS

- Review and absorb the content, findings, and recommendations of this report.
- Adopt updated response performance goals as recommended.
- Work with the County agencies and regional health providers to field a non-9-1-1 behavioral and low-acuity medical response team.
- Consider increasing minimum daily staffing as funding allows.

APPENDIX A—COMMUNITY RISK ASSESSMENT

A.1 COMMUNITY RISK ASSESSMENT

The third element of the Standards of Coverage (SOC) process is a community risk assessment. Within the context of an SOC study, the objectives of a community risk assessment are to:

SOC ELEMENT 3 OF 8
COMMUNITY RISK ASSESSMENT

- Identify the values at risk to be protected within the community or service area.
- Identify the specific hazards with the potential to adversely impact the community or service area.
- Quantify the overall risk associated with each hazard.
- Establish a foundation for current/future deployment decisions and risk-reduction/hazard-mitigation planning and evaluation.

A hazard is broadly defined as a situation or condition that can cause or contribute to harm. Examples include fire, medical emergency, vehicle collision, earthquake, flood, etc. Risk is broadly defined as the *probability of hazard occurrence* in combination with the *likely severity of resultant impacts* to people, property, and the community.

A.1.1 Risk Assessment Methodology

The methodology employed by Citygate to assess community risks as an integral element of an SOC study incorporates the following elements:

- Identification of geographic planning sub-zones (risk zones) appropriate to the community or jurisdiction.
- Identification and quantification, to the extent data is available, of the specific values at risk to various hazards within the community or service area.
- Identification of the fire and non-fire hazards likely to impact the community or service area relative to services provided by the fire agency.
- Determination of the probability of occurrence for each hazard.
- Determination of *probable* impact severity of a hazard occurrence by planning zone.

- Determination of the impact severity of a hazard occurrence on the fire agency's overall response capacity.
- Determination of overall risk by hazard considering probability of occurrence and likely impact severity according to the following table.

Table 19—Overall Risk

Probability	Impact				
	Insignificant	Minor	Moderate	Major	Catastrophic
Rare	*Low*	*Low*	*Low*	*Moderate*	*High*
Unlikely	*Low*	*Low*	*Low*	*Moderate*	*High*
Possible	*Low*	*Low*	*Moderate*	*High*	*Extreme*
Probable	*Low*	*Low*	*Moderate*	*High*	*Extreme*
Frequent	*Low*	*Moderate*	*High*	*Extreme*	*Extreme*

For this assessment, Citygate used the following data sources to understand the hazards and values to be protected in the Cities of South Saint Paul and West Saint Paul:

- Esri and U. S. Census Bureau population and demographic data
- City Geographical Information Systems (GIS) data
- City General Plan and Zoning information
- City and Dakota County Hazard Mitigation Plans
- Department and other City data and information.

A.1.2 Risk Assessment Summary

Citygate's evaluation of the values at risk and hazards likely to impact the service area yields the following:

1. The Department serves a diverse urban population with densities ranging from less than 2,500 to more than 8,500 people per square mile over a varied urban land use pattern.
2. The Department's service area population is projected to grow approximately 8 percent by 2040.
3. The service area has a large inventory of residential and non-residential buildings to protect.

4. The service area has significant economic and other resource values to be protected, as identified in this assessment.

5. The Department has access to electronic mass emergency notification options and outdoor warning sirens available to effectively communicate emergency information to the public in a timely manner.

6. The service area's risk for six hazards related to emergency services provided by the Department range from **Low** to **High** as summarized in the following table.

Table 20—Overall Risk by Incident Type

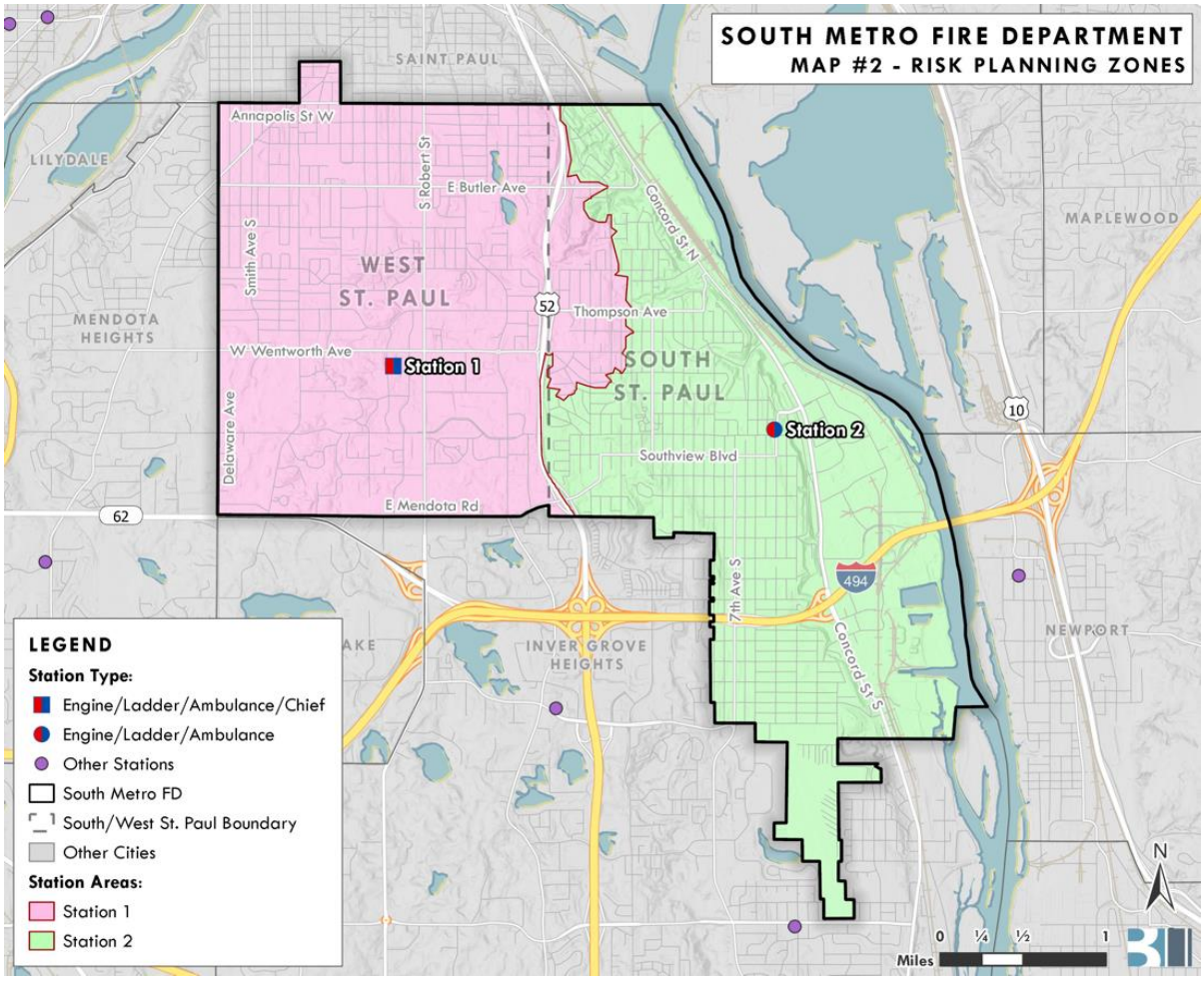
Hazard	Planning Zone	
	Station 1	Station 2
Building Fire	***Moderate***	***Moderate***
Vegetation/Wildland Fire	***Low***	***Low***
Medical Emergency	***High***	***High***
Hazardous Materials	***Moderate***	***Moderate***
Technical Rescue	***Moderate***	***Moderate***
Marine Incident	***Low***	***Low***

A.1.3 Planning Zones

The Commission on Fire Accreditation International (CFAI) recommends jurisdictions establish geographic planning zones to better understand risk at a sub-jurisdictional level. For example, portions of a jurisdiction may contain predominantly moderate risk building occupancies, such as detached single-family residences, while other areas contain high- or maximum-risk occupancies, such as commercial and industrial buildings with a high hazard fire load. If risk were to be evaluated on a jurisdiction-wide basis, the predominant moderate risk could outweigh the high or maximum risk and may not be a significant factor in an overall assessment of risk. If, however, high-risk or maximum-risk occupancies are a larger percentage of the risk in a smaller planning zone, then they become a more significant risk factor.

Another consideration in establishing planning zones is that the jurisdiction's record management system must also track the specific zone for each incident to appropriately evaluate service demand and response performance relative to each specific zone. For this assessment, Citygate utilized two planning zones corresponding with established City Fire Management Areas (FMA) and fire station first-due response areas as shown on the following map.

Figure 15—Risk Planning Zones



A.1.4 Values at Risk to Be Protected

Values at risk, broadly defined, are tangibles of significant importance or value to the community or jurisdiction potentially at risk of harm or damage from a hazard occurrence. Values at risk typically include people, critical facilities/infrastructure, buildings, and key economic, cultural, historic, or natural resources.

People

Residents, employees, visitors, and travelers in a community or jurisdiction are vulnerable to harm from a hazard occurrence. Particularly vulnerable are specific at-risk populations, including those unable to care for themselves or self-evacuate in the event of an emergency. At-risk populations typically include children under the age of 10, the elderly, people housed in institutional settings, and households below the federal poverty level. The following table summarizes key demographic data for the combined South Metro Fire Department service area.

Table 21—Key Demographic Data – South Metro Service Area

Demographic	2023
Population	**41,415**
Under 10 years	12.1%
10 – 14 years	6.2%
15 – 64 years	62.7%
65 – 74 years	10.8%
75 years and older	8.3%
Median age	40.6
Daytime population	37,633
Housing Units	**18,475**
Owner-Occupied	61.20%
Renter-Occupied	33.60%
Vacant	5.20%
Median Household Size	2.34
Median Home Value	$272,043
Ethnicity	
White Alone	69.00%
Black/African American Alone	7.30%
Asian Alone	2.90%
Some Other Race Alone	10.00%
Two or More Races	10.80%
Hispanic/Latino Origin	18.90%
Diversity Index	65.2
Education (population over 24 yrs. of age)	**29,408**
High School Graduate	93.80%
Undergraduate Degree	32.80%
Graduate/Professional Degree	10.30%
Employment (population over 15 yrs. of age)	**23,086**
In Labor Force	93.40%
Unemployed	6.60%
Median Household Income	$68,221
Population Below Poverty Level	11.30%
Population without Health Insurance Coverage	6.85%

Source: Esri Community Analyst (2023) and U.S. Census Bureau

Of note from the previous table is the following:

- Slightly more than 31 percent of the population is under 10 years or over 65 years of age.
- The service area population is predominantly White Alone (69 percent), followed by Two or More Races (11 percent), Other Ethnicity Alone (10 percent), Black / African American Alone (7 percent), and Asian Alone (3 percent). In addition, nearly 19 percent of the population is Hispanic/Latino in origin.
- Of the population over 24 years of age, almost 94 percent has completed high school or equivalency.
- Of the population over 24 years of age, nearly 33 percent has an undergraduate degree, and slightly more than 10 percent has a graduate or professional degree.
- Of the population 15 years of age or older, more than 93 percent is in the workforce; of those, nearly 7 percent are unemployed.
- Median household income is nearly $69,000.
- The population below the federal poverty level is slightly more than 11 percent.
- Nearly 7 percent of the population does not have health insurance coverage.

The service area's Comprehensive Plan projects slightly more than 1,800 new households by 2040.[9]

Buildings

The service area has nearly 19,000 residential housing units and 1,250 other buildings housing manufacturing, research, technology, office, professional services, retail sales, restaurants/bars, motels, churches, schools, storage, government facilities, healthcare facilities, and other occupancy types.[10]

Building Occupancy Risk Categories

The CFAI identifies the following four risk categories that relate to building occupancy:

[9] Source: Metropolitan Council. THRIVE MSP 2040 Forecast.
[10] Source: Esri Community Analyst – Community Profile (2023).

Low Risk – includes detached garages, storage sheds, outbuildings, and similar building occupancies that pose a relatively low risk of harm to humans or the community if damaged or destroyed by fire.

Moderate Risk – includes detached single-family or two-family dwellings; mobile homes; commercial and industrial buildings smaller than 10,000 square feet without a high hazard fire load; aircraft; railroad facilities; and similar building occupancies where loss of life or property damage is limited to the single building.

High Risk – includes apartment/condominium buildings; commercial and industrial buildings larger than 10,000 square feet without a high hazard fire load; low-occupant load buildings with high fuel loading or hazardous materials; and similar occupancies with potential for substantial loss of life or unusual property damage or financial impact.

Maximum Risk – includes buildings or facilities with unusually high risk requiring an Effective Response Force (ERF) involving a significant augmentation of resources and personnel and where a fire would pose the potential for a catastrophic event involving large loss of life or significant economic impact to the community.

Critical Facilities

The U.S. Department of Homeland Security defines critical infrastructure and key resources as those physical assets essential to the public health and safety, economic vitality, and resilience of a community, such as lifeline utilities infrastructure, telecommunications infrastructure, essential government services facilities, public safety facilities, schools, hospitals, airports, etc. The Department has identified a number of critical facilities and infrastructure. A hazard occurrence with significant impact severity affecting one or more of these facilities would likely adversely impact critical public or community services.

Economic Resources

The service area has nearly 1300 businesses employing nearly 18,000 people. Key economic industries include educational, city and county government, manufacturing, retail, and services.[11]

Natural Resources

Key natural resources within the service area include:[12]

- Over seven miles of river and 37 acres of open water.

[11] Source: City of South St. Paul 2022 ACFR, City of West St. Paul 2021 ACFR.
[12] Source: West St. Paul 2040 Comprehensive Plan, Dakota County River to River Management Plan.

- Over 830 acres of parks and open space, including River to River Greenway and Kaposia Landing.

A.1.5 Hazard Identification

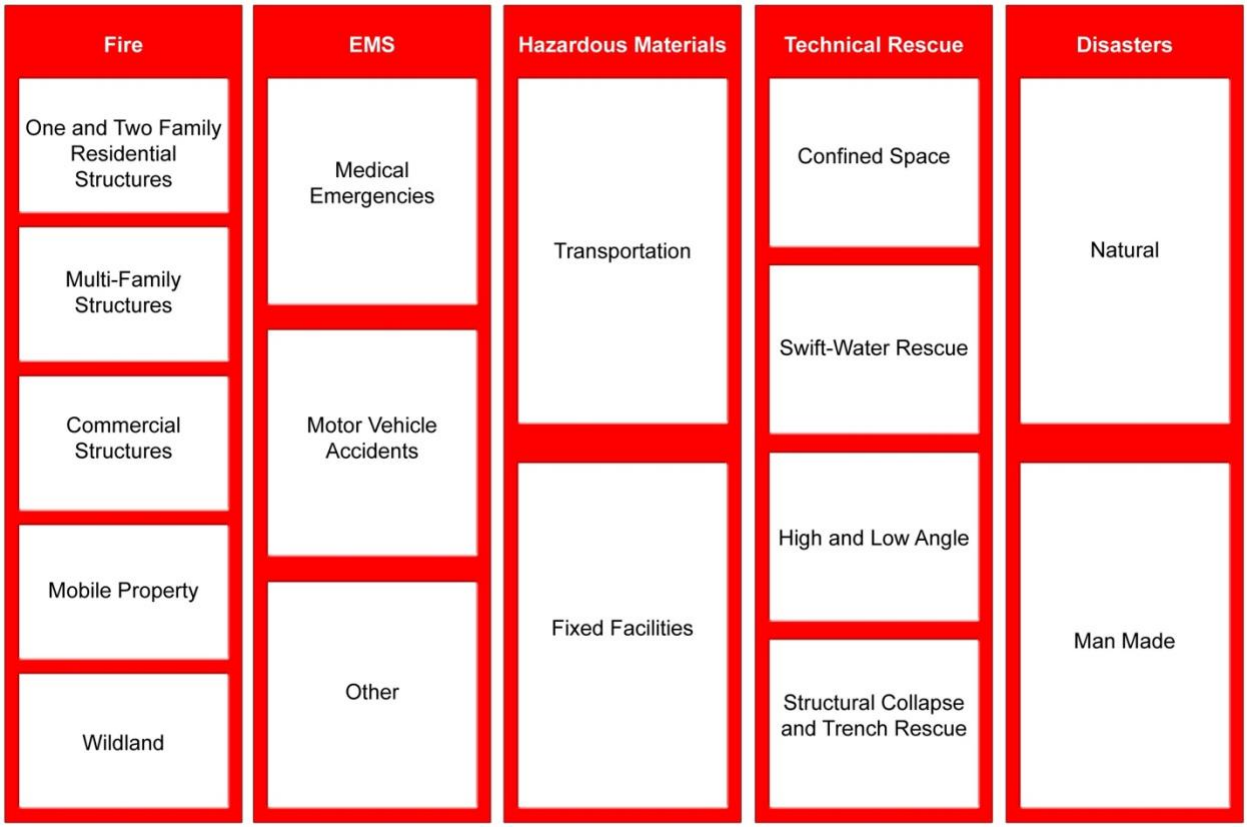
Citygate utilizes prior risk studies where available, fire and non-fire hazards as identified by the CFAI, and agency/jurisdiction-specific data and information to identify the hazards to be evaluated for this study. The 2021 Dakota County Minnesota All Hazards Mitigation Plan identifies the following 15 hazards likely to impact the service area:

1. Drought
2. Extreme Temperature
3. Flood (Flash and Overland)
4. Infectious Disease Outbreak
5. Landslide
6. Tornado
7. Violent Winter/Summer Storms
8. Wildfire
9. Civil Disturbance
10. Cyber Attack
11. Dam failure
12. Hazardous Materials
13. Terrorism
14. Wastewater Treatment System Failure
15. Water Supply Contamination

Although the Department has no legal authority or responsibility to mitigate any hazards other than possibly for wildfire, it does provide services related to many hazards, including fire suppression, emergency medical services, technical rescue, and hazardous materials response.

