

POSTPONED MOTIONS: ADMINISTRATIVE BACKGROUNDER

NUMBER: PM-20-083

REQUESTED BY:	Councillor Sheena Hughes
ORIGIN OF REQUEST:	Email
DATE OF REQUEST:	November 17, 2019

AUTHOR:	Bernd Gretzinger
DEPARTMENT:	Emergency Services Department
DATE RESPONSE DUE:	November 19, 2019

MOTION:

That the decision for firehall #4 and its related capital projects is postponed to Q1 2020, following an analysis report of the cost, feasibility and expected improvement in response times across the city of expanding firehall no 1 compared to building firehall no 4.

RESPONSE (one page max.):

Administration's Understanding of Intent Motion:

Postpone the decision for Firehall 4 and its related capital projects to Q1 2020, following an analysis report of the cost, feasibility, and expected improvement in response times across the city of expanding Firehall 1 compared to building Firehall 4.

Operational or Organizational Impacts if Motion is Approved:

Service levels could be impacted due to inadequate response times.

Financial Implications of Motions:

Station 4 – According to the Hanscomb Escalation Watch (based on the non-residential Building Construction Price Indices – Stats Canada) the estimated increase for land and construction for buildings such as Fire Hall 4 is approximately 3.35% per year. Based on this data, in the coming years the projected costs of the Fire Hall 4 project would be as follows:

	2020	2021	2022	2023	2024	2025	2026
Land	\$2,500,000	\$2,583,750	\$2,670,306	\$2,759,761	\$2,852,213	\$2,947,762	\$3,046,512
DESIGN (based on increase of 12% of construction costs in the following year)		\$1,477,000	\$1,533,383	\$1,584,752	\$1,637,841	\$1,692,708	\$1,749,414
CONSTRUCTION			\$12,364,000	\$12,778,194	\$13,206,263	\$13,648,673	\$14,105,904

* Present Capital Project Charter

Currently, the design of Station 1 is almost complete. The budgeted amount for design of Station 1 is \$1,051,700. With a change/alteration of the design there would be increased costs and a delay in ultimate construction.

Station 1

The budget for Construction of Station 1: **\$14.1M**

Current design cost for Station 1: **\$1,051,700**

Cost of entire project: **\$15.15M**

Station 1 Expansion

When looking at the expansion of Station 1 current calculations are running at around \$4,045/sq.m. Additions to Station 1 would be:

One extra bay at 230 sq.m. = **\$930,350**

Two extra bays at 460 sq. m. = **\$1,860,700**

8 dorms at 8 sq.m. each = 64 sq.m. = **\$258,880**

Design costs are **8.35%** of the above construction costs

Total cost would range from **\$1,189,230 to \$2,119,580**.

The above cost estimates for a station 1 Expansion should be considered a Class C estimate with a variability of +/- 25%

In addition, all related equipment and associated staffing would still ultimately be required.

Station 4

The cost of Station 4 is:

ITEM	2019	2020	2021	2022	2023	2024
STATION 4	FEASIBILITY STUDY	CONCEPT DESIGN / LAND: \$2,500,000	DESIGN: \$1,477,000	CONSTRUCTION: \$12,364,000	OCCUPANCY	
ENGINE		\$1,540,500				
AERIAL				\$2,469,800		
TANKER			\$779,000			
PERSONNEL (Cumulative)		10 ESP'S/1 ACML: \$1,207,459	1 Training Officer/10 ESP'S: \$2,435,988	10 ESP'S: \$3,737,639		
TOTAL	N/A	\$5,247,959	\$4,691,988	\$18,571,439	N/A	N/A

Stakeholder Consultations: N/A

Background:

Station One

The rebuild of Station 1 was due to the building being at the end of its life cycle. The present rebuild of Station 1 will address the response issue within Station 1's response area (and south St. Albert), and more effectively utilize fire apparatus (namely the Aerial unit). The rebuild includes expanding the size of the facility to allow for more emergency vehicles, larger emergency vehicles, and more staffing. This endeavour is currently taking place within the present redesign of Station 1.

The new Firehall 1 will be a 4 double deep bay configuration, which will allow more apparatus and equipment to be placed within the station and allow for modern, larger sized units to be deployed from the building as well. Once Station 1 construction is complete, the intention is to move additional units into the new expanded firehall. A Fire Engine unit must be placed in every Station because it is designed and equipped in such a way that it is a frontline fire attack unit.

