

# PERFORMANCE GAP ANALYSIS

---

2019



**BOWLING GREEN  
FIRE DEPARTMENT**



# TABLE OF CONTENTS

Performance Gap Introduction .....	3
Fire Response Time Standards .....	4
EMS Response Time Standards .....	5
Turnout Time Compliance by Shift .....	6
Travel Time Analysis .....	8
District 1 – Headquarters .....	9
District 2 – Airport .....	10
District 3 – Southside .....	11
District 4 – Westside .....	12
District 5 – Northside .....	13
District 6 - Greenwood .....	14
Planning Zones .....	15

## **PERFORMANCE GAP INTRODUCTION**

The Standard of Response Coverage declares the Bowling Green Fire Department's service level, defines the basic resources necessary to meet the stated objectives, and identifies the current effectiveness of these objectives.

This Standard was developed to ensure the citizens of Bowling Green receive an adequate emergency response from the Bowling Green Fire Department. The Standard of Cover provides for emergency response determined by the nature and type of incident and assigns Department resources accordingly.

It is the duty of the Bowling Green Fire Department senior staff members to monitor incident data to ensure the requirements for this standard are met. When any non-conforming trends are identified, Bowling Green Fire Department senior staff members shall make recommendations to bring response times within compliance. It is the duty of each officer to adhere to the staffing requirements of this standard. It is the responsibility of all suppression personnel to respond quickly and safely to life-threatening emergencies.

The 2019 Performance Gap Analysis provides a summary review of all 2019 Bowling Green Fire Department incidents based upon the Standard of Response Coverage. Gaps in performance are reported according to this Standard.





## FIRE RESPONSE TIME STANDARDS

### Benchmark

For 90 percent of all moderate- and high-risk structure fire responses, the total response time for the arrival of the first-due unit, staffed with 3 firefighters, shall be: 6 minutes and 20 seconds in all districts. The first-due unit shall be capable of: providing 500 gallons of water and 1,500 gpm pumping capacity; establishing command; completing an initial size-up; requesting additional resources; initiating fire attack, including establishing and advancing an attack line flowing a minimum of 150 gpm; establishing an uninterrupted water supply; containing the fire; and rescuing at-risk victims. These operations shall be done in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

For 90 percent of all moderate- and high-risk structure fire responses, the total response time for the arrival of the effective response force (ERF), staffed with 14 firefighters and officers, shall be: 10 minutes and 20 seconds in all districts. The ERF shall be capable of: establishing command; providing an uninterrupted water supply; advancing an attack line and a backup line for fire control; complying with the OHSA requirements of two in-two out; completing forcible entry; searching and rescuing at-risk victims; ventilating the structure; controlling utilities; establishing a 2-man RIT team; placing elevated master streams into service; and performing salvage and overhaul. These operations shall be done in accordance with departmental standard operating procedures while providing for the safety of responders and the general public.

#### Call Processing Time

Alarm to Dispatch Time

GOAL

**01:00**

90% OF THE TIME

**01:00**

ACTUAL 90%

**90.0%**

COMPLIANCE

#### Turnout Time

Dispatch to En Route Time  
(First-Arriving Unit)

GOAL

**01:20**

90% OF THE TIME

**02:03**

ACTUAL 90%

**20.0%**

COMPLIANCE

#### Total Response Time

Alarm to Arrival Time  
(First-Arriving Unit)

GOAL

**06:20**

90% OF THE TIME

**07:07**

ACTUAL 90%

**71.0%**

COMPLIANCE

## EMS RESPONSE TIME STANDARDS

### Benchmark

For 90 percent of all EMS responses, the total response time for the arrival of the first-due unit, staffed with 3 firefighters, shall be: 6 minutes and 45 seconds in all districts. The first-due unit shall be capable of: assessing scene safety and establishing command; sizing-up the situation; conducting initial patient assessment; initiating CPR; obtaining vitals and patient's medical history; initiating mitigation efforts within one minute of arrival; providing first responder medical aid including automatic external defibrillation; and assisting transport personnel with packaging the patient.

As the Bowling Green Fire Department provides EMS response only at the first responder level, in support of the local ambulance service, only one unit is sent to EMS calls. The remainder of the Effective Response Force, including Advanced Life Support, is supplied by the Medical Center of Bowling Green. In 2019, the Fire Department arrived on scene before EMS 59.5% of the time and after EMS 21.5% of the time. The Fire Department and the Medical Center EMS arrived simultaneously 15.5% of the time. This information was not gathered on the remaining 3.5% of EMS runs.

#### Call Processing Time

Alarm to Dispatch Time

GOAL

**01:45**

90% OF THE TIME

**01:40**

ACTUAL 90%

**91.8%**

COMPLIANCE

#### Turnout Time

Dispatch to En Route Time  
(First-Arriving Unit)

GOAL

**01:00**

90% OF THE TIME

**01:49**

ACTUAL 90%

**24.5%**

COMPLIANCE

#### Total Response Time

Alarm to Arrival Time  
(First-Arriving Unit)

GOAL

**06:45**

90% OF THE TIME

**07:31**

ACTUAL 90%

**80.7%**

COMPLIANCE

## TURNOUT TIME COMPLIANCE BY SHIFT

Turnout Time is measured by the time a call was dispatched to the time the crew called en route.