The CFAI groups hazards into fire and non-fire categories, as shown in the following figure. Identification, qualification, and quantification of the various fire and non-fire hazards are important factors in evaluating how resources are or can be deployed to mitigate those risks.

Figure 16—Commission on Fire Accreditation International Hazard Categories



Source: CFAI *Standards of Cover* (Fifth Edition)

After review and evaluation of the hazards identified in the 2021 Dakota County Hazard Mitigation Plan, and the fire and non-fire hazards as identified by the CFAI as they relate to services provided by the Department, Citygate evaluated the following six hazards for this risk assessment:

1. Building fire
2. Vegetation/wildland fire
3. Medical emergency
4. Hazardous material release/spill
5. Technical rescue
6. Marine incident

A.1.6 Service Capacity

Service capacity refers to an agency's available response force; the size, types, and condition of its response fleet and any specialized equipment; core and specialized performance capabilities and competencies; resource distribution and concentration; availability of automatic or mutual aid;

and any other agency-specific factors influencing its ability to meet current and prospective future service demand and response performance relative to the risks to be protected.

The Department's service capacity for fire and non-fire risk consists of eight minimum personnel on duty daily staffing two engines and two aerial ladder trucks cross staffing two ambulances, operating from the Department's two fire stations. There is also one 40-hour peak demand ambulance staffed during weekday business hours. The Department also has one brush engine, two reserve engines, one marine response watercraft (a 28-foot landing craft-style boat equipped with a 350-gallon-per-minute pump), and one reserve ambulance.

All South Metro Fire Department response personnel are trained to the Emergency Medical Technician (EMT) level, capable of providing Basic Life Support (BLS) pre-hospital emergency medical care. EMT-Paramedic (Paramedic) level, capable of providing Advanced Life Support (ALS) pre-hospital emergency medical care and ground paramedic ambulance service is provided by MHealth Fairview, a private-sector ambulance provider operating under an exclusive operating area contract administered by the Dakota County Emergency Medical Services Advisory Council which includes air ambulance services, when needed. Response personnel are also trained to the U.S. Department of Transportation Hazardous Material First Responder Operational (FRO) level to provide initial hazardous material incident assessment, hazard isolation, and support/partially staff the Dakota County Special Operations Team (DCSOT). The Department has 10 personnel trained to the Hazardous Materials Specialist or Technician level to partially staff the DCSOT. All response personnel are further trained to the Confined Space Awareness and Low Angle Rope Rescue Operations levels, with 10 personnel also trained to the Trench Rescue Technician level, Confined Space / USAR Technician level, high-angle rope rescue, heavy machinery rescue, and heavy vehicle extrication to partially staff the DCSOT as requested in the Dakota County service area.

A.1.7 Probability of Occurrence

Probability of occurrence refers to the probability of a future hazard occurrence during a specific period. Because the CFAI agency accreditation process requires annual review of an agency's risk assessment and baseline performance measures, Citygate recommends using the 12 months following the completion of an SOC study as an appropriate period for the probability of occurrence evaluation. The following table describes the five probability of occurrence categories and related characteristics used for this analysis.

Table 22—Probability of Occurrence Categories

Category	General Characteristics	Anticipated Frequency of Occurrence
Rare	• Hazard ***may occur*** under exceptional circumstances.	> 10 years
Unlikely	• Hazard ***could occur*** at some time. • No recorded or anecdotal evidence of occurrence. • Little opportunity, reason, or means for hazard to occur.	2–10 years
Possible	• Hazard ***should occur*** at some time. • Infrequent, random recorded or anecdotal evidence of occurrence. • Some opportunity, reason, or means for hazard to occur.	1–23 months
Probable	• Hazard will ***probably occur*** occasionally. • Regular recorded or strong anecdotal evidence of occurrence. • Considerable opportunity, reason, or means for hazard to occur.	1–4 weeks
Frequent	• Hazard is ***expected to occur*** regularly. • High level of recorded or anecdotal evidence of regular occurrence. • Strong opportunity, reason, or means for hazard to occur. • Frequent hazard recurrence.	Daily to weekly

Citygate's SOC assessments use recent multiple-year hazard response data to determine the probability of hazard occurrence for the ensuing 12-month period.

A.1.8 Impact Severity

Impact severity refers to the *probable* extent a hazard occurrence has on people, buildings, lifeline services, the environment, and the community. The following table describes the five impact severity categories and general characteristics used for this analysis.

Table 23—Impact Severity Categories

Category	General Characteristics
Insignificant	• No injuries or fatalities • Few to no persons displaced for short duration • Little or no personal support required • Inconsequential to no damage • Minimal to no community disruption • No measurable environmental impacts • Minimal to no financial loss • No wildland Fire Hazard Severity Zones (FHSZs)
Minor	• Few injuries; no fatalities; minor medical treatment only • Some displacement of persons for less than 24 hours • Some personal support required • Some minor damage • Minor community disruption of short duration • Small environmental impacts with no lasting effects • Minor financial loss • No wildland FHSZs
Moderate	• Medical treatment required; some hospitalizations; few fatalities • Localized displacement of persons for fewer than 24 hours • Personal support satisfied with local resources • Localized damage • Normal community functioning with some inconvenience • No measurable environmental impacts with no long-term effects, or small impacts with long-term effect • Moderate financial loss • Less than 25% of area in *Moderate* or *High* wildland FHSZs
Major	• Extensive injuries; significant hospitalizations; many fatalities • Large number of persons displaced for more than 24 hours • External resources required for personal support • Significant damage • Significant community disruption; some services not available • Some impact to environment with long-term effects • Major financial loss with some financial assistance required • More than 25% of area in *Moderate* or *High* wildland FHSZs; less than 25% in *Very High* wildland FHSZs
Extreme	• Large number of severe injuries requiring hospitalization; significant fatalities • General displacement for extended duration • Extensive personal support required • Extensive damage • Community unable to function without significant external support • Significant impact to environment and/or permanent damage • Catastrophic financial loss; unable to function without significant support • More than 50% of area in *High* wildland FHSZs; more than 25% of area in *Very High* wildland FHSZs

A.1.9 Overall Risk

Overall risk was determined by considering the probability of occurrence, reasonably expected impact severity according to the following table.

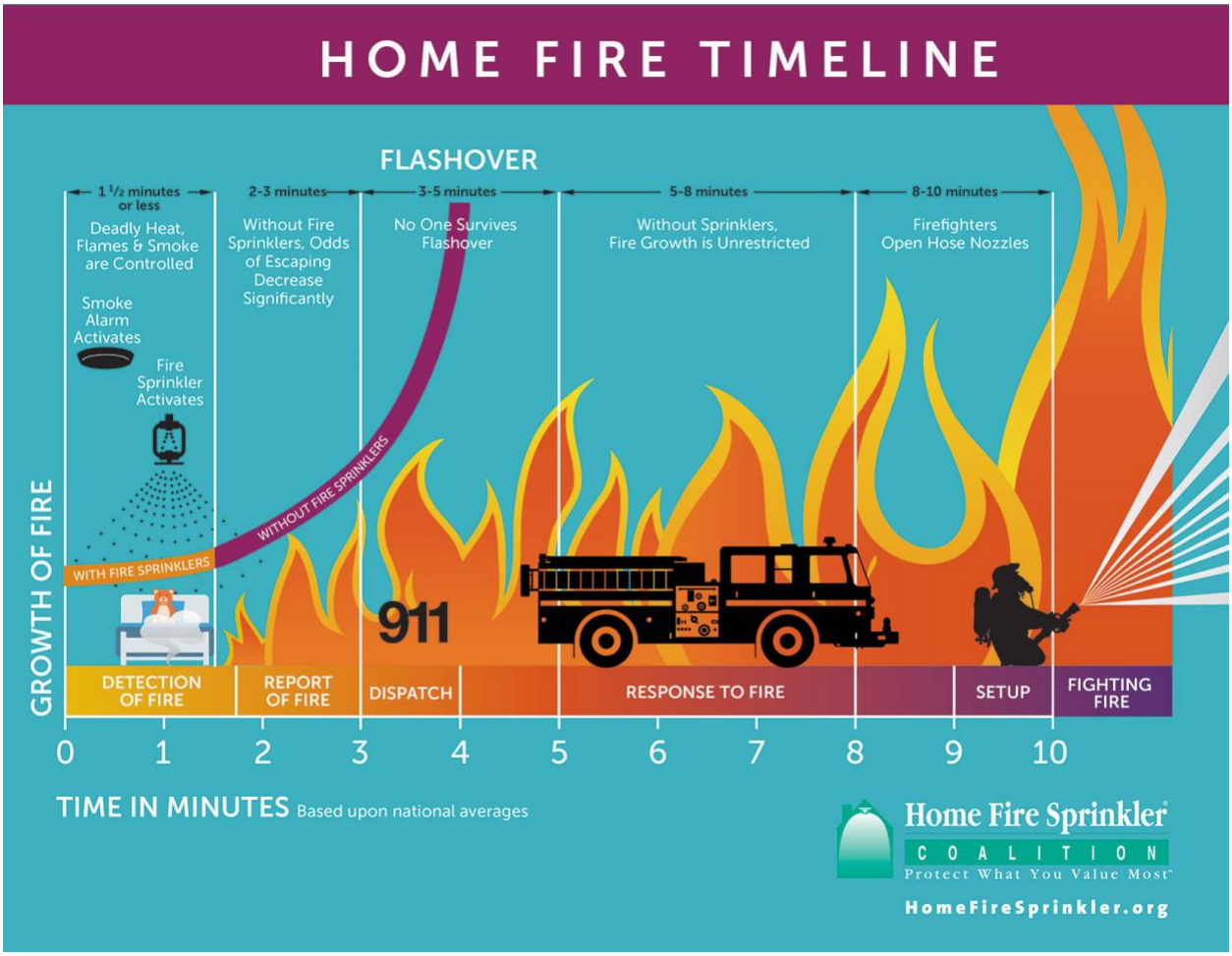
Probability	Impact				
	Insignificant	Minor	Moderate	Major	Catastrophic
Rare	*Low*	*Low*	*Low*	*Moderate*	*High*
Unlikely	*Low*	*Low*	*Low*	*Moderate*	*High*
Possible	*Low*	*Low*	*Moderate*	*High*	*Extreme*
Probable	*Low*	*Low*	*Moderate*	*High*	*Extreme*
Frequent	*Low*	*Moderate*	*High*	*Extreme*	*Extreme*

A.1.10 Building Fire Risk

One of the primary hazards in any community is building fire. Building fire risk factors include building size, age, construction type, density, occupancy, and height above ground level; required fire flow; proximity to other buildings; built-in fire protection/alarm systems; available fire suppression water supply; building fire service capacity; and fire suppression resource deployment (distribution/concentration), staffing, and response time. Citygate used available data from the Department and the U.S. Census Bureau and the Dakota County Office of Planning to assist in determining the service area's building fire risk.

The following figure illustrates the building fire progression timeline and shows that flashover, which is the point at which the entire room erupts into fire after all the combustible objects in that room reach their ignition temperature, can occur as early as three to five minutes from the initial ignition. Human survival in a room after flashover is extremely improbable.

Figure 17—Building Fire Progression Timeline



Source: http://www.firesprinklerassoc.org

Population Density

Population density within the service area ranges from less than 2,500 to more than 8,500 people per square mile. [13] Although risk analysis across a wide spectrum of other Citygate clients shows no direct correlation between population density and building fire *occurrence*, it is reasonable to conclude that building fire *risk* relative to potential impact on human life is greater as population density increases, particularly in areas with high density, multiple-story buildings.

Water Supply

A reliable public water system providing adequate volume, pressure, and flow duration near all buildings is a critical factor in mitigating the potential impact severity of a community's building

[13] Source: ESRI and U.S. Census Bureau

fire risk. Potable water is provided by the City of South St. Paul and by Saint Paul Regional Water Services in West St. Paul, and according to Fire Department staff, available fire flow volume and pressure are adequate throughout the service area except for areas without fire hydrants.

Building Fire Service Demand

For the three-year period from January 1, 2020, through December 31, 2022, the service area experienced 142 building fire incidents comprising 0.64 percent of total service demand over the same period, as summarized in the following tables.

Table 24—Building Fire Service Demand

Hazard	Year	Planning Zone			Total	Percent Total Annual Demand
		Sta. 1	Sta. 2	Other		
Building Fire	RY 20/21	31	21	-	52	0.74%
	RY 21/22	24	20	0	44	0.59%
	RY 22/23	28	17	1	46	0.59%
	Total	83	58	1	142	0.64%
Percent Total Station Demand		0.62%	0.66%	20.00%		

As the table shows, annual building fire service demand fluctuated by up to nearly 20 percent over the three-year study period. Overall, building fire service demand is low at only 0.64 percent of total service demand.

Building Fire Risk Assessment

The following table summarizes Citygate's assessment of the service area's building fire risk by planning zone.