Once the new Fire Station 1 is completed, the main unit that would be relocated to Station 1 would be the frontline Aerial unit. This would allow for better Aerial coverage in areas of the City that have the most of high risk buildings. High Risk buildings include buildings such as Schools, apartments, offices, mercantile, and industrial occupancies. If Station 4 were to be constructed it would be built large enough to accommodate a second frontline Aerial unit. An Aerial in Station 4 (north) would allow for better fire protection of large footprint/large fire load high risk buildings (i.e. buildings such as Costco etc.), as well as deal with the areas of the City where the greatest number of calls occur.

The following heat maps identify where the largest number of Fire / EMS/ MFR and Fire Assist calls occur within the City. *Diagram 1* illustrates all calls (including Fire, EMS, Medical First Response, and Medical Assist), while *Diagram 2* illustrates calls where only Fire Apparatus respond (no Ambulances). Note: both diagrams illustrate where both the old Firehall 1 is now, and where the new Firehall will be situated in the future.

The concern is the growing number of calls in north St. Albert. While the rebuild of Station 1 and relocation of Aerial Unit should address the high service demand areas in

the south, as well as central parts of the City, it cannot address the growing number of emergencies in the northern regions of the City.

St. Albert Fire Services - Service Demand Q1 2014 - Q3 2019

All Calls - Including Fire, EMS, Medical First Response and Medical Assist

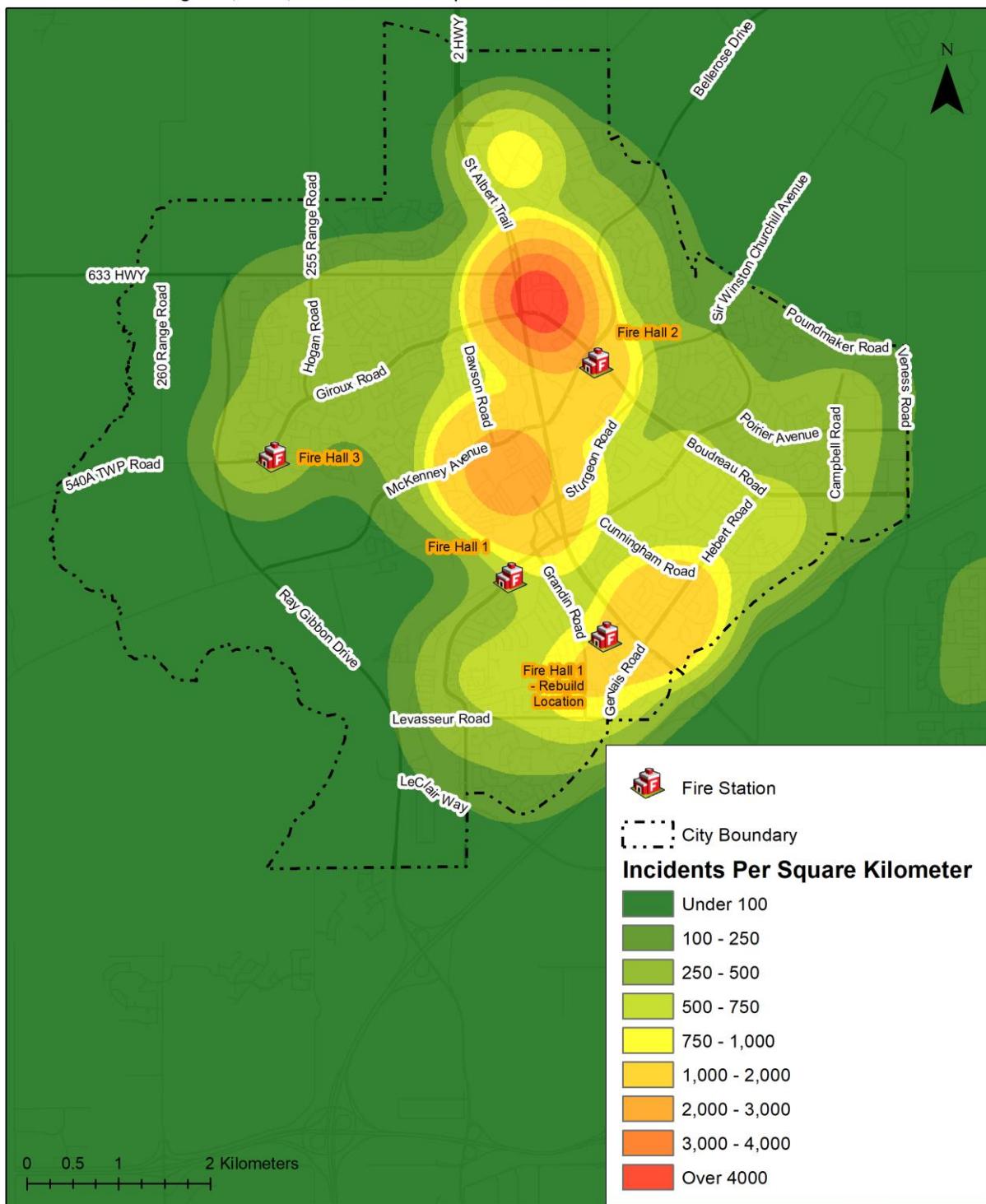


Diagram 1

St. Albert Fire Services - Service Demand Q1 2014 - Q3 2019

Fire, Medical First Response and Medical Assist Calls Only

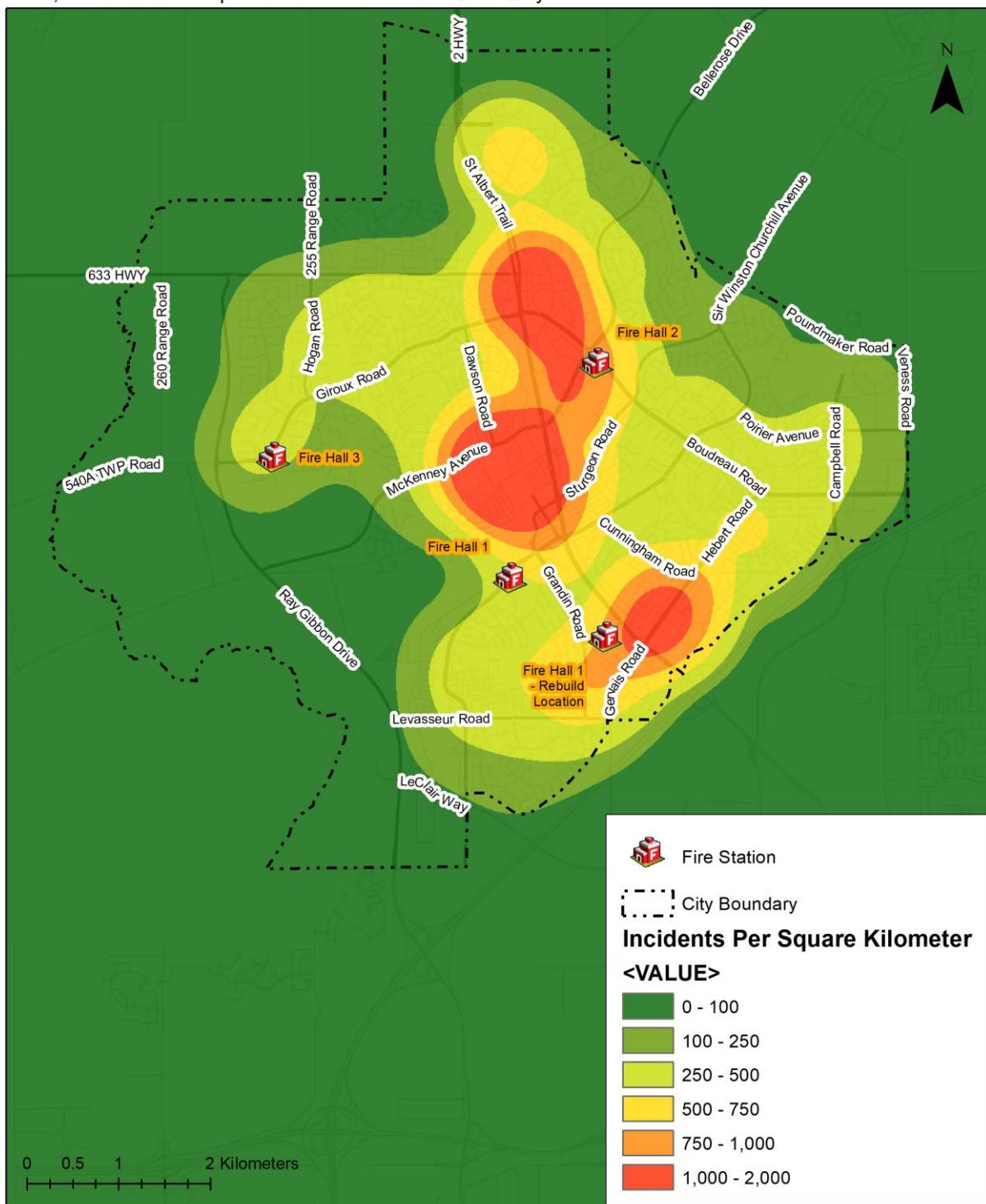


Diagram 2

Fire Station 4 would address the growing number of service demands in north St. Albert and also ensure that Station 1 apparatus remain in their service area for coverage.

The present plan calls for Station 1 to have two fully manned frontline Fire Apparatus – mainly an Engine and an Aerial. Moving the Aerial from Station 3 to Station 1 would allow for two frontline fire units to be housed out of Fire Station 1. Depending on the type of response there may be situations where one unit (i.e. Engine) would be left behind while another unit (Aerial) would be able to respond to a concurrent call. This may happen in situations such as motor vehicle collisions (MVC's) where only the Engine would be deployed out of Station 1 and the Aerial would be left behind. If it were a confirmed structure fire both units may be deployed along with other units from Station 2 and 3.