### A Shift

UNIT	INCIDENT TYPE	COMPLIANT	NOT COMPLIANT	% COMPLIANT
E2	Fire	4	9	30.77%
	EMS	61	109	35.88%
E3	Fire	2	13	13.33%
	EMS	29	141	17.06%
E4	Fire	5	20	20.00%
	EMS	83	303	21.50%
E5	Fire	2	8	20.00%
	EMS	21	40	34.43%
E6	Fire	3	8	27.27%
	EMS	39	224	14.83%
R1	Fire	5	18	21.74%
	EMS	110	221	33.23%
T1	Fire	0	5	0.00%
	EMS	1	4	20.00%
T4	Fire	2	15	11.76%
	EMS	21	23	47.73%
T6	Fire	0	5	0.00%
	EMS	10	23	30.30%
TOTAL		398	1189	25.08%

### B Shift

UNIT	INCIDENT TYPE	COMPLIANT	NOT COMPLIANT	% COMPLIANT
E2	Fire	5	11	31.25%
	EMS	66	119	35.68%
E3	Fire	3	12	20.00%
	EMS	41	110	27.15%
E4	Fire	5	16	23.81%
	EMS	109	217	33.44%
E5	Fire	1	15	6.25%
	EMS	12	53	18.46%
E6	Fire	2	10	16.67%
	EMS	27	167	13.92%
R1	Fire	9	15	37.50%
	EMS	63	153	29.17%
T1	Fire	3	2	60.00%
	EMS	3	7	30.00%
T4	Fire	3	11	21.43%
	EMS	29	68	29.90%
T6	Fire	5	9	35.71%
	EMS	23	49	31.94%
TOTAL		409	1044	28.15%



## TURNOUT TIME

GOAL: FIRE

**01:00**

90% OF THE TIME

GOAL: EMS

**01:20**

90% OF THE TIME

## TURNOUT TIME COMPLIANCE BY SHIFT

Turnout Time is measured by the time a call was dispatched to the time the crew called en route.

### C Shift

UNIT	INCIDENT TYPE	COMPLIANT	NOT COMPLIANT	% COMPLIANT
E2	Fire	6	13	31.58%
	EMS	23	139	14.20%
E3	Fire	4	12	25.00%
	EMS	50	105	32.26%
E4	Fire	4	14	22.22%
	EMS	103	257	28.61%
E5	Fire	6	16	27.27%
	EMS	9	48	15.79%
E6	Fire	4	10	28.57%
	EMS	50	178	21.93%
R1	Fire	8	20	28.57%
	EMS	87	226	27.80%
T1	Fire	1	5	16.67%
	EMS	5	1	83.33%
T4	Fire	1	19	5.00%
	EMS	9	22	29.03%
T6	Fire	2	7	22.22%
	EMS	11	20	35.48%
TOTAL		383	1112	25.62%



### TURNOUT TIME

GOAL: FIRE

**01:00**

90% OF THE TIME

GOAL: EMS

**01:20**

90% OF THE TIME



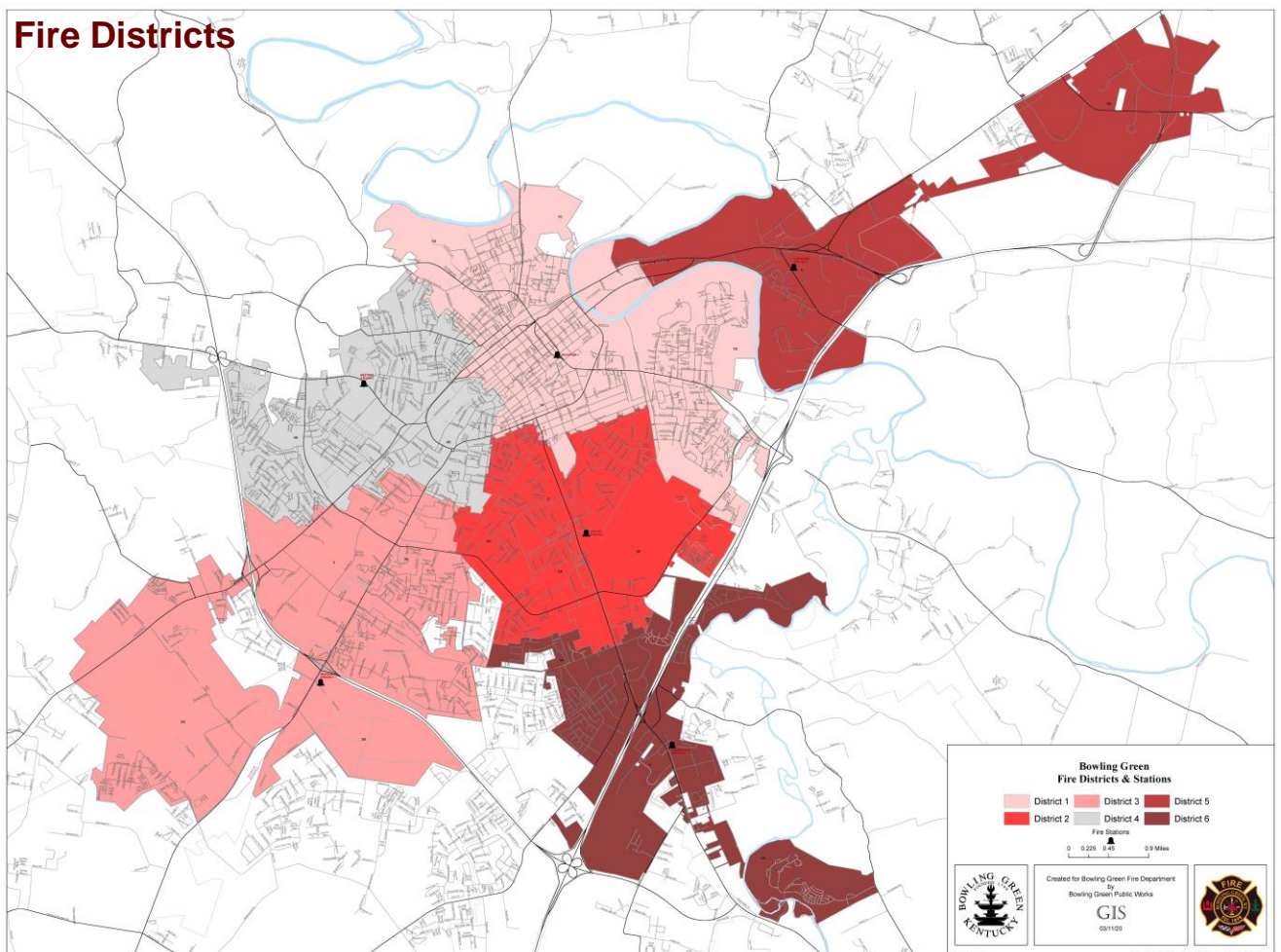


## TRAVEL TIME ANALYSIS

### Methodology

Travel time for 2019 incidents was analyzed with the following parameters and heat maps created of each district.