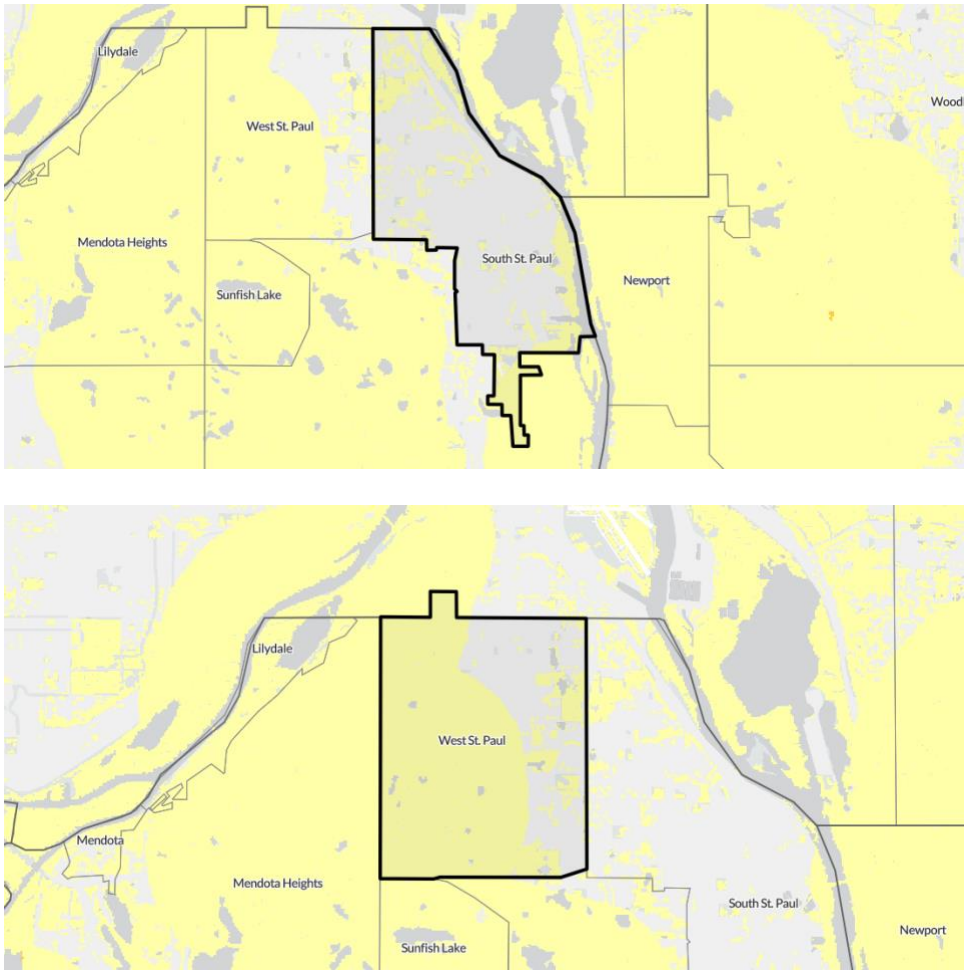
Table 25—Building Fire Risk Assessment

Building Fire Risk	Planning Zone	
	Station 1	Station 2
Probability of Occurrence	*Probable*	*Probable*
Probable Impact Severity	*Moderate*	*Moderate*
Overall Risk	***Moderate***	***Moderate***

A.1.11 Vegetation/Wildland Fire Risk

Some of the service area is susceptible to a vegetation/wildfire, as identified in the following map from the Minnesota Department of Natural Resources (DNR). Vegetation/wildland fire risk factors include vegetative fuel types and configuration, weather, topography, prior service demand, water supply, mitigation measures, and vegetation fire service capacity.

Figure 18—Wildfire Hazard Risk Zones



Source: Minnesota Department of Natural Resources.

The DNR also designates wildland–urban interface (WUI) areas of the state where urban or suburban development exists within a wildland vegetation environment prone to fire. These are the areas with at least 20 people per square mile with the most potential for significant damage to life and property, as shown in the following map. The Department's service area is in a ***lower*** wildfire risk zone.

Vegetation/Wildland Fire Service Demand

Over the three-year study period, the Department responded to 34 vegetation/wildfires comprising 0.15 percent of total service demand over the same period, as summarized in the following tables.

Table 26—Vegetation/Wildland Fire Service Demand

Hazard	Year	Planning Zone		Total	Percent Total Annual Service Demand
		Station 1	Station 2		
Vegetation / Wildland Fire	2020	5	7	**12**	0.17%
	2021	6	6	**12**	0.16%
	2022	8	2	**10**	0.13%
	Total	**19**	**15**	**34**	0.15%
Percent of Total Station Service Demand		0.14%	0.17%		

The table shows annual vegetation/wildland fire service demand consistent over the three-year study with very low overall demand.

Vegetation/Wildland Fire Risk Assessment

The following table summarizes Citygate's assessment of the service area's vegetation/wildland fire risk by planning zone.

Table 27—Vegetation/Wildland Fire Risk Assessment

Vegetation/Wildland Fire Risk	Planning Zone	
	Station 1	Station 2
Probability of Occurrence	*Possible*	*Possible*
Probable Impact Severity	*Minor*	*Minor*
Overall Risk	***Low***	***Low***

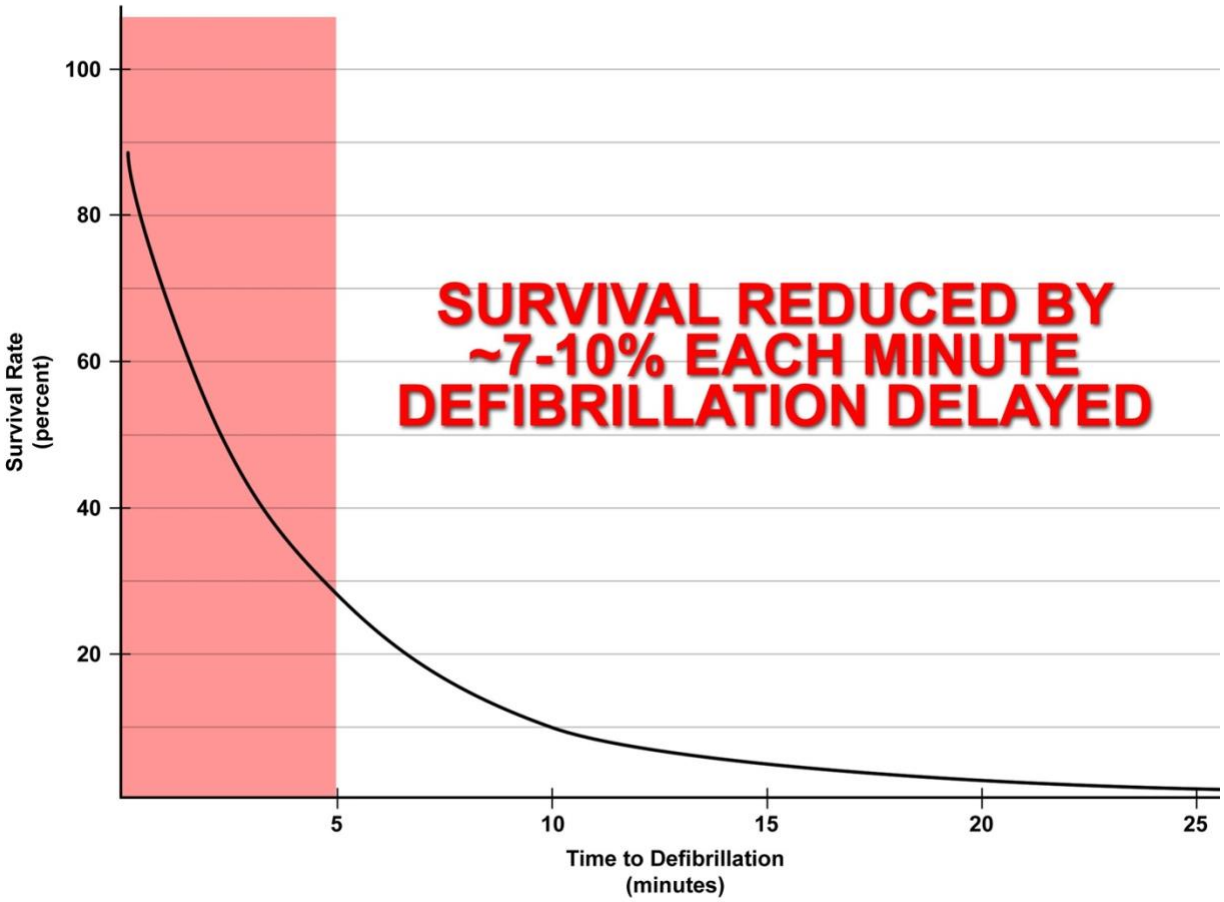
A.1.12 Medical Emergency Risk

Medical emergency risk in most communities is predominantly a function of population density, demographics, violence, health insurance coverage, and vehicle traffic.

Medical emergency risk can also be categorized as either a medical emergency resulting from a traumatic injury or a health-related condition or event. Cardiac arrest is one serious medical emergency among many where there is an interruption or blockage of oxygen to the brain.

The following figure illustrates the reduced survivability of a cardiac arrest victim as time to defibrillation increases. While early defibrillation is one factor in cardiac arrest survivability, other factors can influence survivability as well, such as early CPR and pre-hospital advanced life support interventions.

Figure 19—Survival Rate versus Time to Defibrillation



Population Density

Population density in the service area ranges from less than 2500 to more than 8,500 people per square mile, as shown in Map #2a (**Volume 2—Map Atlas**). Risk analysis across a wide spectrum of other Citygate clients shows a direct correlation between population density and the *occurrence* of medical emergencies, particularly in high urban population density zones.

Demographics

Medical emergency risk tends to be higher among older, poorer, less educated, and uninsured populations. As shown in Table 21, 21.8 percent of the service area population is 65 and older; 6.1 percent of the population over 24 years of age has less than a high school education or equivalent;

just over 11 percent of the population is at or below poverty level; and 6.9 percent of the population does not have health insurance coverage.[14]

Vehicle Traffic

Medical emergency risk tends to be higher in areas of a community with high daily vehicle traffic volume, particularly areas with high traffic volume traveling at high speeds. The service area's transportation network includes Highways 52 and 494 carrying an aggregate annual average daily traffic volume of more than 167,000 vehicles.[15]

Medical Emergency Service Demand

Medical emergency service demand over the three-year study period includes more than 16,000 calls for service comprising over 75 percent of total service demand over the same period, as summarized in the following tables.

Table 28—Medical Emergency Service Demand

Hazard	Year	Planning Zone		Total	Percent Total Annual Service Demand
		Station 1	Station 2		
Medical Emergency	2020	3152	2070	**5222**	74.55%
	2021	3492	2157	**5649**	76.00%
	2022	3667	2179	**5846**	75.50%
	Total	**10311**	**6406**	**16,717**	75.37%
Percent of Total Station Service Demand		77.07%	72.87%		

As the table shows, medical emergency service demand varies consistently by planning zone and has increased by 11 percent over the three-year study period.

Medical Emergency Risk Assessment

The following table summarizes Citygate's assessment of the service area's medical emergency risk by planning zone.

[14] Source: ESRI and US Census Bureau.
[15] Source: Minnesota Department of Transportation Traffic Mapping Application 2022 data: Traffic Mapping Application (arcgis.com)

Table 29—Medical Emergency Risk Assessment

Medical Emergency Risk	Planning Zone	
	Station 1	Station 2
Probability of Occurrence	*Frequent*	*Frequent*
Probable Impact Severity	*Moderate*	*Moderate*
Overall Risk	***High***	***High***

A.1.13 Hazardous Material Risk

Hazardous material risk factors include fixed facilities that store, use, or produce hazardous chemicals or waste; underground pipelines conveying hazardous materials; aviation, railroad, maritime, and vehicle transportation of hazardous commodities into or through a jurisdiction; vulnerable populations; emergency evacuation planning and related training; and specialized hazardous material service capacity.

Fixed Hazardous Materials Facilities

The Dakota County Hazard Mitigation Plan identified many sites requiring a state or county hazardous material operating permit or Hazardous Materials Business Plan. In addition, high-pressure natural gas distribution pipelines are located throughout the service area.

Population Density

Because hazardous material emergencies have the potential to adversely impact human health, it is logical that the higher the population density, the greater the potential population exposed to a hazardous material release or spill. As shown in Map #2b (**Volume 2 – Map Atlas**), the service area population density ranges from less than 2,500 to more than 8,500 people per square mile.

Vulnerable Populations

Persons vulnerable to a hazardous material release/spill include individuals or groups unable to self-evacuate, generally including children under the age of 10, the elderly, and persons confined to an institution or other setting where they are unable to leave voluntarily. As shown in Table 21, nearly one third of the population is under age 10 or is 65 years and older.

Emergency Evacuation Planning, Training, Implementation, and Effectiveness

Another significant hazardous material impact severity factor is a jurisdiction's shelter-in-place / emergency evacuation planning and training. In the event of a hazardous material release or spill, time can be a critical factor in notifying potentially affected persons, particularly at-risk populations, to either shelter-in-place or evacuate to a safe location. Essential to this process is an

effective emergency plan that incorporates one or more mass emergency notification capabilities, as well as pre-established evacuation procedures. It is also essential to conduct regular, periodic exercises involving these two emergency plan elements to evaluate readiness and to identify and remediate any planning or training gaps to ensure ongoing emergency incident readiness and effectiveness.

Hazardous Material Service Demand

The service area experienced 218 hazardous material incidents over the three-year study period, comprising 0.98 percent of total service demand over the same period, as summarized in the following tables.

Table 30—Hazardous Material Service Demand

Hazard	Year	Planning Zone		Total	Percent Total Annual Service Demand
		Station 1	Station 2		
Hazardous Material	2020	29	35	**64**	0.91%
	2021	34	39	**73**	0.98%
	2022	2	58	**81**	1.05%
	Total	**86**	**132**	**218**	0.98%
Percent of Total Station Service Demand		.064%	1.50%		

As the table shows, increasing hazardous material service demand over the three-year study period by 21 percent.

Hazardous Material Risk Assessment

The following table summarizes Citygate's assessment of hazardous material risk by planning zone.

Table 31—Hazardous Material Risk Assessment

Hazardous Materials Risk	Planning Zone	
	Station 1	Station 2
Probability of Occurrence	*Probable*	*Probable*
Probable Impact Severity	*Moderate*	*Moderate*
Overall Risk	***Moderate***	***Moderate***

A.1.14 Technical Rescue Risk

Technical rescue risk factors include active construction projects; structural collapse potential; confined spaces, such as tanks and underground vaults; bodies of water, including rivers and streams; industrial machinery use; transportation volume; and earthquake, flood, and landslide potential.

Construction Activity

There is ongoing residential, commercial, industrial, and infrastructure construction activity within the service area.

Confined Spaces

There are multiple confined spaces within the service area, including tanks, vaults, and open trenches.

Bodies of Water

The service area borders the Mississippi River and includes the 5.8-mile Mississippi River Trail system. Waterside recreation areas include Kaposia Landing, Wildflower Levee Park and the Department of Natural Resources launch area.

Transportation Volume

Another technical rescue risk factor is transportation-related incidents requiring technical rescue. This risk factor is primarily a function of vehicle, railway, maritime, and aviation traffic. Vehicle traffic volume is the greatest of these factors within the service area, with Highways 52 and 494 carrying an aggregate annual average daily traffic volume of more than 167,000 vehicles.[16]

Flood Risk

Many areas of the service area are subject to flooding from various causes.

Technical Rescue Service Demand

The Department responded to 36 technical rescue incidents over the three-year study period, comprising 0.16 percent of total service demand for the same period, as summarized in the following tables.

[16] Source: Source: Minnesota Department of Transportation Traffic Mapping Application 2022 data: Traffic Mapping Application (arcgis.com)

Table 32—Technical Rescue Service Demand

Hazard	Year	Planning Zone		Total	Percent Total Annual Service Demand
		Station 1	Station 2		
Technical Rescue	2020	4	5	**9**	0.13%
	2021	5	5	**10**	0.13%
	2022	13	4	**17**	0.22%
	Total	**22**	**14**	**36**	0.16%
Percent of Total Station Service Demand		0.16%	0.16%		

As the table shows, overall service area technical rescue service demand is low but increased by doubled over the three-year study period.

Technical Rescue Risk Assessment

The following table summarizes Citygate's assessment of technical rescue risk by planning zone.

Table 33—Technical Rescue Risk Assessment

Technical Rescue Risk	Planning Zone	
	Station 1	Station 2
Probability of Occurrence	*Possible*	*Possible*
Probable Impact Severity	*Moderate*	*Moderate*
Overall Risk	***Moderate***	***Moderate***

A.1.15 Marine Incident Risk

Marine incident risk factors include waterway and near-shore recreational activities and watercraft storage and use in or on waterways within the service area.

Waterways

Bodies of water and waterways within the service area include approximately six miles of the Mississippi River.

Recreational Activity

The service area's waterways are popular for water recreation activities, including fishing, paddle boarding, kayaking, etc.

Watercraft/Vessel Activity

In addition to smaller fishing and recreational boats and personal watercraft, bulk carriers and barges are utilized at the Dakota Bulk Terminal.

Marine Incident Service Capacity

The Department's marine safety service capacity includes one watercraft—a 28-foot landing craft-style boat equipped with a 350-gallon-per minute-pump housed at Station 2.