The present expansion of Fire Hall 1 should be enough to deal with the concurrent call issues in south St. Albert. For example, fire compliance with Council Policy C-PS-01 for the area of Grandin is presently at 81.9%. 20% of the total calls in the Grandin neighbourhood were responded to by apparatus from Station 2 and Station 3. It is expected that an additional unit (Aerial) will be able to bridge the gap and increase the compliance to at least 90% or better.

Expanding Station 1 even further then what is presently being constructed would have a minimal effect on response times considering the present Station 1 design allows for the potential growth for extra units and manpower within the Station already. The following table shows the number of times concurrent Fire and MFR calls have occurred within the City since 2014 (values in blue are forecasted)

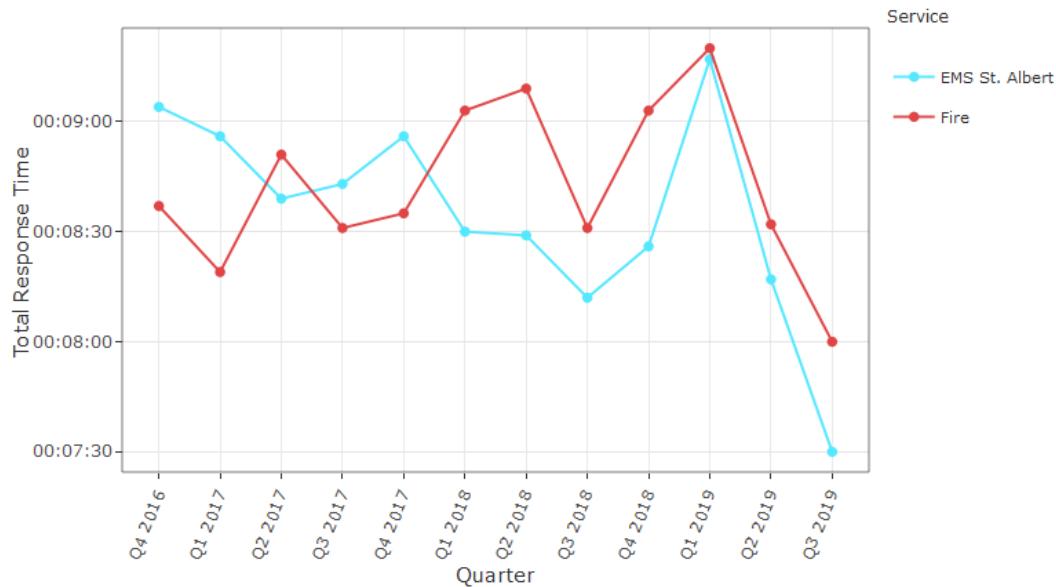
Year	2 Calls	3 Calls	4 Calls	5 Calls
2014	11%	2%	0.258%	0.086%
2015	14%	2%	0.250%	0.083%
2016	15%	3%	0.957%	0.221%
2017	14%	2%	0.564%	0.212%
2018	16%	2%	0.637%	0.382%
2019	18%	2%	0.404%	0.162%
2020	18%	4%	-	-
2021	19%	3%	-	-
2022	19%	5%	-	-
2023	20%	4%	-	-
2024	21%	5%	-	-
2025	22%	4%	-	-
2026	23%	5%	-	-
2027	24%	5%	-	-
2028	25%	6%	-	-
2029	26%	5%	-	-
2030	27%	6%	-	-

Assuming that the frequency of concurrent calls is similar throughout the City, having a third front-line unit in Station 1 would not have a significant impact on service performance.