- District area selected by address and/or GPS coordinates
- In-District responses only
- All incident types
- Response mode: Emergency, lights and sirens only
- Order of arrival: first only
- Travel Time: greater than 4 minutes
- Heat map is displayed as a sum of all travel times for each incident at the given location







## HEADQUARTERS

701 EAST 7<sup>th</sup> AVE

### Performance Gap Areas

- Broadway / US-31W Bypass
- KY185 / Delafield
- Olde Town / WKONA (New Station 7)
- Briarwood / Lovers Ln / Cemetery Rd (New Station 7)
- Indian Hills (New Station 7)

GOAL TRAVEL TIME  
90% OF THE TIME

**04:00**

ACTUAL 90%

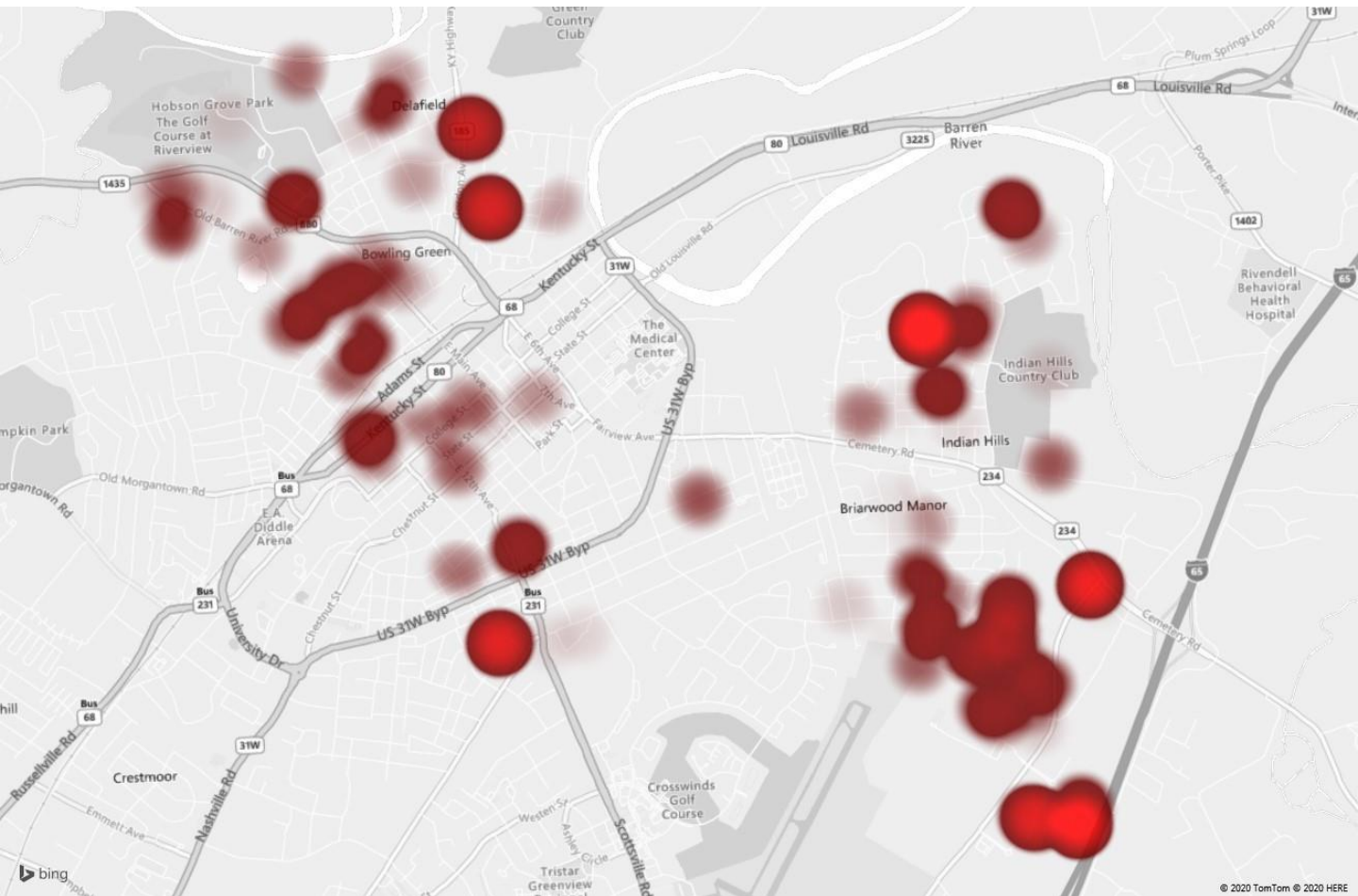
**04:23**

COMPLIANCE

**85%**

RUNS ANALYZED:

**1370**



**DISTRICT ONE**



## AIRPORT

1108 WOODHURST AVE

### Performance Gap Areas

- TC Cherry / Smallhouse Rd / Scottsville Rd
- Westen St / Campbell Ln
- Traditions (New Station 7)