Marine Incident Service Demand

Over three-year study period, the Department responded to nine marine incidents, comprising 0.04 percent of total service demand for the same period, as summarized in the following tables.

Table 34—Marine Incident Service Demand

Hazard	Year	Planning Zone		Total	Percent Total Annual Service Demand
		Station 1	Station 2		
Marine Incident	2020	-	5	**5**	0.07%
	2021	-	5	**2**	0.03%
	2022	-	2	**2**	0.03%
	Total	**-**	**9**	**9**	0.04%
Percent of Total Station Service Demand		-	0.10%		

As the table shows, overall service area marine incident service demand is very low over the three-year study period.

Marine Risk Assessment

The following table summarizes Citygate's assessment of marine incident risk by planning zone.

Table 35—Marine Incident Risk Analysis

Marine Incident Risk	Planning Zone	
	Station 1	Station 2
Probability of Occurrence	*Rare*	*Possible*
Probable Impact Severity	*Minor*	*Minor*
Overall Risk	***Low***	***Low***

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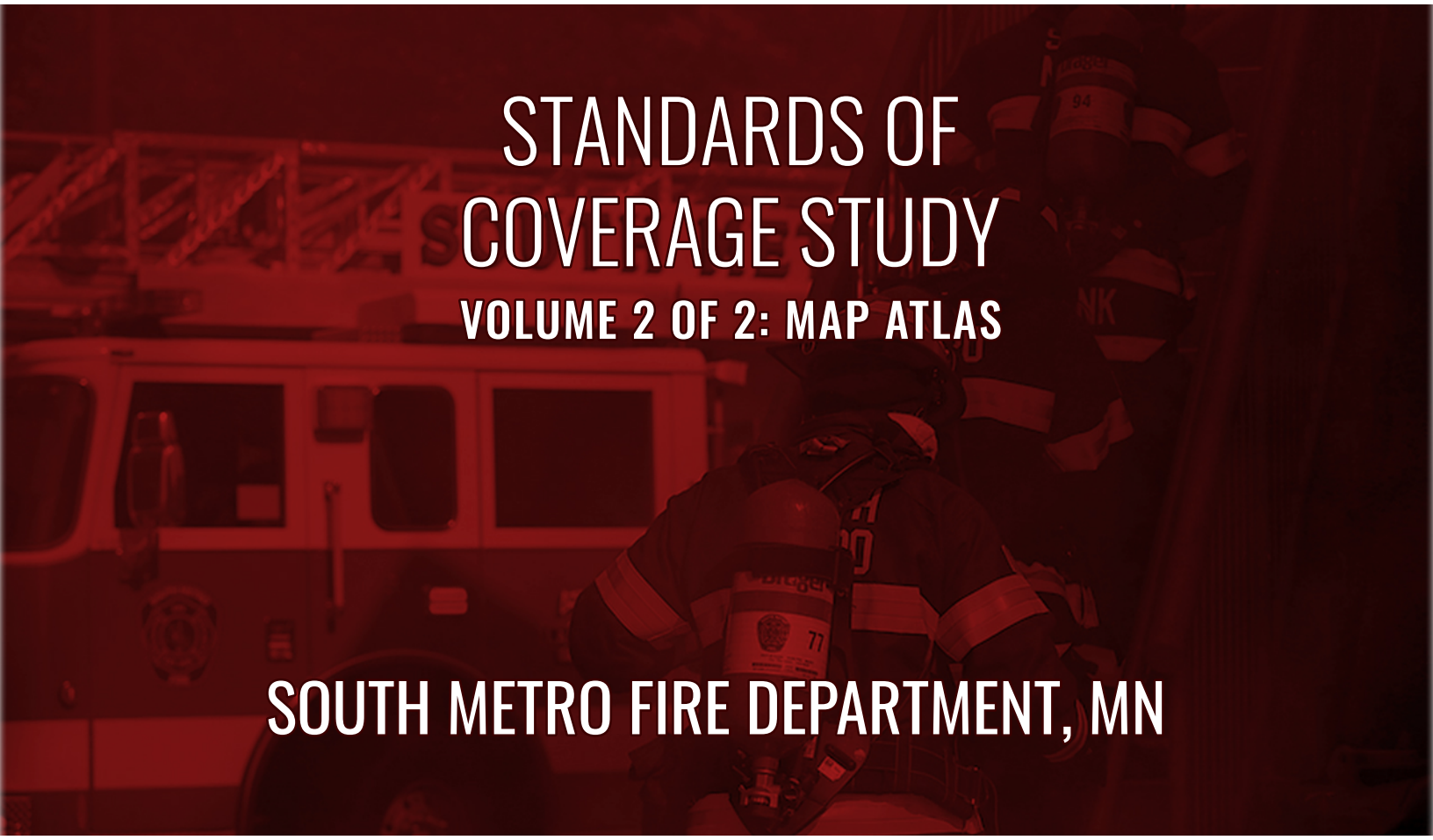

STANDARDS OF COVERAGE STUDY

VOLUME 2 OF 2: MAP ATLAS

SOUTH METRO FIRE DEPARTMENT, MN

DECEMBER 15, 2023

CITYGATE
FIRE & EMS

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FOLSOM, CA 95630

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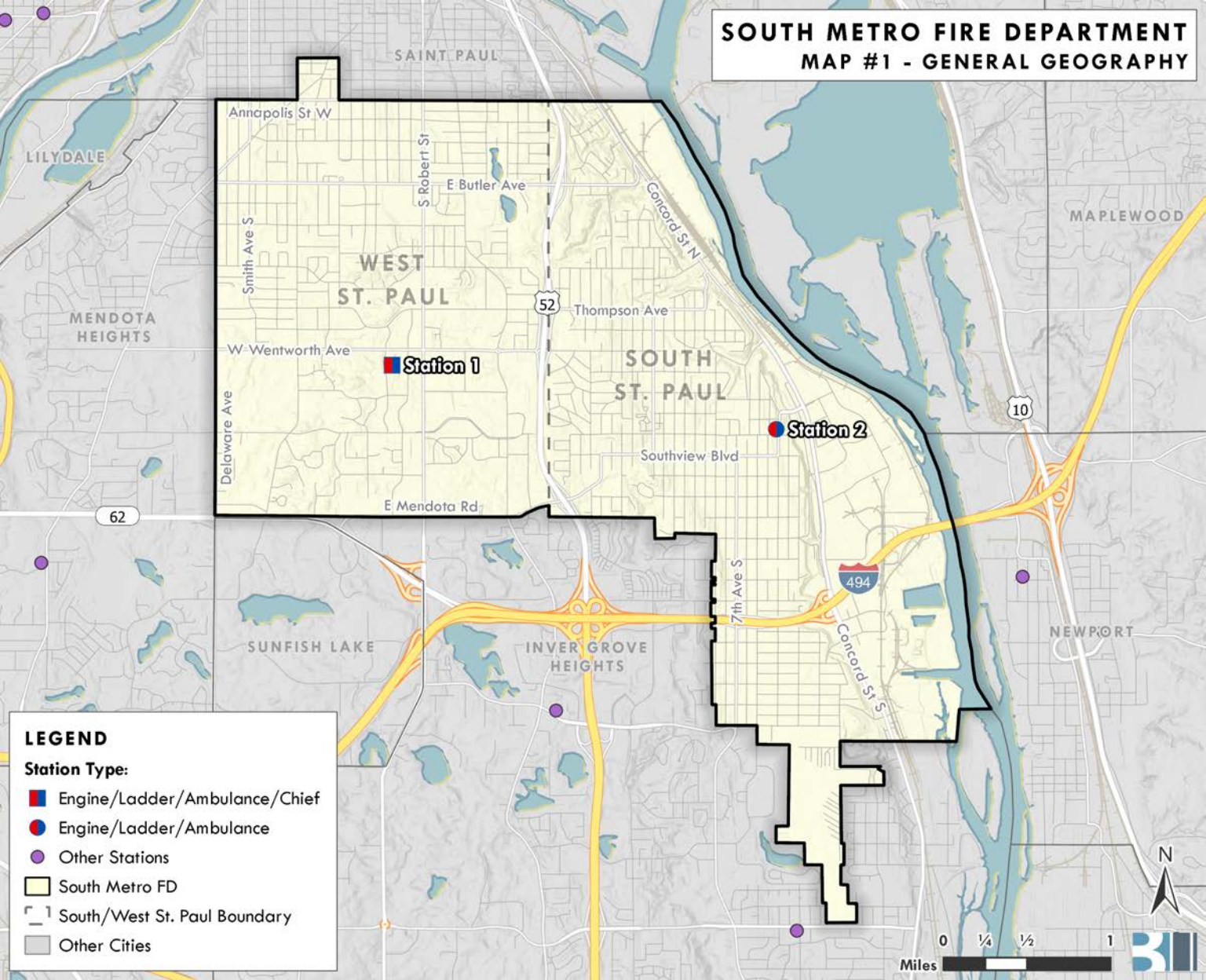
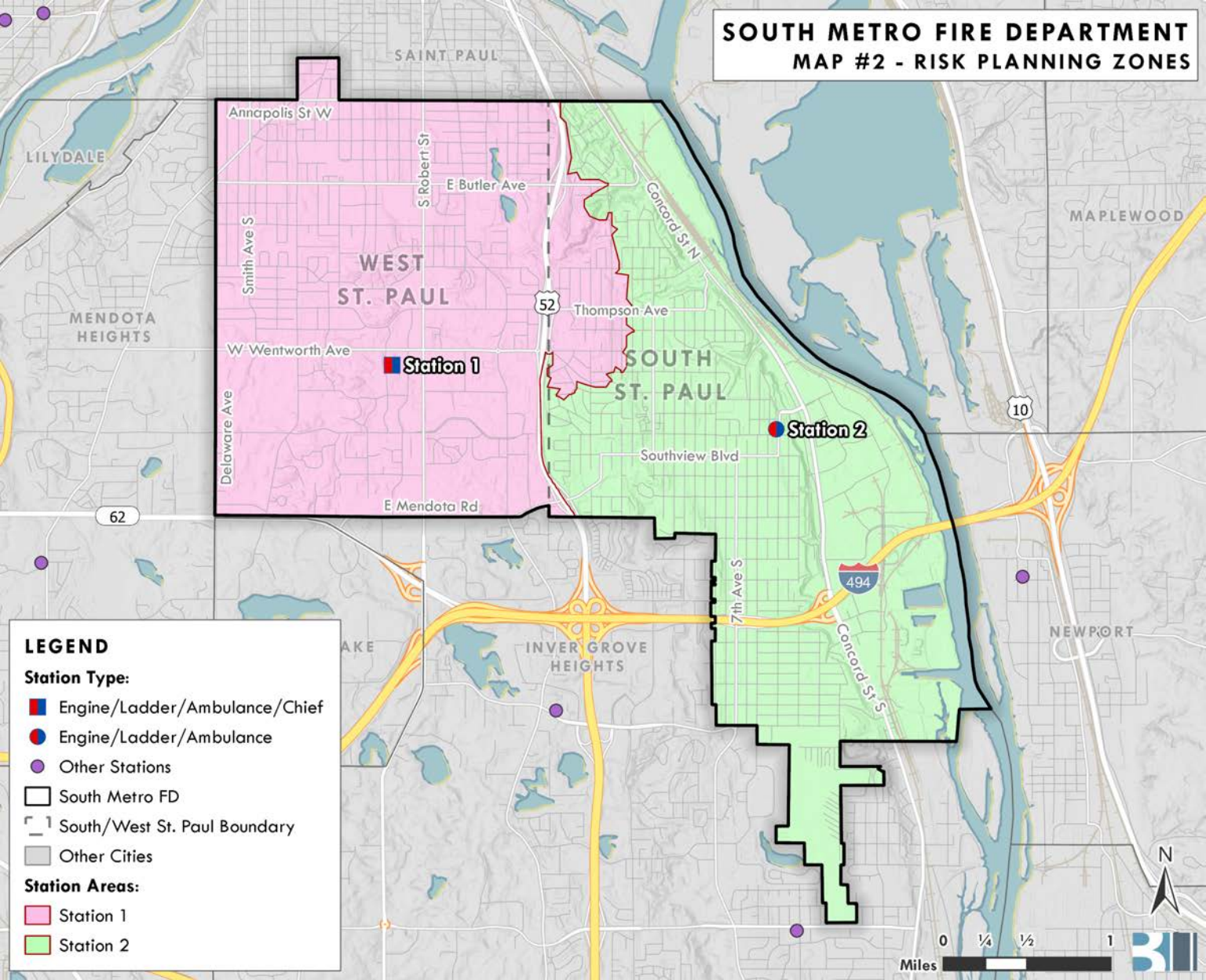
FAX: (916) 983-2090

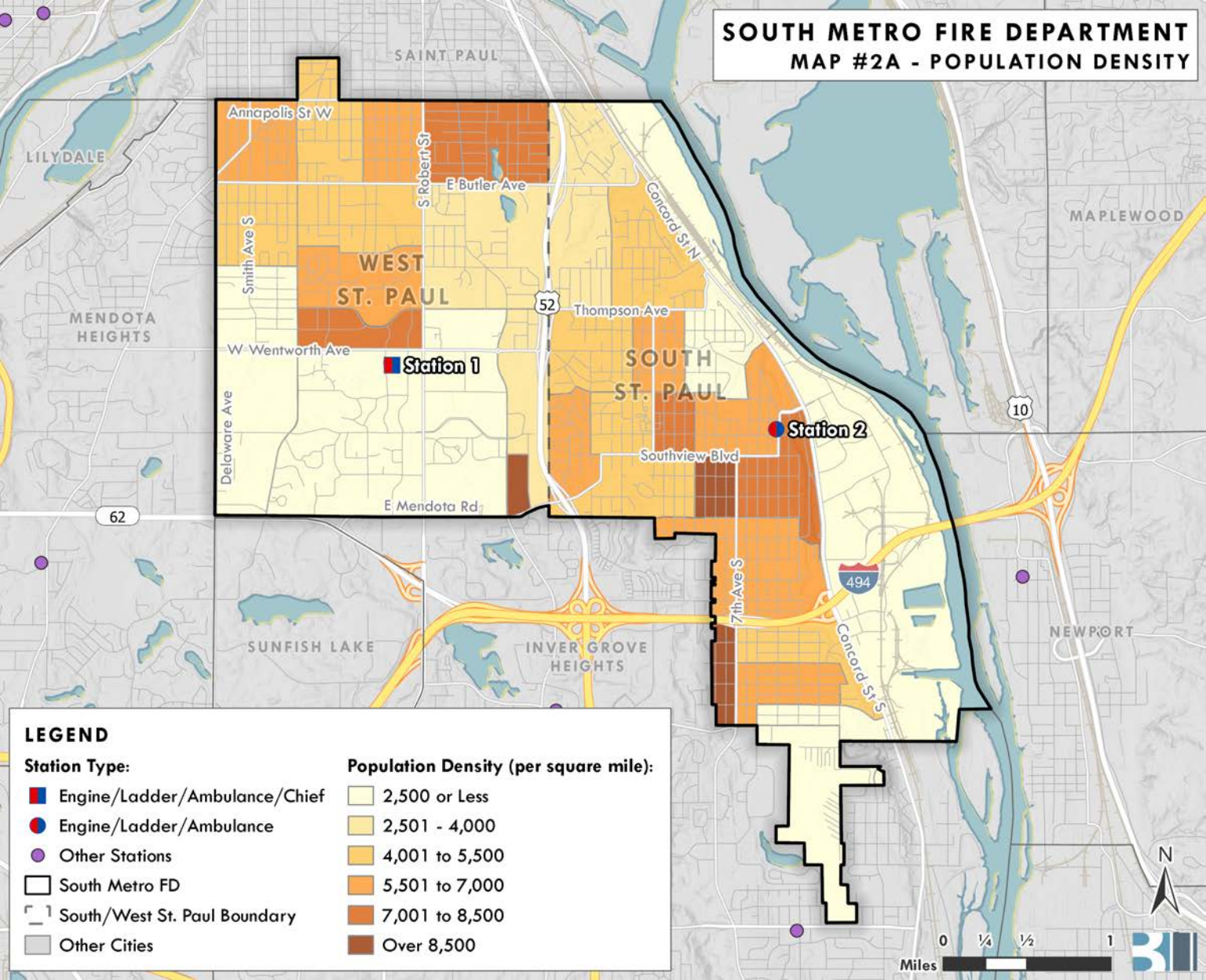
SOUTH METRO FIRE DEPARTMENT
MAP #1 - GENERAL GEOGRAPHY