Improvements

Aside from the plan to increase equipment and manpower at Station 1 to deal with concurrent calls, measures presently being taken to address the response times in Station 1's area (as well as the rest of the City) include:

- 1) Pre-emptive lights – pre-emptive traffic lights are now completed along most of St. Albert trail as well as various high capacity intersections throughout the City.
- 2) Pre-alert toning – The technology is now in place where pre-alerts are being utilized. It has been utilized over the past few months with positive results. The goal is to have this up and running at Station 1 with the construction of Station 1 with its rebuild. The following graph shows how response times have decreased over the past few months with the incorporation of pre-alerts.



- 3) Units are now required to stay in response areas unless responding to incidents or unforeseen circumstances (i.e. unit might be driving to P.W. for service or inspection etc.).
- 4) Automated Station Alerting – With the completion of the Station 1 rebuild, Fire Services would be able to roll out Automated Station Alerting that would improve call processing time. Automated Station Alerting utilizes a computer module that speeds up the dispatch of fire apparatus through automated voice announcements and digital signage with call details.

With these new initiatives, response times are expected to be better. Early indications show that this is the case.

Station 4

The Fire Department Evaluation and Master Plan from 2009 recommended utilizing Geographical Information Systems (GIS) to plan for service delivery and planning for Station 4. The Master Plan also indicated that Station 4 staffing “would move the Effective Response Force capabilities closer to the suggested industry standard for High Risk facilities and the Critical Tasking needs.”

A study on Fire Service response to Erin Ridge in 2013 identified challenges with travel times for that area. Short-term solutions such as pre-emptive street signal lights controlled by response fire units has helped moderate the risk into the north by reducing the response times. Despite implementing pre-emptive signal lights, Fire Services response times into Northern St. Albert are not currently meeting the City Council Policy for provision of Emergency Services.

The addition of Firehall 4 would not only positively impact service delivery in northern St. Albert but would undoubtedly help the response times in Station 1's area as well. This is because presently when major incidents occur within the City, all three Stations are deployed to achieve an Effective Response Force (ERF). In short, every unit is deployed. With an additional Station, if incidents were to occur in the north (where most calls occur), there would be one available unit left at Station 1 to respond to concurrent calls. The main Stations that would be dispatched would be Station 2,3, and 4. Station 1 would most likely respond the Aerial unit but would still have an Engine for the next emergency. If Station 4 was completed with the necessary manpower, the new frontline Aerial unit would respond from Station 4, leaving all the units in Station 1 available for a concurrent call.

If a concurrent call were to transpire within Station 1's area, the response times in Station 1's area would also improve. Once again, in short, having four stations with the required manpower will allow for quicker responses to concurrent calls should major incidents occur. Better overall response times should ensue in Station 1's area and areas to the south.

As stated, the current rebuild of Station 1 will address response issues in south St. Albert. It does not address the growing concern and risk of increased response times in north St. Albert. Station 4 would help deal with the current response issues as well as address future growth.

Implications of expanding Fire Station 1 further, while delaying the construction of Station 4 for 6-7 years include:

- 1) Increased cost of construction of Firehall 4
- 2) Increased cost of design and construction of Firehall 1
- 3) Further delay of occupancy of the new Firehall 1
- 4) Inability to meet 10 minute response time as set out by the Alberta Building Code. Should residential and commercial development proceed beyond the limits of the established 10 minute response time, specific design, construction

and exterior finish measures would have to be taken to ensure an equivalent level of safety is provided, reducing the risk of adjacent structures in a fire event, resulting in increased construction costs of housing.