GOAL TRAVEL TIME  
90% OF THE TIME

**04:00**

ACTUAL 90%

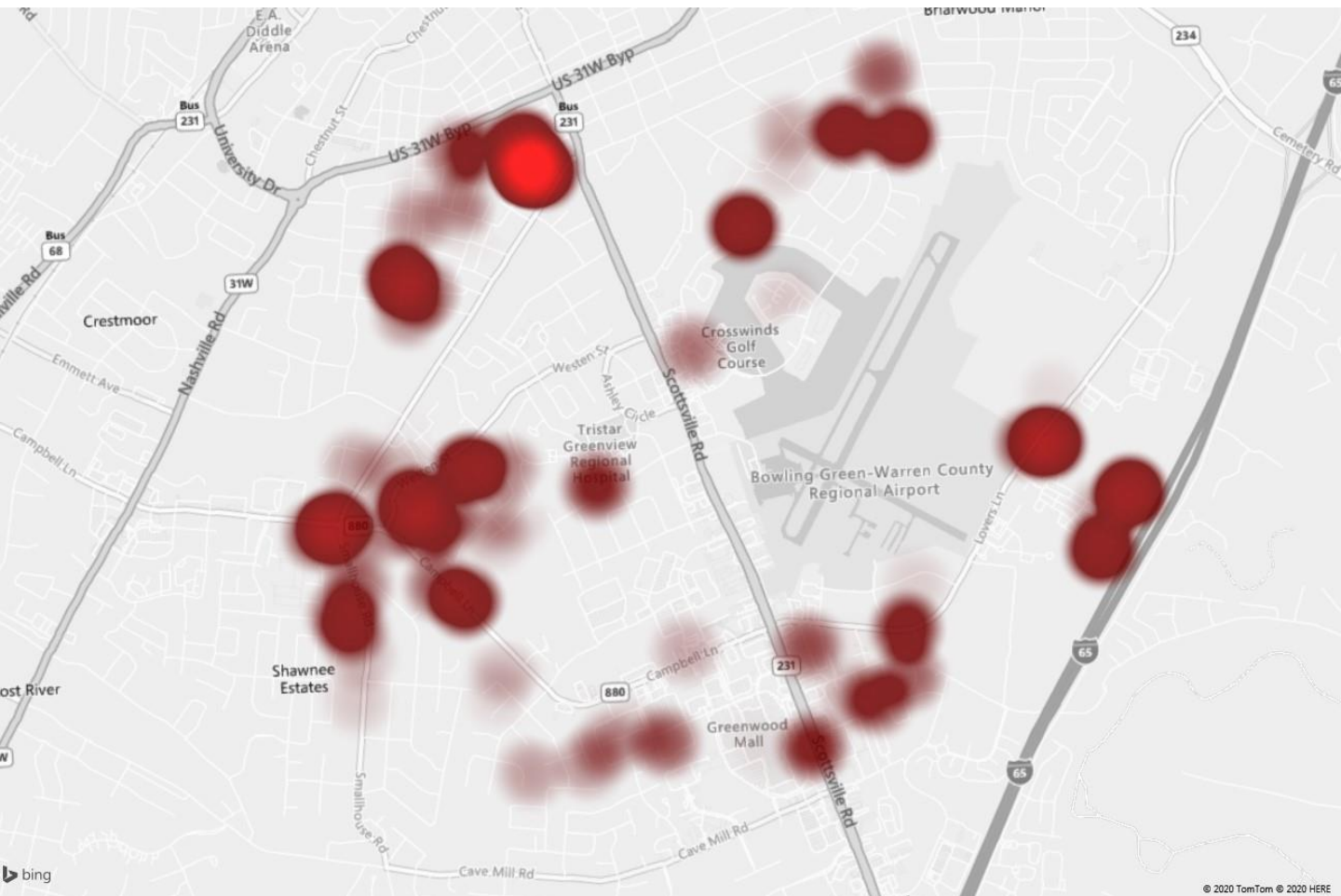
**04:34**

COMPLIANCE

**77%**

RUNS ANALYZED:

**717**



**DISTRICT TWO**



## SOUTHSIDE

150 BENNETT LN

### Performance Gap Areas

- Greystone Subdivision
- South Industrial Park / Georgia Pacific
- Russellville Rd / Windover Ave
- Shawnee Estates / Thoroughbred
- Dishman Ln / Lost Cir
- Country Oven Bakery
- Grider Pond Rd / Smallhouse Rd