SOUTH METRO FIRE DEPARTMENT
MAP #2 - RISK PLANNING ZONES



SOUTH METRO FIRE DEPARTMENT
MAP #2A - POPULATION DENSITY



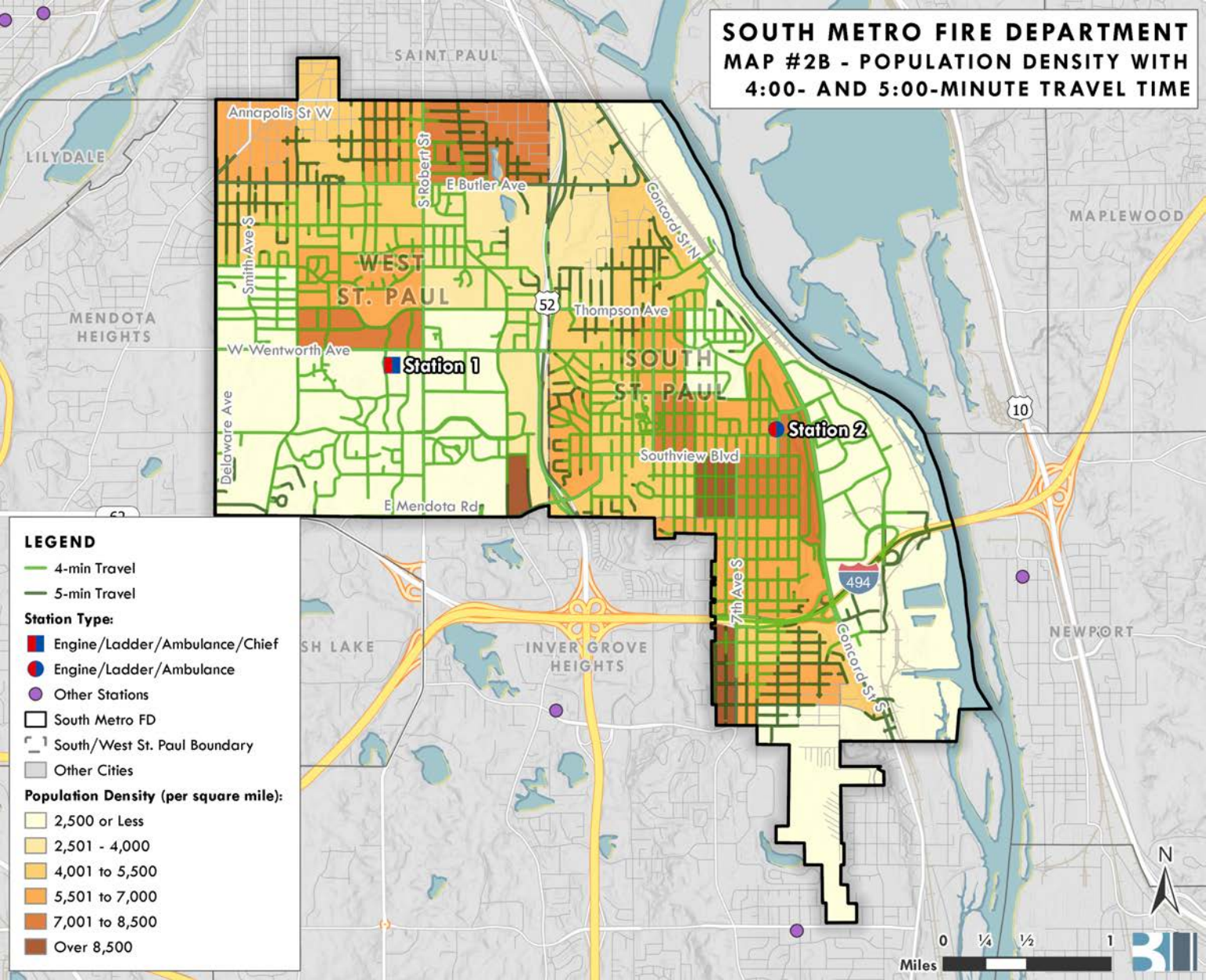
LEGEND

Station Type:

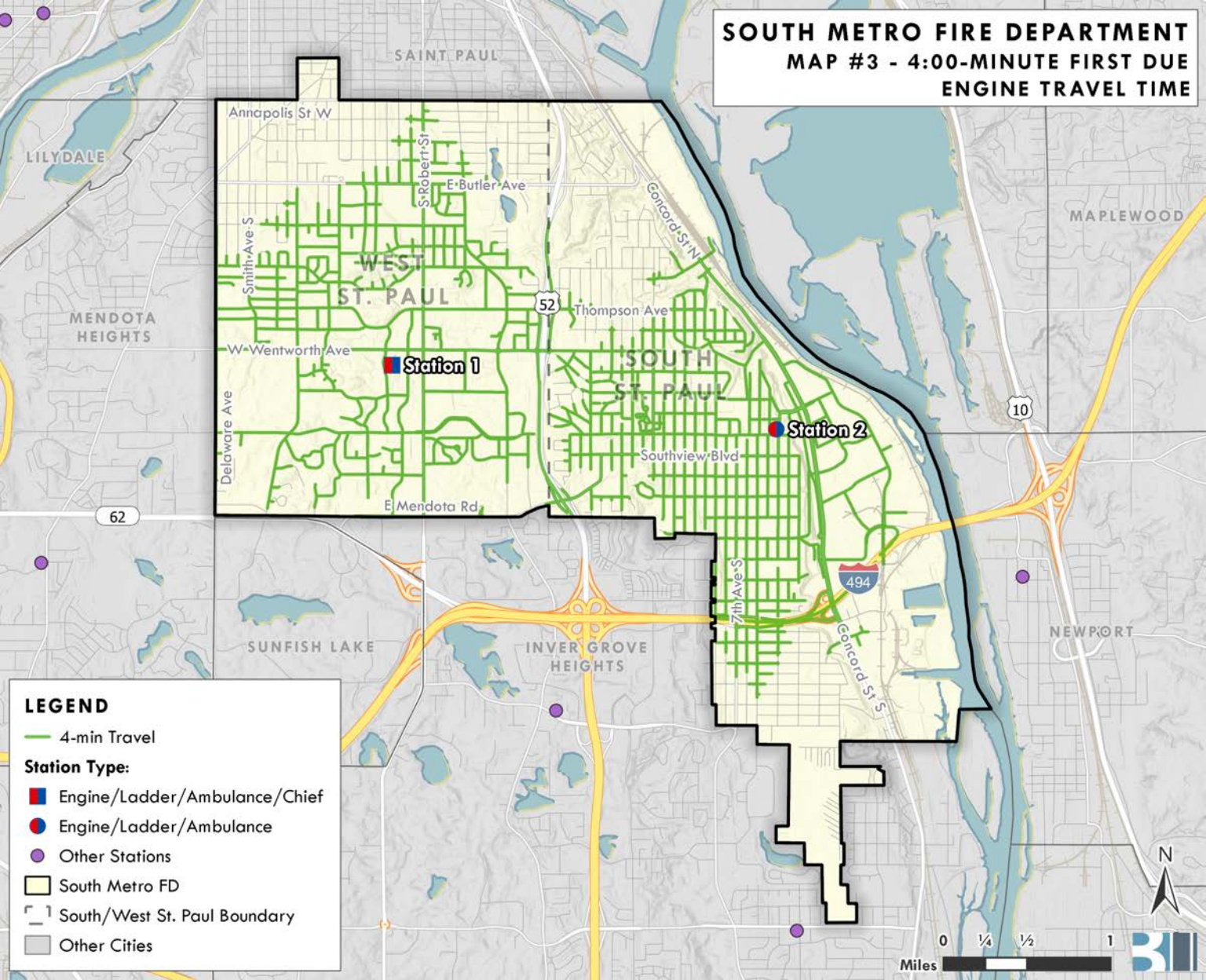
- Engine/Ladder/Ambulance/Chief
- Engine/Ladder/Ambulance
- Other Stations
- South Metro FD
- South/West St. Paul Boundary
- Other Cities

Population Density (per square mile):

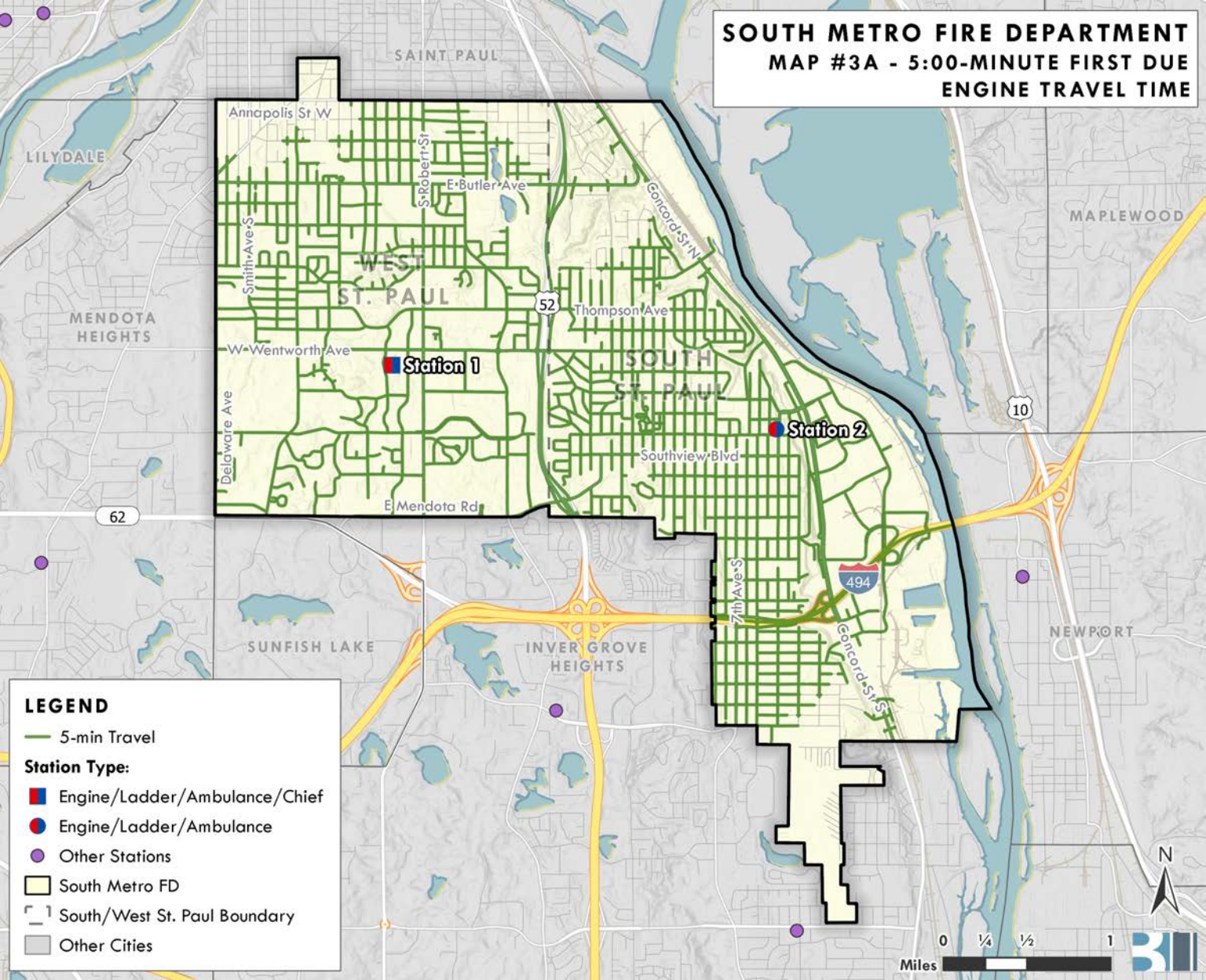
- 2,500 or Less
- 2,501 - 4,000
- 4,001 to 5,500
- 5,501 to 7,000
- 7,001 to 8,500
- Over 8,500


SOUTH METRO FIRE DEPARTMENT
MAP #2B - POPULATION DENSITY WITH 4:00- AND 5:00-MINUTE TRAVEL TIME
SAINT PAUL
LILYDALE
MENDOTA HEIGHTS
WEST ST. PAUL
SOUTH ST. PAUL
INVER GROVE HEIGHTS
NEWPORT
MAPLEWOOD
Annapolis St W
S Robert St
E Butler Ave
Smith Ave S
Concord St N
Thompson Ave
W Wentworth Ave
Station 1
Station 2
Delaware Ave
Southview Blvd
E Mendota Rd
7th Ave S
Concord St S
52
10
494
LEGEND
4-min Travel
5-min Travel
Station Type:
Engine/Ladder/Ambulance/Chief
Engine/Ladder/Ambulance
Other Stations
South Metro FD
South/West St. Paul Boundary
Other Cities
Population Density (per square mile):
2,500 or Less
2,501 - 4,000
4,001 to 5,500
5,501 to 7,000
7,001 to 8,500
Over 8,500
N
0 ¼ ½ 1
Miles