The following three diagrams illustrate 9 minute Total Response Time coverages:

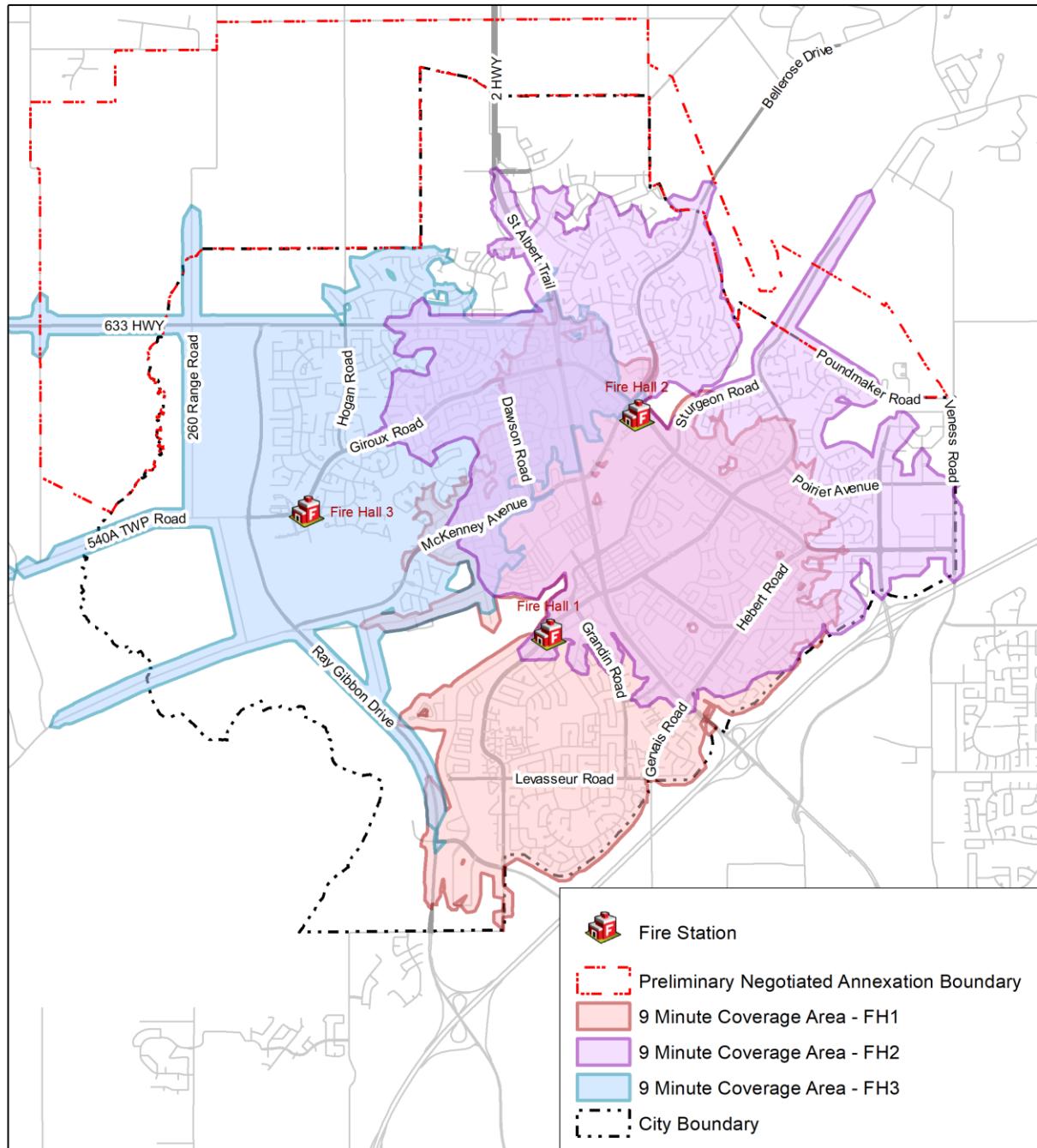
Diagram 3 illustrates coverages for the old Station 1 site, Station 2, and Station 3

Diagram 4 illustrates coverages for the new Station 1 site, Station 2 and Station 3

Diagram 5 illustrates coverages for the new Station 1 site, Station 2, Station 3, as well as an approximate 9 min coverage area for Station 4 (Station 4 coverage is a high-level model based on existing station locations and their coverage)

Analyzing the data, it can be noted that without Station 4, areas in the north will not meet Council Policy C-PS-01.