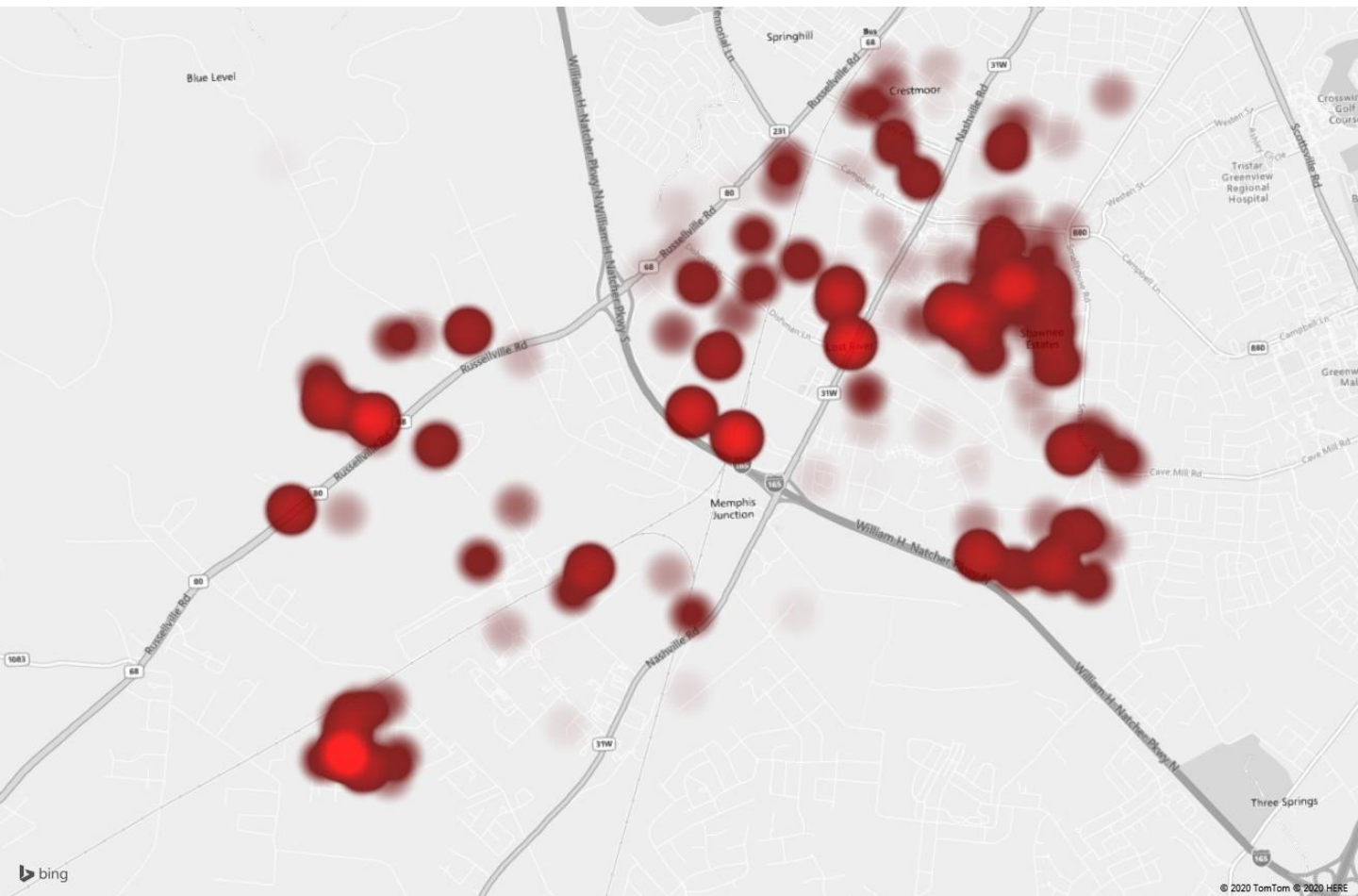
GOAL TRAVEL TIME  
90% OF THE TIME

**04:00**

ACTUAL 90% **05:39**

COMPLIANCE **59%**

RUNS ANALYZED: **816**



# DISTRICT THREE





## WESTSIDE

835 MORGANTOWN RD

### Performance Gap Areas

- Whispering Hills / Water Park
- Stonehenge
- Brookwood Mobile Home Park
- Skyline Mobile Home Park
- WKU Campus
- Glen Lily Rd / Old Barren River Rd