SOUTH METRO FIRE DEPARTMENT
MAP #3 - 4:00-MINUTE FIRST DUE ENGINE TRAVEL TIME

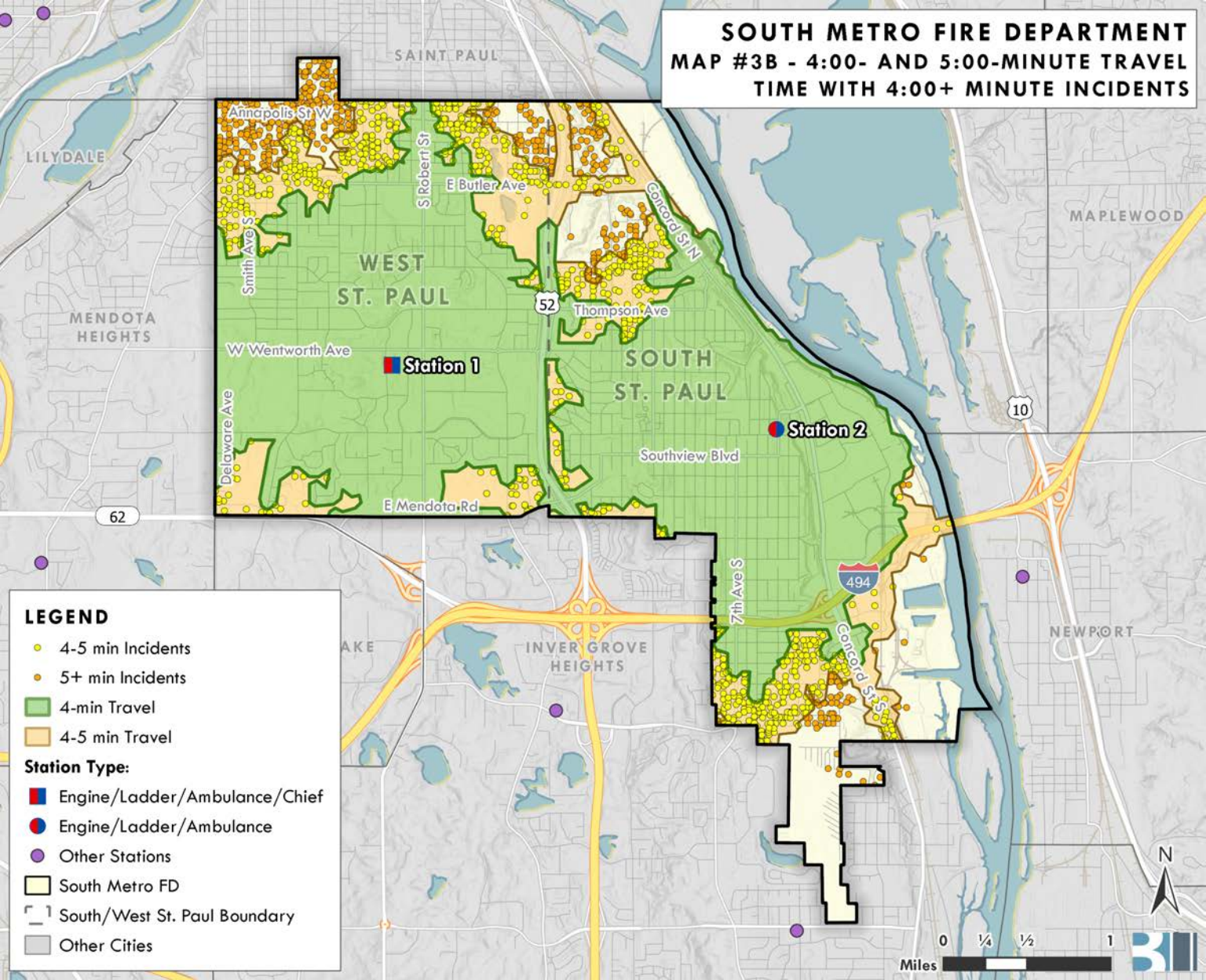


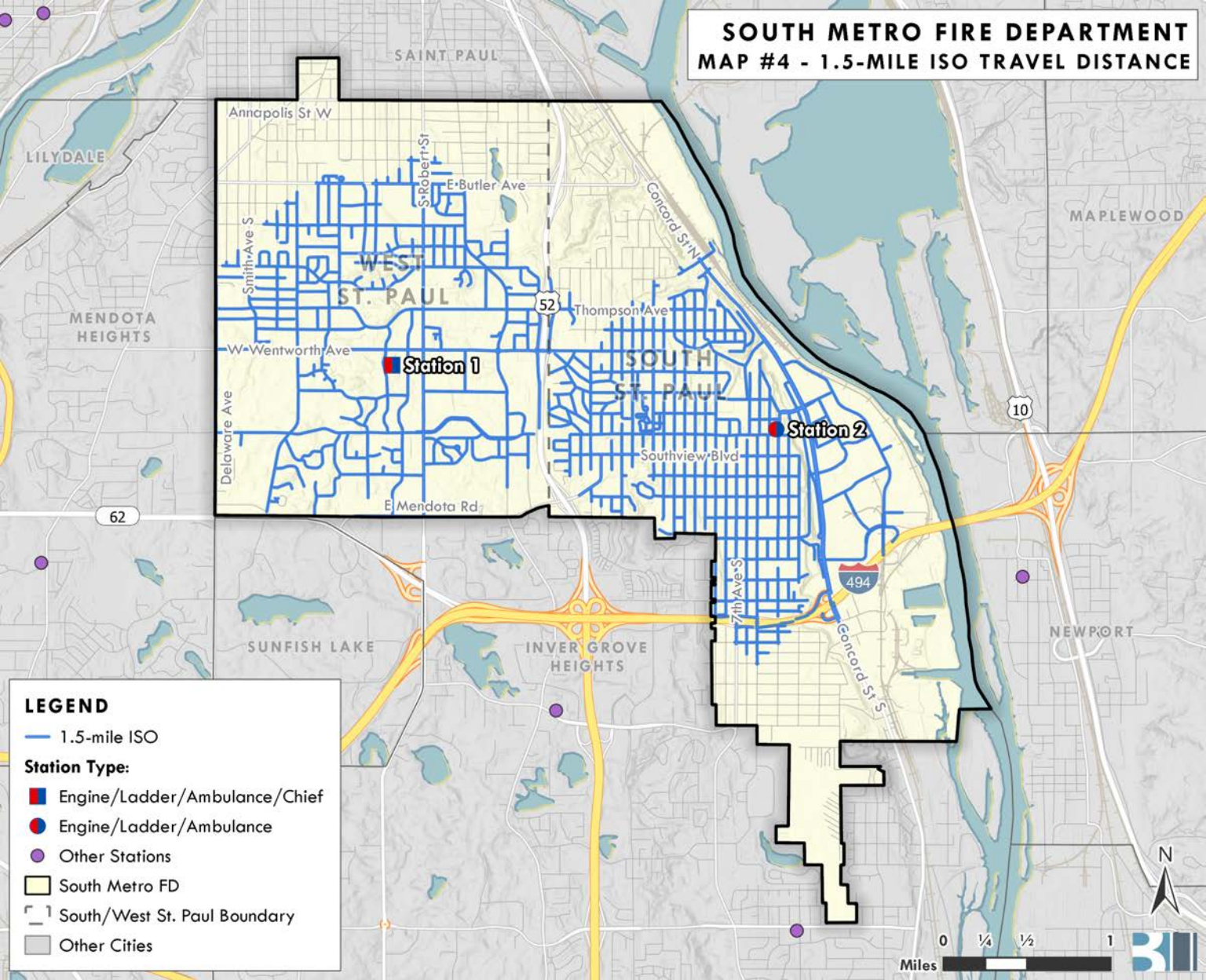
SOUTH METRO FIRE DEPARTMENT
MAP #3A - 5:00-MINUTE FIRST DUE ENGINE TRAVEL TIME



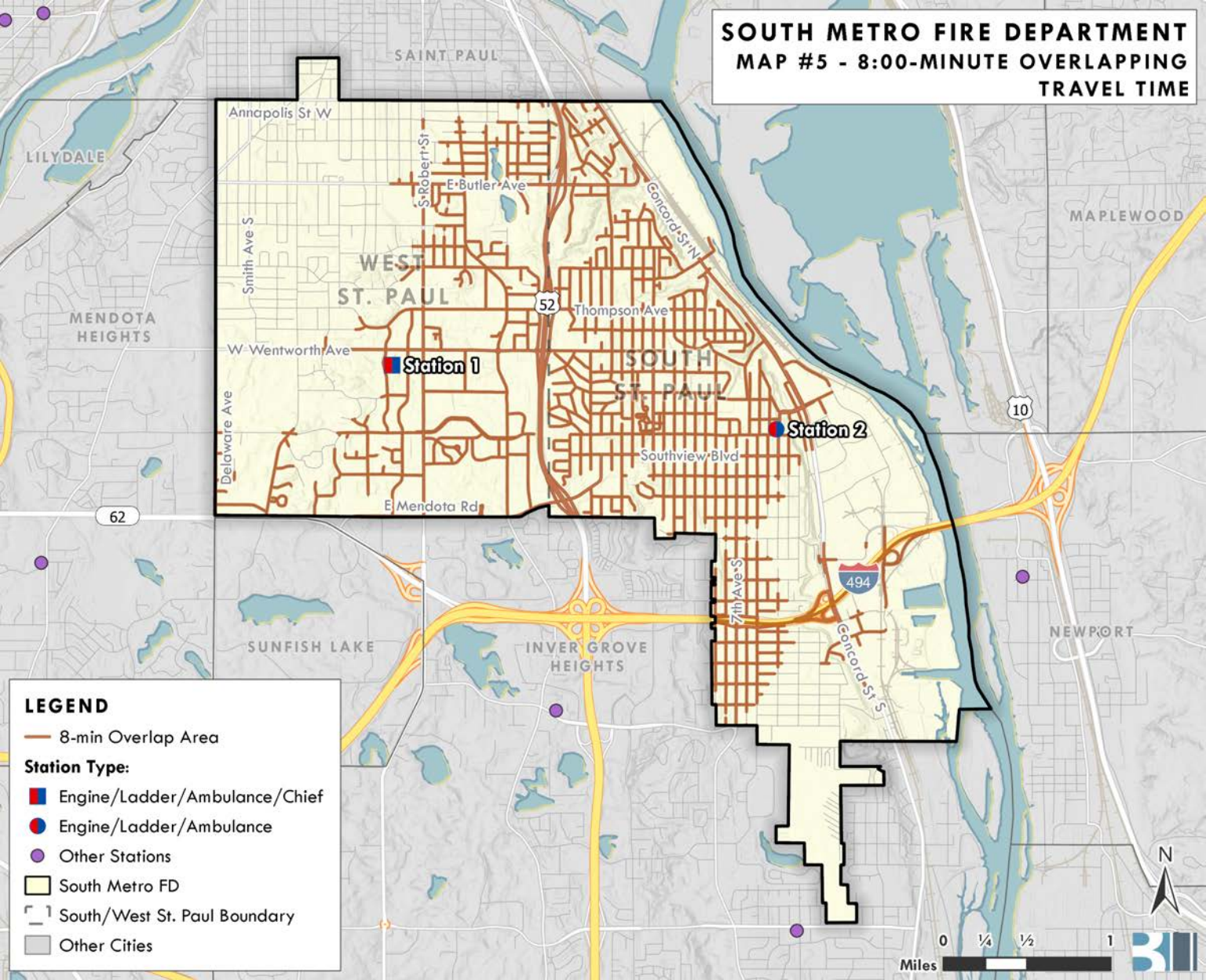
SOUTH METRO FIRE DEPARTMENT

MAP #3B - 4:00- AND 5:00-MINUTE TRAVEL TIME WITH 4:00+ MINUTE INCIDENTS

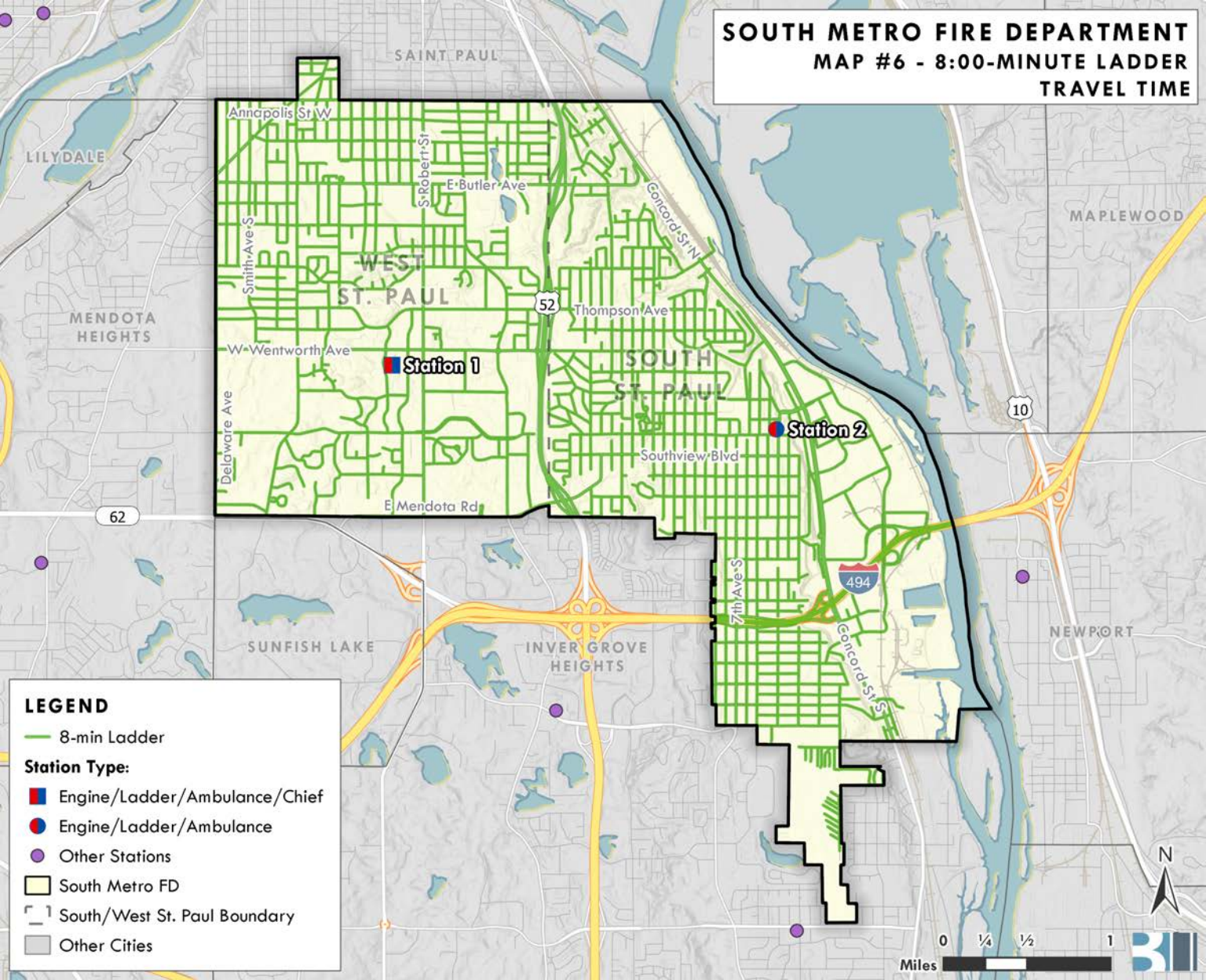



SOUTH METRO FIRE DEPARTMENT
MAP #4 - 1.5-MILE ISO TRAVEL DISTANCE
SAINT PAUL
LILYDALE
MENDOTA HEIGHTS
WEST ST. PAUL
SOUTH ST. PAUL
MAPLEWOOD
NEWPORT
SUNFISH LAKE
INVER GROVE HEIGHTS
Annapolis St W
S Robert St
E Butler Ave
Smith Ave S
Concord St N
Thompson Ave
W Wentworth Ave
Station 1
Station 2
Southview Blvd
Delaware Ave
E Mendota Rd
7th Ave S
Concord St S
52
62
10
494
LEGEND
1.5-mile ISO
Station Type:
Engine/Ladder/Ambulance/Chief
Engine/Ladder/Ambulance
Other Stations
South Metro FD
South/West St. Paul Boundary
Other Cities
N
0
¼
½
1
Miles