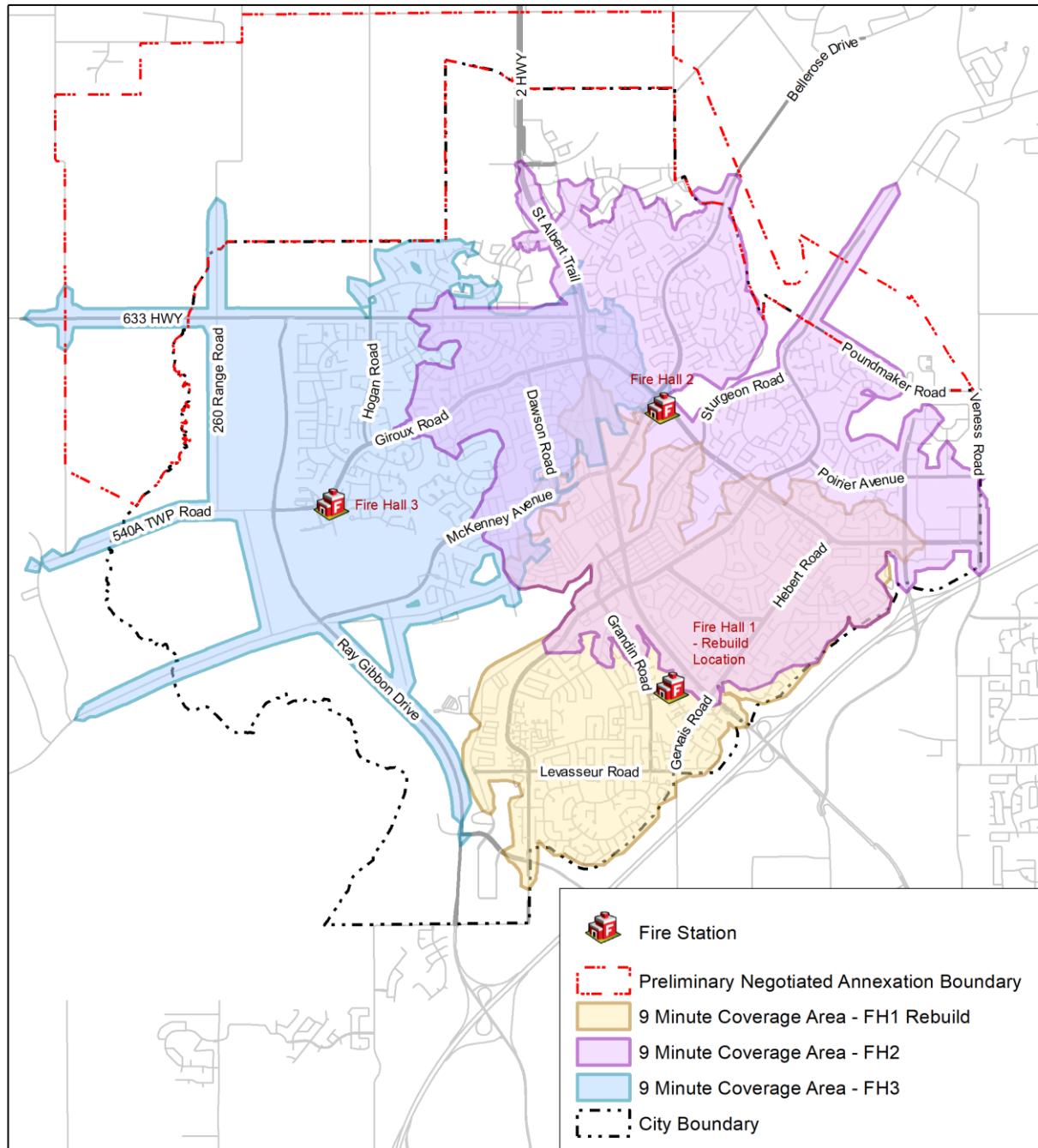
9 Minute Total Response Time Coverage Model Existing Stations



Note:- 9 minute Total Response Time Coverage Calculated using 90th Percentile Call Processing Time 0:01:36 (Q3 2016 to Q3 2019), 90th Percentile Turnout Time 0:02:06 (Q3 2016 to Q3 2019) and 0:05:18 Drive Time.