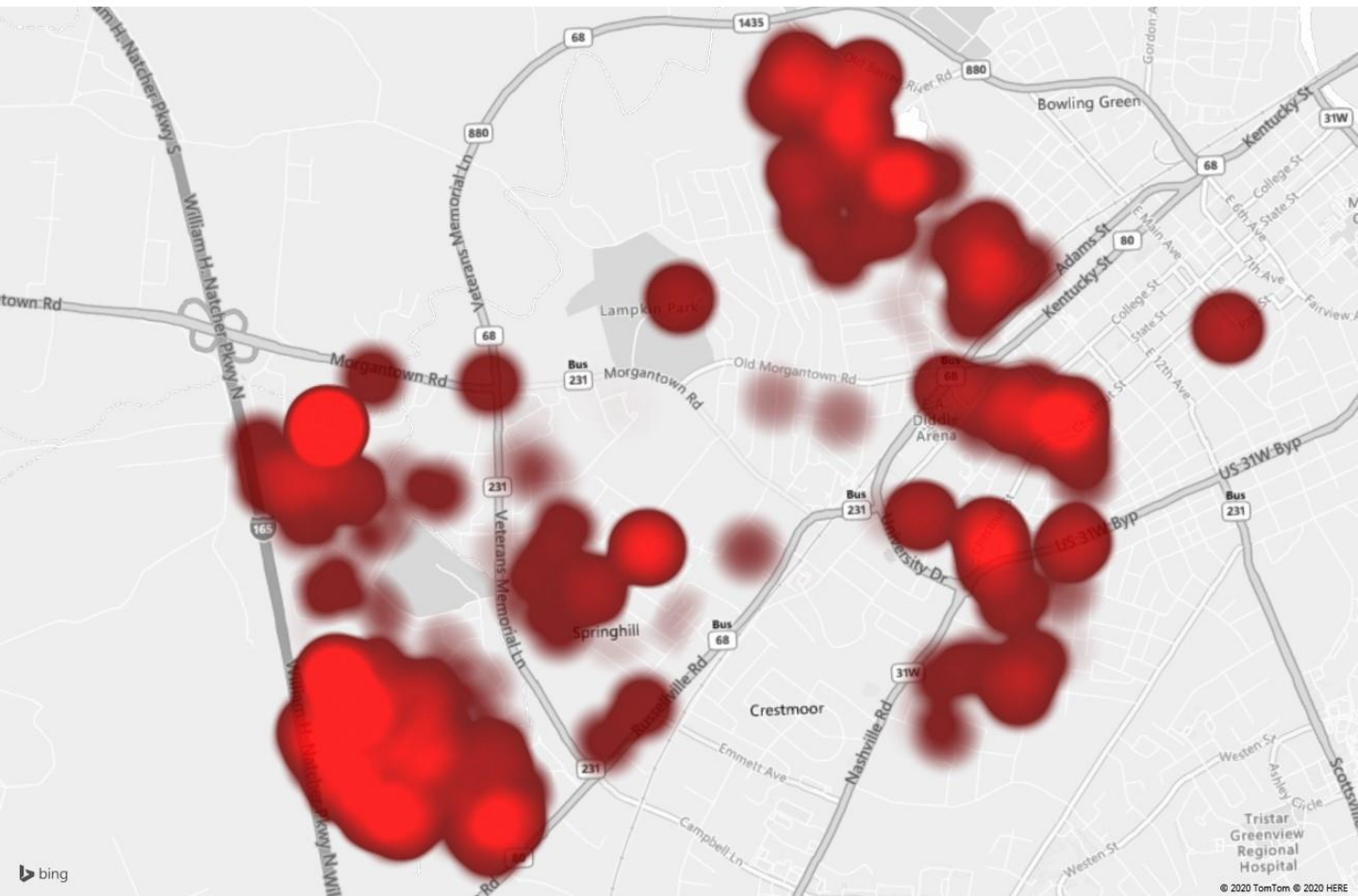
GOAL TRAVEL TIME  
90% OF THE TIME

**04:00**

ACTUAL 90% **04:51**

COMPLIANCE **74%**

RUNS ANALYZED: **1540**



# DISTRICT FOUR



## NORTHSIDE

250 PORTER PIKE

### Performance Gap Areas

- Old Louisville Rd / River St
- Transpark
- Scotty's Way

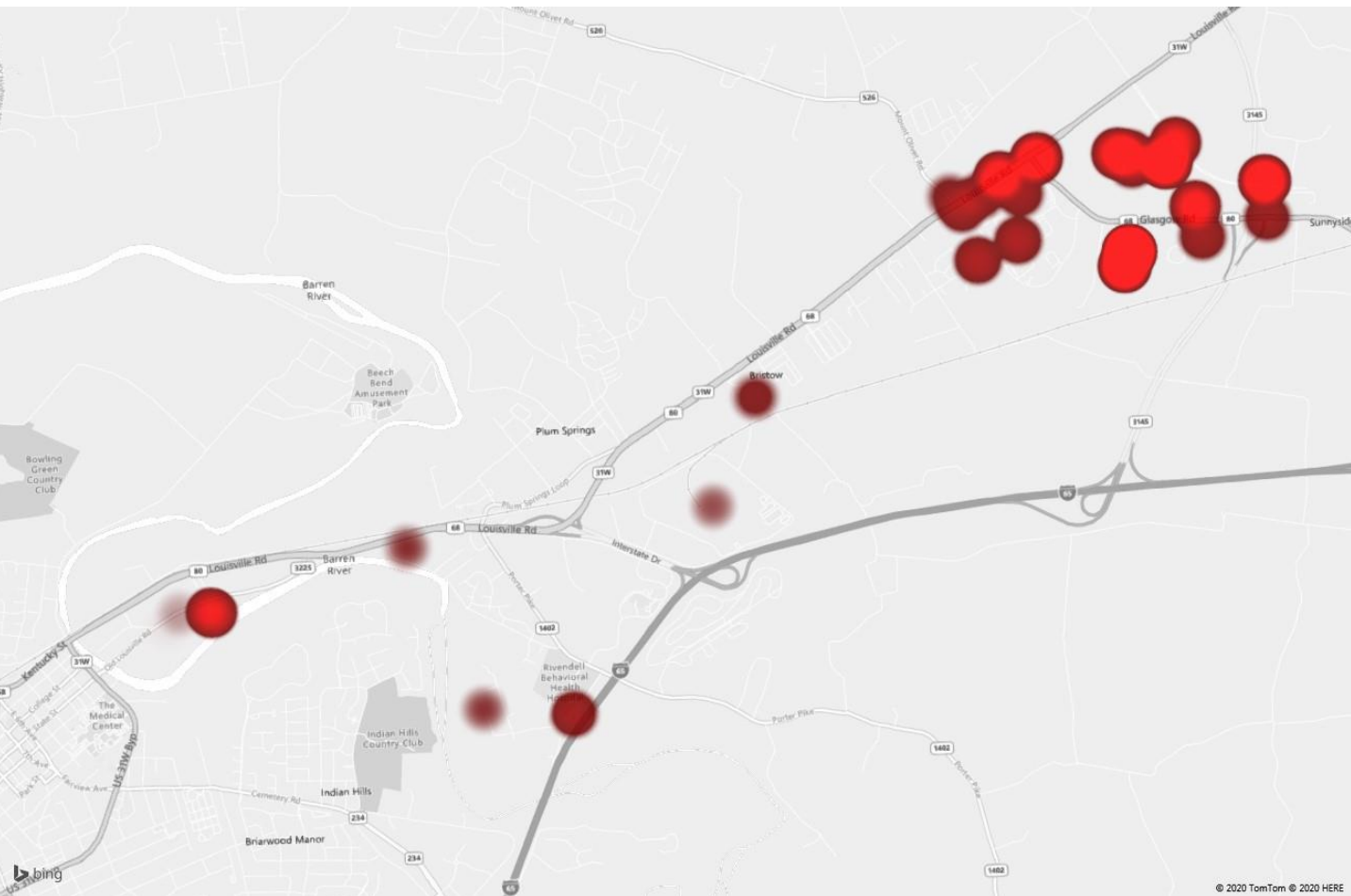
GOAL TRAVEL TIME  
90% OF THE TIME

**04:00**

ACTUAL 90% **07:04**

COMPLIANCE **71%**

RUNS ANALYZED: **295**



**DISTRICT FIVE**



**GREENWOOD**

201 CHERRY FARM LN

### Performance Gap Areas

- Countryside Village Mobile Home Park
- Charter Senior Living (New Station 7)
- Fruit of the Loom (New Station 7)
- Nutterville
- Cave Mill Rd / N Mill Ave