SOUTH METRO FIRE DEPARTMENT
MAP #5 - 8:00-MINUTE OVERLAPPING TRAVEL TIME

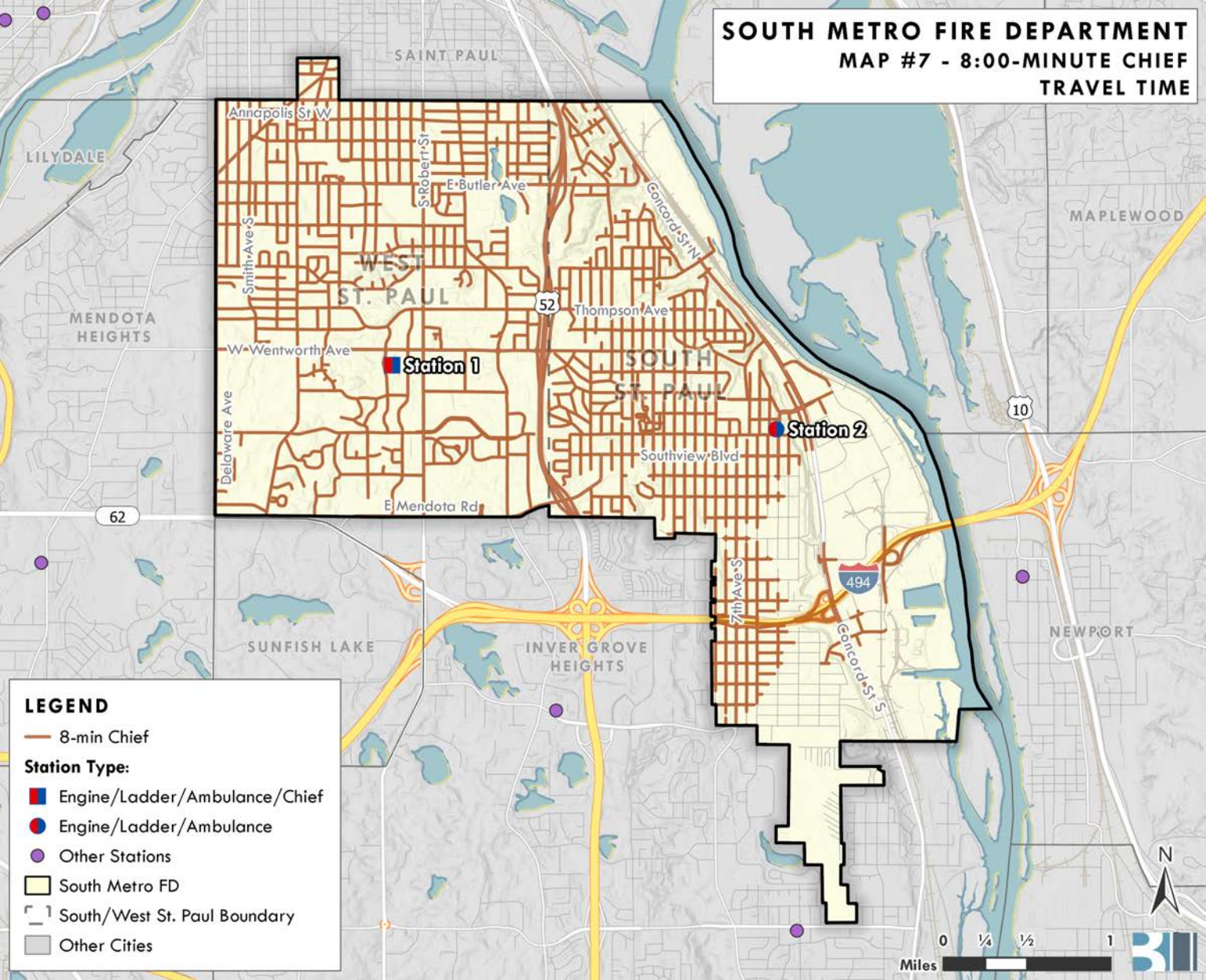


SOUTH METRO FIRE DEPARTMENT
MAP #6 - 8:00-MINUTE LADDER TRAVEL TIME



SOUTH METRO FIRE DEPARTMENT

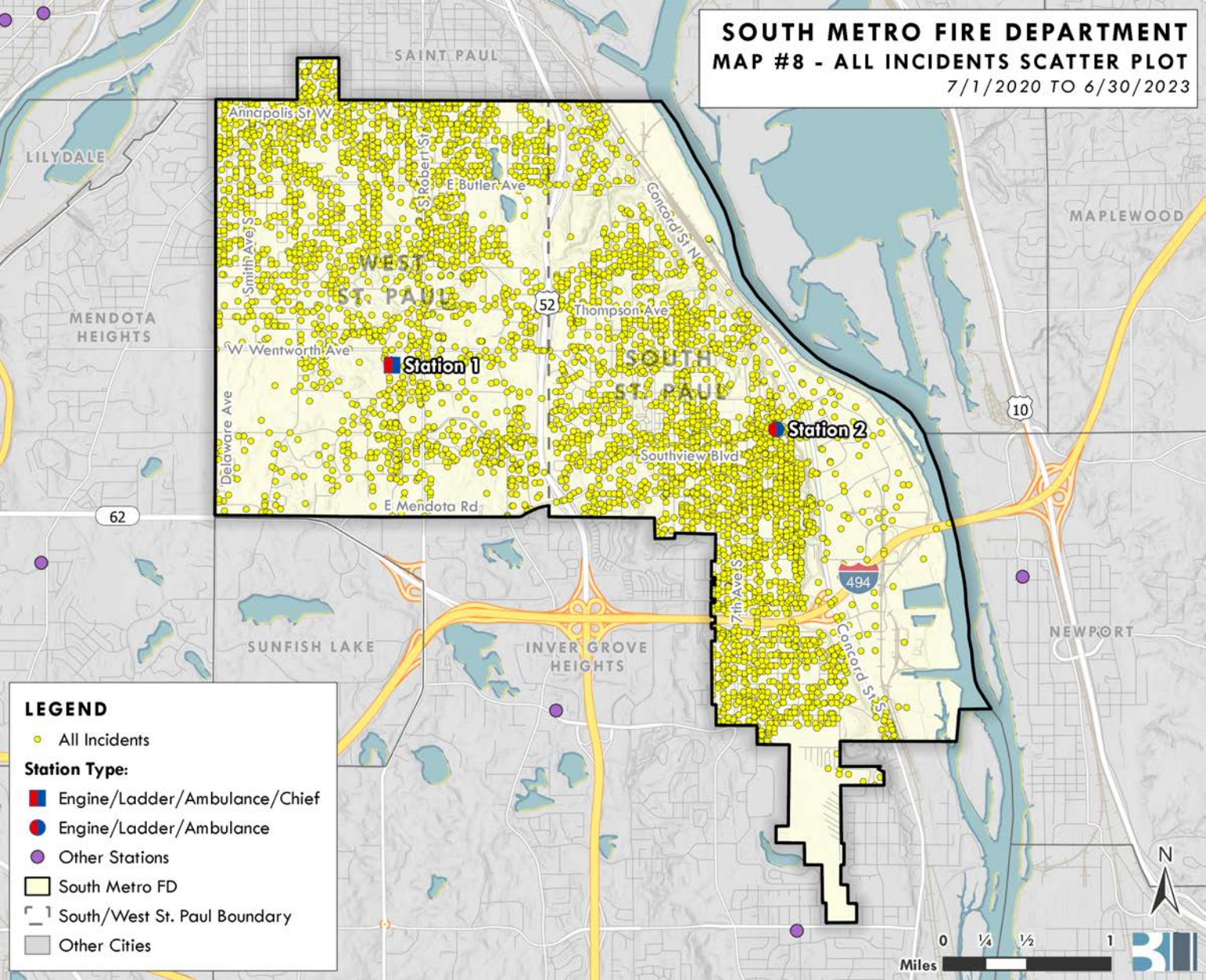
MAP #7 - 8:00-MINUTE CHIEF TRAVEL TIME

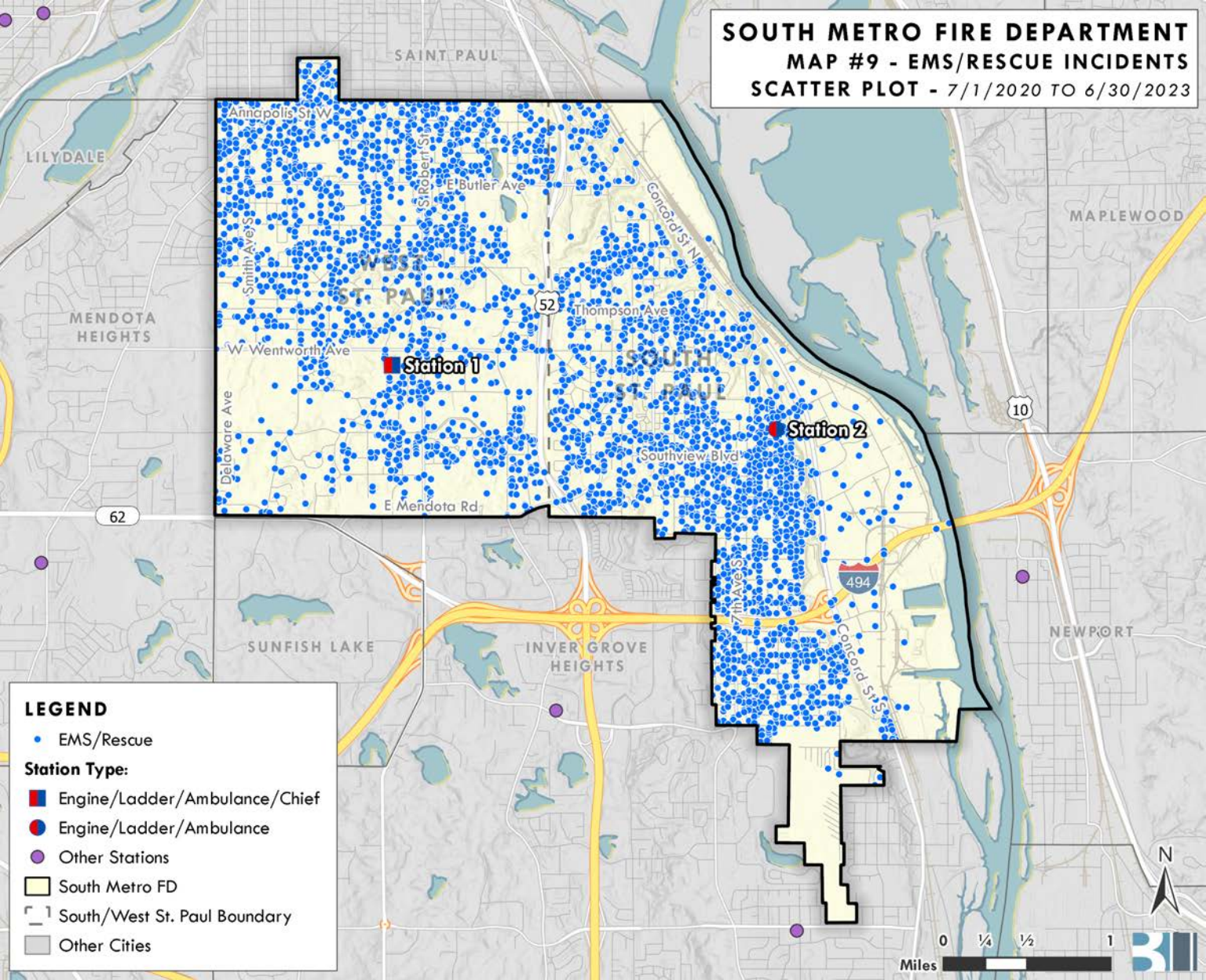


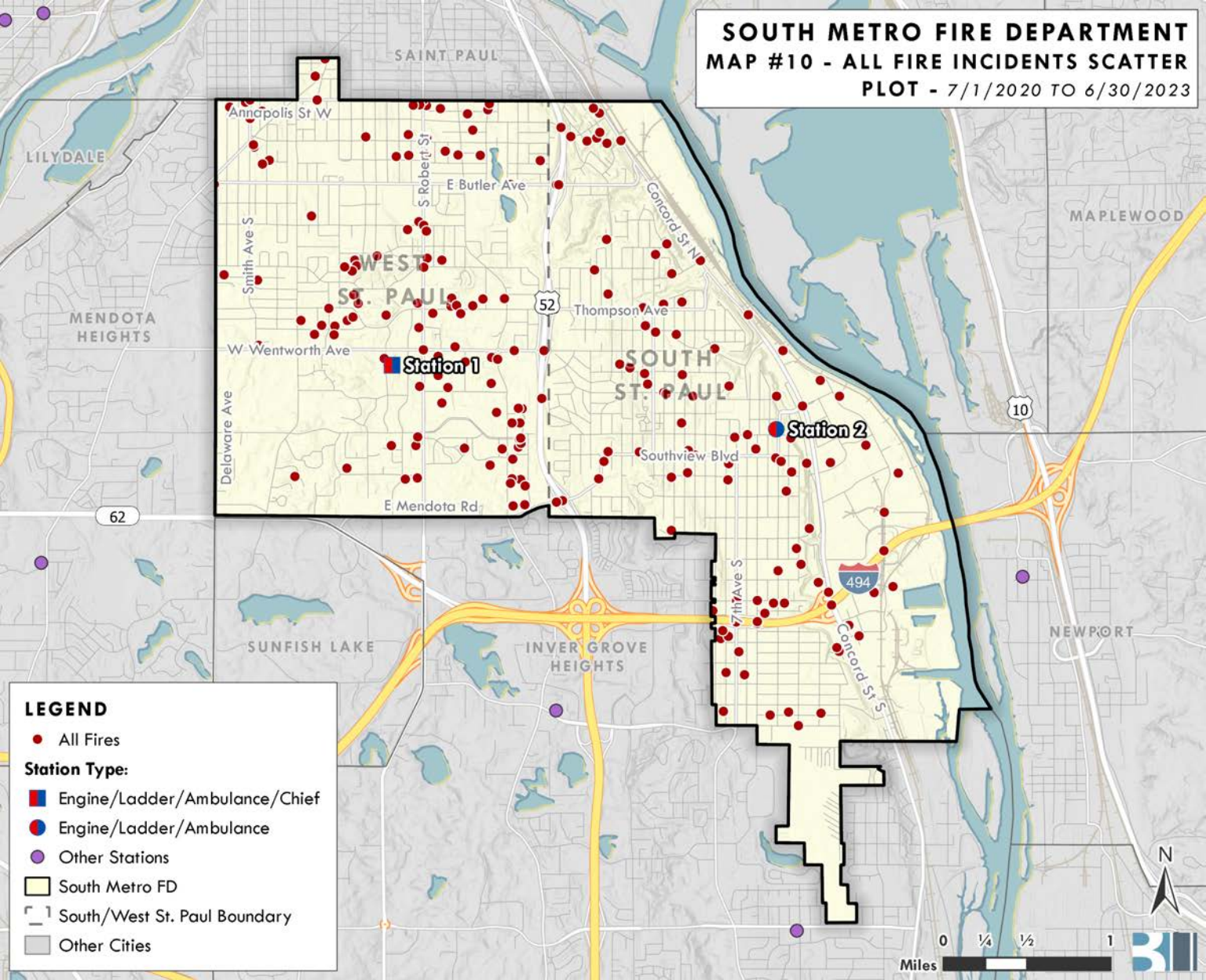
SOUTH METRO FIRE DEPARTMENT

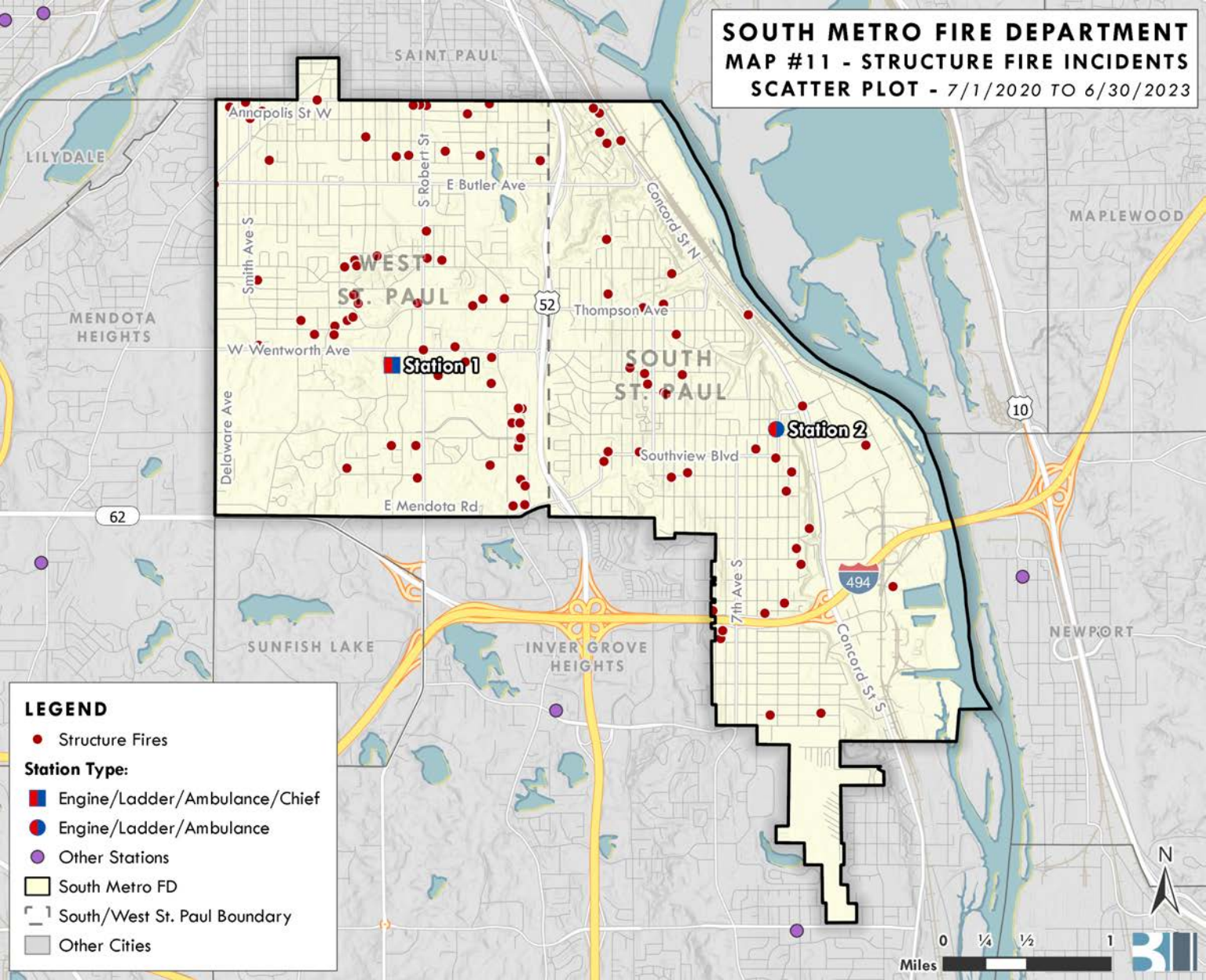
MAP #8 - ALL INCIDENTS SCATTER PLOT

7/1/2020 TO 6/30/2023




SOUTH METRO FIRE DEPARTMENT
MAP #9 - EMS/RESCUE INCIDENTS
SCATTER PLOT - 7/1/2020 TO 6/30/2023
SAINT PAUL
LILYDALE
MENDOTA HEIGHTS
WEST ST. PAUL
SOUTH ST. PAUL
MAPLEWOOD
NEWPORT
SUNFISH LAKE
INVER GROVE HEIGHTS
Annapolis St W
E Butler Ave
Smith Ave S
St Robert St
Concord St N
Thompson Ave
W Wentworth Ave
Delaware Ave
E Mendota Rd
Southview Blvd
Concord St S
Station 1
Station 2
52
62
10
494
LEGEND
EMS/Rescue
Station Type:
Engine/Ladder/Ambulance/Chief
Engine/Ladder/Ambulance
Other Stations
South Metro FD
South/West St. Paul Boundary
Other Cities
N
0
¼
½
1
Miles