Diagram 3

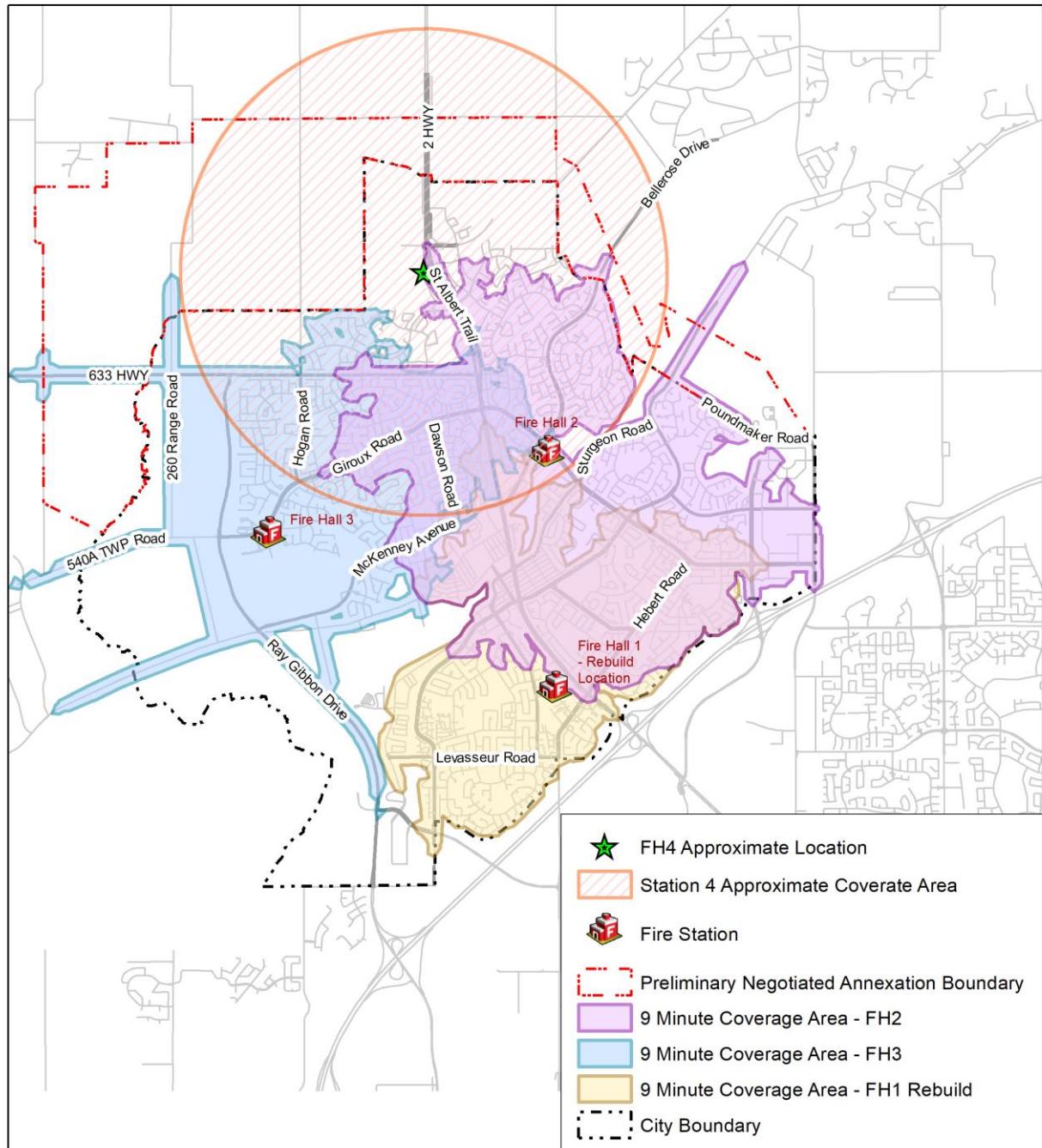
9 Minute Total Response Time Coverage Model After FH1 Completion



Note:- 9 minute Total Response Time Coverage Calculated using 90th Percentile Call Processing Time 0:01:36 (Q3 2016 to Q3 2019), 90th Percentile Turnout Time 0:02:06 (Q3 2016 to Q3 2019) and 0:05:18 Drive Time.

Diagram 4

9 Minute Total Response Time Coverage Model With FH4



Note:- 9 minute Total Response Time Coverage Calculated using 90th Percentile Call Processing Time 0:01:36 (Q3 2016 to Q3 2019), 90th Percentile Turnout Time 0:02:06 (Q3 2016 to Q3 2019) and 0:05:18 Drive Time.

Diagram 5