GOAL TRAVEL TIME  
90% OF THE TIME

**04:00**

ACTUAL 90%

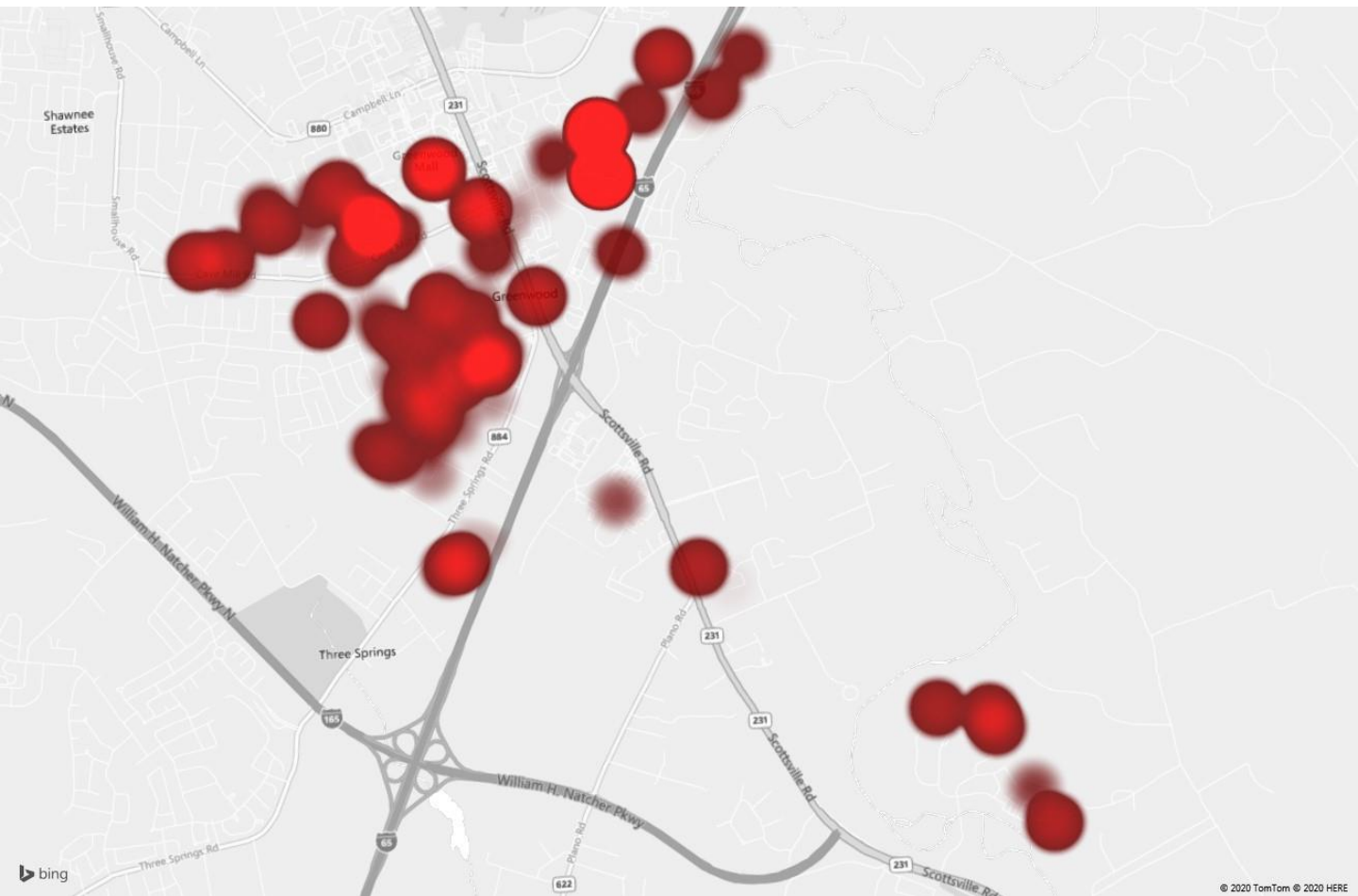
**05:04**

COMPLIANCE

**66%**

RUNS ANALYZED:

**872**



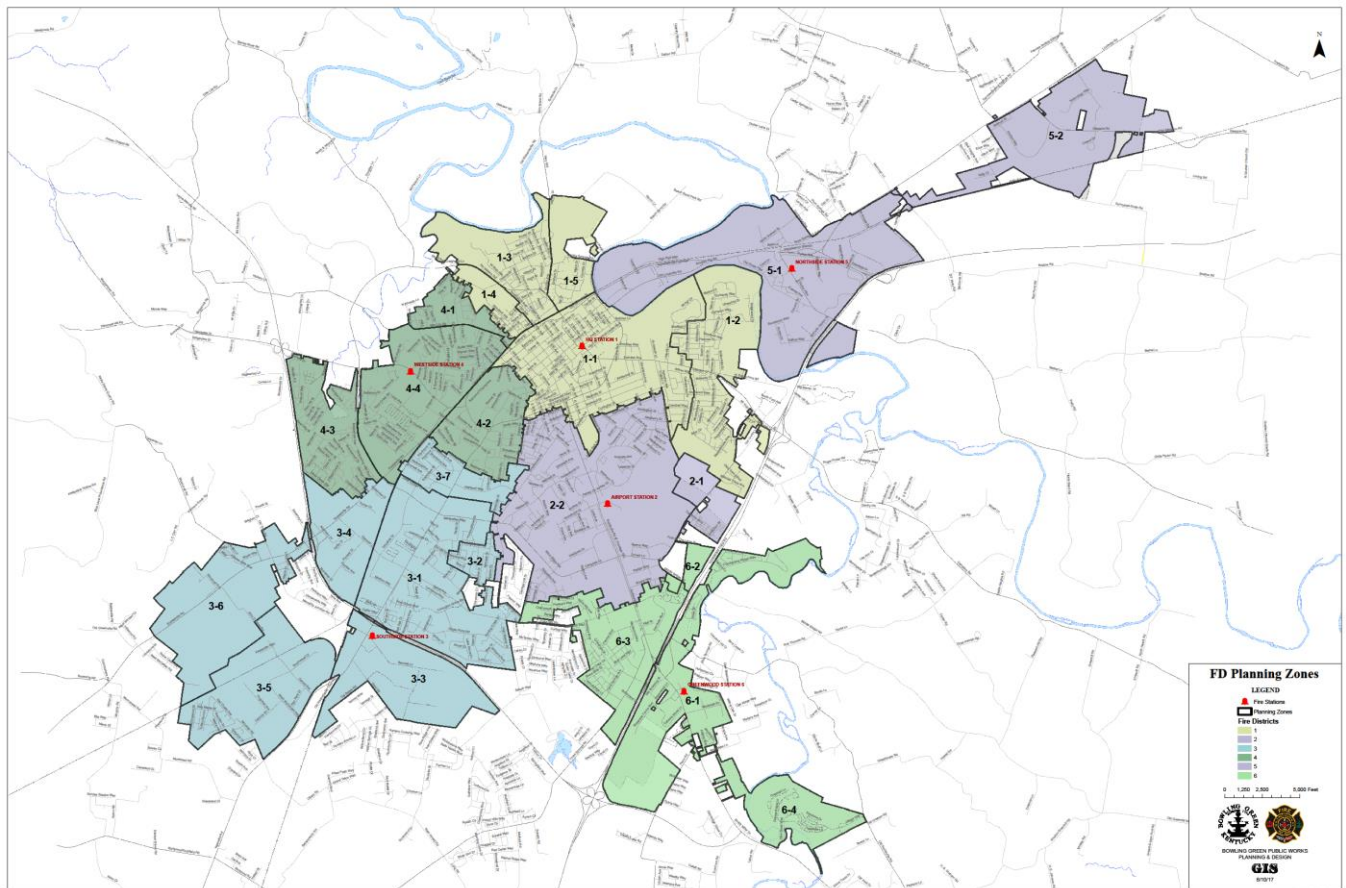
**DISTRICT FIVE**



## PLANNING ZONES

In order to better evaluate areas within the City of Bowling Green, the Fire Department has further divided the 6 response districts into 24 smaller geographical planning zones for more detailed analysis. These zones have been organized and evaluated for size, population and population density, run volume, response time, and maximum risk structures. The planning zones are contained within the response districts, e.g., no planning zone crosses response district lines. For evaluation of areas crossing district lines, planning zones from neighboring districts are evaluated together.