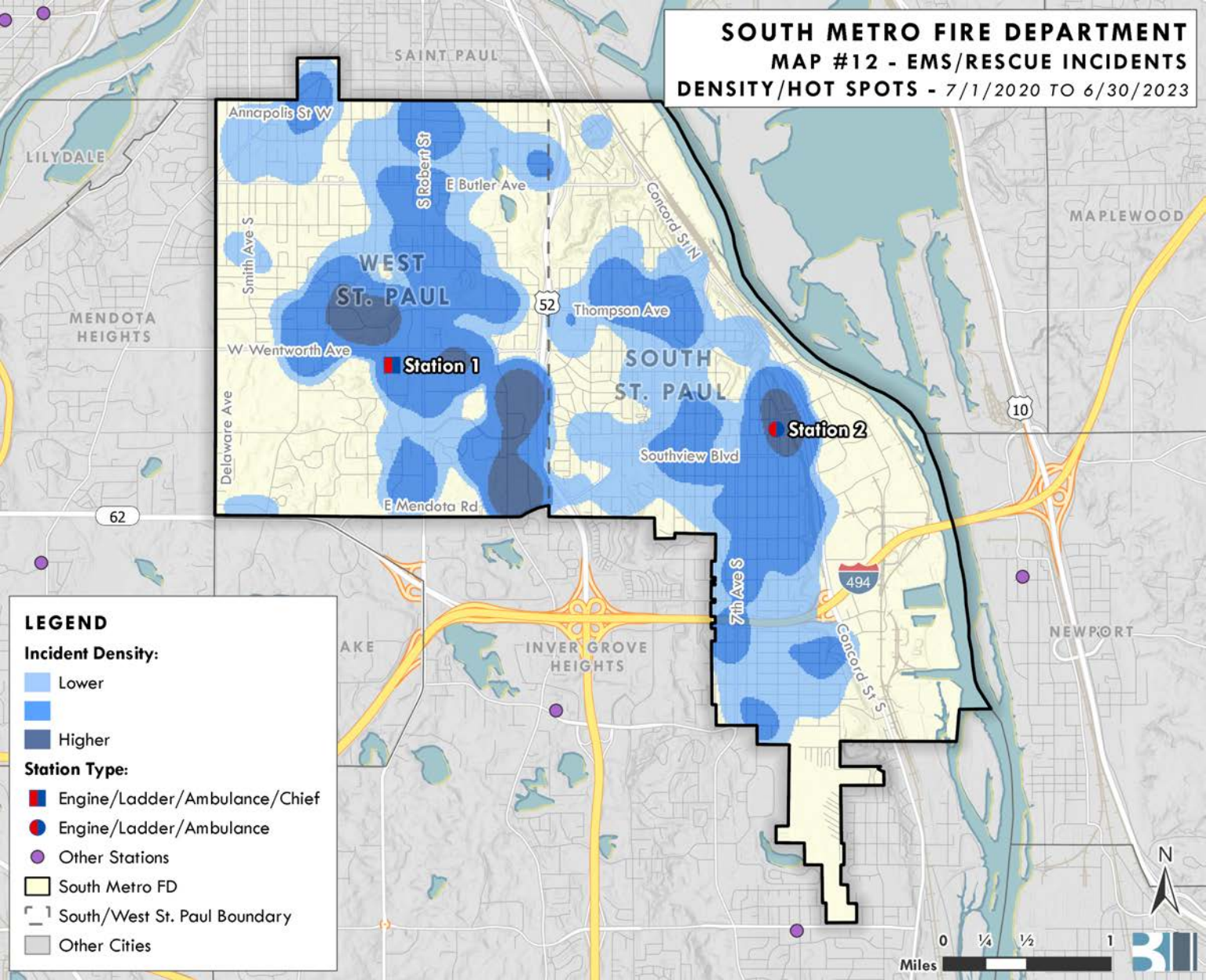

SOUTH METRO FIRE DEPARTMENT
MAP #10 - ALL FIRE INCIDENTS SCATTER PLOT - 7/1/2020 TO 6/30/2023
SAINT PAUL
LILYDALE
MENDOTA HEIGHTS
WEST ST. PAUL
SOUTH ST. PAUL
MAPLEWOOD
NEWPORT
SUNFISH LAKE
INVER GROVE HEIGHTS
Annapolis St W
S Robert St
E Butler Ave
Smith Ave S
Concord St N
Thompson Ave
W Wentworth Ave
Station 1
Station 2
Delaware Ave
Southview Blvd
E Mendota Rd
Concord St S
52
62
10
494
LEGEND
All Fires
Station Type:
Engine/Ladder/Ambulance/Chief
Engine/Ladder/Ambulance
Other Stations
South Metro FD
South/West St. Paul Boundary
Other Cities
N
0 ¼ ½ 1
Miles


SOUTH METRO FIRE DEPARTMENT
MAP #11 - STRUCTURE FIRE INCIDENTS
SCATTER PLOT - 7/1/2020 TO 6/30/2023
SAINT PAUL
LILYDALE
MENDOTA HEIGHTS
WEST ST. PAUL
SOUTH ST. PAUL
MAPLEWOOD
NEWPORT
SUNFISH LAKE
INVER GROVE HEIGHTS
Annapolis St W
S Robert St
E Butler Ave
Smith Ave S
Concord St N
Thompson Ave
W Wentworth Ave
Station 1
Station 2
Delaware Ave
Southview Blvd
E Mendota Rd
7th Ave S
Concord St S
52
62
10
494
LEGEND
Structure Fires
Station Type:
Engine/Ladder/Ambulance/Chief
Engine/Ladder/Ambulance
Other Stations
South Metro FD
South/West St. Paul Boundary
Other Cities
N
0 ¼ ½ 1
Miles

SOUTH METRO FIRE DEPARTMENT

MAP #12 - EMS/RESCUE INCIDENTS

DENSITY/HOT SPOTS - *7/1/2020 TO 6/30/2023*



LEGEND

Incident Density:

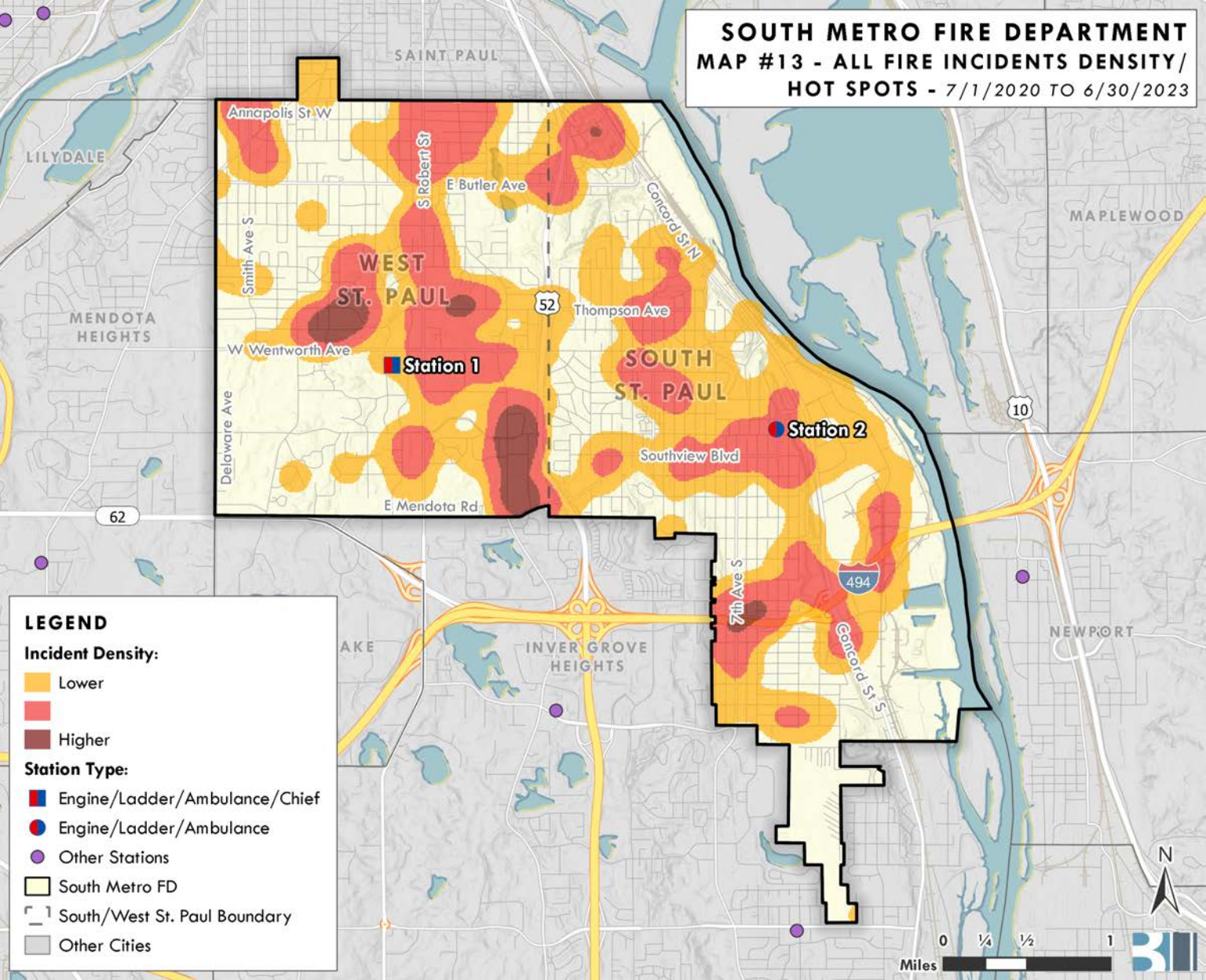
- Lower
- Higher

Station Type:

- Engine/Ladder/Ambulance/Chief
- Engine/Ladder/Ambulance
- Other Stations
- South Metro FD
- South/West St. Paul Boundary
- Other Cities

SOUTH METRO FIRE DEPARTMENT

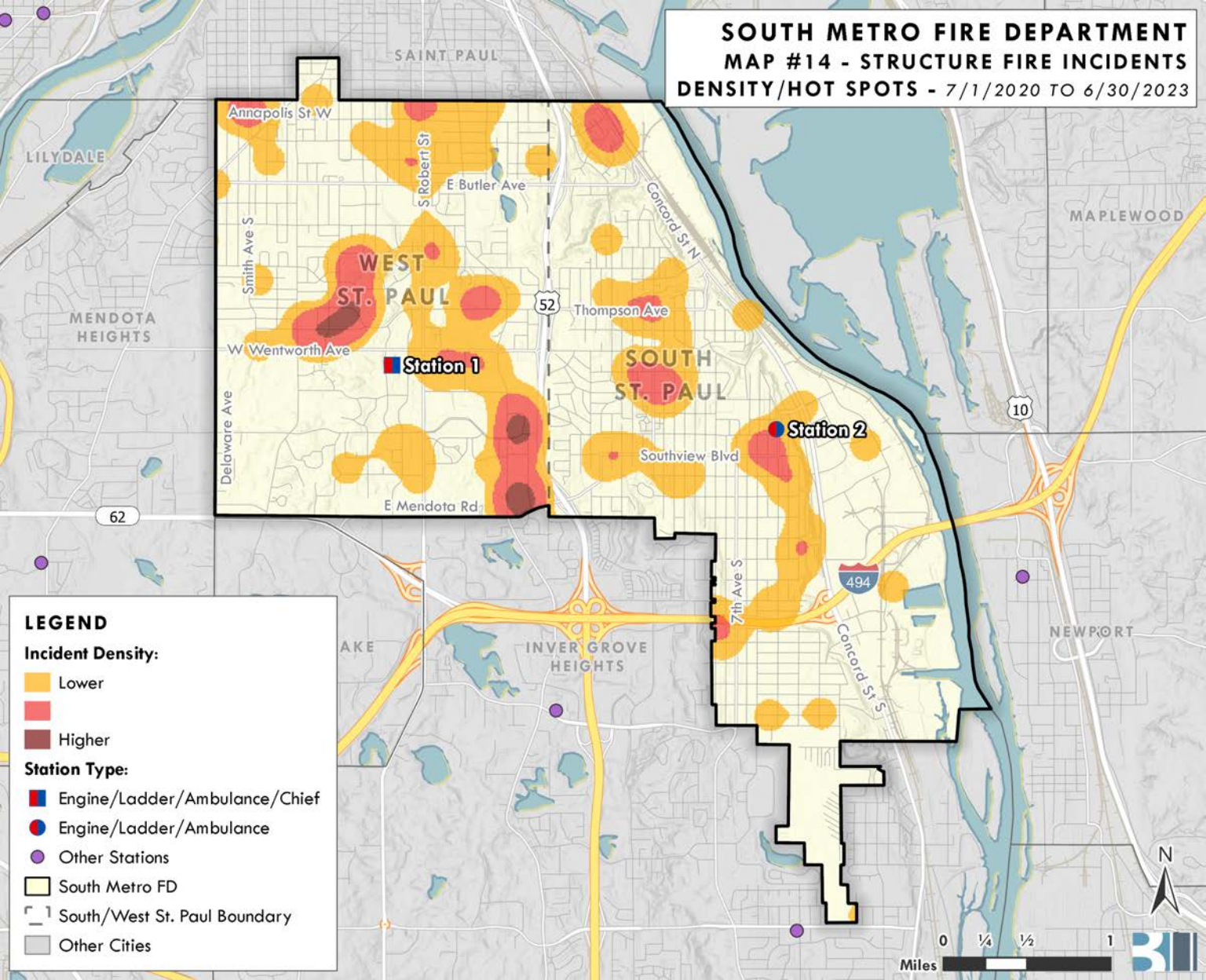
MAP #13 - ALL FIRE INCIDENTS DENSITY/ HOT SPOTS - *7/1/2020 TO 6/30/2023*



SOUTH METRO FIRE DEPARTMENT

MAP #14 - STRUCTURE FIRE INCIDENTS

DENSITY/HOT SPOTS - *7/1/2020 TO 6/30/2023*



LEGEND

Incident Density:

- Lower
- Higher

Station Type:

- Engine/Ladder/Ambulance/Chief
- Engine/Ladder/Ambulance
- Other Stations
- South Metro FD
- South/West St. Paul Boundary
- Other Cities