The primary purpose for determining boundaries was for the evaluation of response times and the run volume growth. When combined with other factors such as area, population, road miles, and future growth, this enhances the Department's ability to identify areas with service gaps.



## **PLANNING ZONE ANALYSIS**

### **Methodology**

For evaluation of response times, run-specific data was pulled from Emergency Reporting, the Department's RMS, and plotted on a GIS program map to obtain the planning zone for each response. Non-emergency, cancelled-en-route, and county extrication runs were eliminated to provide accurate response times. Total response is the time from alarm to arrival on scene.

The Bowling Green Fire Department implemented Emergency Reporting RMS software in 2019. The availability and reliability of data compared to the previous system may be responsible for discrepancies.

Plan Zone	Area Sq Miles	Runs 7/14 - 6/15	Runs 7/15 - 6/16	Runs 7/16 - 6/17	Runs 7/17 - 6/18	Runs 1/19 - 12/19	Total Runs 7/14-12/19	% Change 2015 to 2019	2019 Structure Fires	90% Travel Time 2019	90% Total Response Time 7/17 - 6/18	90% Total Response Time 2019
1-1	3.07	830	820	864	940	804	4258	-3%	9	3:45	7:07	6:13
1-2	2.02	90	74	135	128	128	555	42%	4	6:36	8:59	9:02
1-3	1.19	195	239	210	229	221	1094	13%	4	4:21	7:49	6:42
1-4	0.39	137	143	140	142	130	692	-5%	4	4:43	8:17	7:28
1-5	0.70	97	103	135	116	95	546	-2%	1	3:58	7:54	6:23
2-1	0.51	5	7	16	23	59	110	1080%	0	4:57	9:23	7:10
2-2	4.68	704	694	729	772	686	3585	-3%	6	4:42	8:04	7:09
3-1	2.89	369	370	427	483	459	2108	24%	8	5:19	8:57	7:53
3-2	0.25	41	44	53	36	37	211	-10%	0	6:35	9:27	9:16
3-3	1.64	39	59	52	28	35	213	-10%	0	3:34	9:01	5:43
3-4	1.08	59	75	102	89	88	413	49%	2	5:25	8:15	7:47
3-5	1.97	72	99	77	110	107	465	49%	4	7:12	11:08	9:39
3-6	2.12	35	31	45	49	64	224	83%	0	6:19	10:47	9:08
3-7	0.65	67	52	42	39	50	250	-25%	0	5:10	8:40	7:27
4-1	0.47	108	101	128	155	118	610	9%	1	5:10	8:47	7:45
4-2	1.14	234	265	300	237	318	1354	36%	1	4:42	7:36	7:12
4-3	1.51	169	194	213	224	245	1045	45%	3	5:56	9:15	8:17
4-4	2.10	767	822	914	848	826	4177	8%	11	4:00	7:31	6:20
5-1	4.15	220	206	297	247	240	1210	9%	3	4:03	8:04	6:44
5-2	2.59	47	46	95	72	74	334	57%	6	8:27	11:36	10:44
6-1	2.27	208	205	235	210	194	1052	-7%	2	3:54	7:53	6:14
6-2	0.17	63	80	86	107	88	424	40%	0	5:11	8:09	7:40
6-3	1.63	510	512	521	619	601	2763	18%	6	5:10	8:12	7:36
6-4	1.04	4	5	11	10	6	36	50%	0	6:35	11:03	10:01
<b>Total</b>	<b>40.20</b>	<b>5070</b>	<b>5246</b>	<b>5827</b>	<b>5913</b>	<b>5673</b>	<b>27729</b>	<b>12%</b>	<b>75</b>	<b>5:08</b>	<b>8:22</b>	<b>7:31</b>

## PLANNING ZONE ANALYSIS

Bowling Green Fire Department senior staff members monitor incident data to determine the effectiveness of the fire suppression program and impact on meeting the Department's goals and objectives. The results from this evaluation have revealed areas where performance gaps exist, and Bowling Green Fire Department senior staff members have made recommendations with the following objectives in mind:

- Bring response times within compliance by evaluating future stations
- Focus public education efforts to at-risk areas

The need for additional stations is continuously evaluated and prioritized using incident data and GIS technology.

Below are six areas, made up of 11 planning zones, with identified gaps in performance. Proposed solutions are provided for the gap area.

Planning Zone	Performance Gap Identified	Proposed Solution
1-2 and 2-1	Total response time in excess of industry standards	Station #7 Lovers Ln, projected completion early 2021*
1-4	Higher than average number of fires per square mile	Focus area for public education and fire prevention
3-1, 3-2, 3-5, 3-6, and 4-3	Total response time in excess of industry standards	Evaluating future station needs in the Russellville Rd/Campbell Ln corridor
4-4	Higher than average number of fires per square mile	Focus area for public education and fire prevention
5-2	Total response time in excess of industry standards. High percentage of calls are structure fires	Property has been obtained for a future station
6-4	High total response time, low call volume, no fires	Continue to observe and evaluate

**OVERALL REDUCTION  
TOTAL RESPONSE TIME  
2018 TO 2019** **01:09**

**12% CALL VOLUME INCREASE  
2015 TO 2019**

**05:08 90% TRAVEL TIME  
ALL ZONES**

**1.5% INCREASE SQUARE MILEAGE  
2018 TO 2019**

\*Construction began on Bowling Green Fire Station 7 in February 2020. This station will be located at 325A Lovers Ln. Planning zones 1-2, 2-1, and 6-2 comprise the proposed response district for Station 7.