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**Review of Public Safety Impact Study  
by Polaris for Haymarket DuPage**

*Prepared by:*



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**CONSULTANT REPORT**

## Executive Summary

Fitch and Associates (*FITCH*) was engaged to review the methodology and findings of a public safety impact report prepared by Polaris Public Safety Solutions (Polaris) on a proposed project in Itasca, Illinois known as Haymarket DuPage.

FITCH was provided a copy of the Polaris report dated August 5, 2020. In addition, FITCH was also provided various other data, including raw computer-aided dispatch (CAD) data for the Chicago Police and Fire Departments. These represented the main information sources for this analysis.

Several major issues arose from this review. First, the methodology employed by Polaris appears to have significantly underestimated the impact on public safety services from the proposed Haymarket DuPage project. Second, Polaris made an assumption that the majority of EMS services required by Haymarket DuPage would be handled by private ambulance company. FITCH did not find supporting documentation to support that assumption, and further noted that Haymarket's facility in the City of Chicago does not use such a process. Accordingly, there is an increased risk to the Village of Itasca for greater demands on their public safety services than previously suggested. Finally, while the Polaris report reflects an existing capacity to serve the immediate needs from the proposed Haymarket DuPage project, the Polaris report does not mention the increased probability for concurrent calls, impacting current service levels; or the likely need to invest in additional resources (vehicles and personnel) sooner than otherwise would be needed because of increased demand for EMS services.

## Introduction

The Polaris report assessing the potential impact on public safety from a proposed Haymarket DuPage facility sought to answer four questions:

- Current service and activity levels for Itasca police, fire, and EMS?
- The impact the proposed facility will have on Itasca's public safety service call volume?
- Do Itasca Police and the Itasca Fire Protection District (IFPD) have existing capacity to serve the demands from the proposed Haymarket Itasca?
- How do current activity level's for Itasca's public safety agencies compare to comparable police and fire agencies?

The first three questions are tightly integrated – and essential to understand and inform the related policy questions regarding how much service will a proposed project require from the community, and what resources will be needed to meet that demand. The last question Polaris explored, comparing activity levels between Itasca's public safety agencies and comparable communities – while interesting – does not help answer the essential issues.

Accordingly, for purposed of this analysis, FITCH focused on what will the proposed project require in public safety services, and what resources are needed to meet that demand. While the majority of FITCH's analysis focuses on the Itasca Fire Protection Districts provision of EMS services, where data was readily available, we also assessed the overall impact on police as well.

## Review of Polaris Report

Polaris sought to answer their questions making use of various data sources. For fire & EMS activity, data from various fire agency's National Fire Incident Reporting System (NFIRS) records and that obtained from Freedom of Information Act (FOIA) requests was reportedly used. For police agencies, Polaris also employed FOIA requests and an annual report from a single police agency which included that agency's comparison with other area law enforcement agencies.<sup>1</sup>

The methodology Polaris employed made use of "eleven comparable treatment facilities and recovery homes sites located in Illinois"<sup>2</sup> and assessed the demand for services in those communities by estimating, on a per bed basis, the demand expected to occur from the Haymarket DuPage project.

Polaris elected not to include either Haymarket's Chicago site, or other similar facilities in the City of Chicago for two stated reasons. First, unlike most other Illinois fire agencies, Chicago Fire Department makes use of NFIRS reports only for fire-related activity. This thereby causes the second issue, EMS calls by the Chicago Fire Department are recorded in a different patient care reporting system and therefore not reflected in NFIRS. This led Polaris to then consider use of Chicago's 9-1-1 records as captured by their computer-aided-dispatch (CAD) system, reflecting what emergency calls are received, the location, and the type of emergency.<sup>3</sup>

However, after receiving CAD data for police and EMS related calls at Haymarket Chicago, Polaris elected to abandon that approach, stating "[t]here were numerous problems with the accuracy of the CAD data generated by OEMC."<sup>4</sup> This included:

- "OEMC dispatches resources based on the information provided by the caller . . ."<sup>5</sup>
- "not uncommon for a caller to mischaracterize the incident, reporting either more or less severe conditions . . ."<sup>6</sup>
- ". . . different call takers may characterize the same call differently based on their interpretations of the information provided by the caller."<sup>7</sup>
- And that ". . . CAD data reflects all calls received by the call center and does not eliminate duplicate calls for the same incident."<sup>8</sup>

Regarding the first two points, essentially all 911 centers must categorize the type of emergency and send required resources based on the information available – most often only from a single caller. There is no other rational basis to provide emergency resources in the community. In fact, the use of records created after the event ignores this underlying fact – dispatching resources to a 911 emergency call mostly relies on the caller's information. It is for

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<sup>1</sup> Polaris Report – p. 3

<sup>2</sup> Ibid

<sup>3</sup> Polaris report, p. 5

<sup>4</sup> Ibid

<sup>5</sup> Ibid

<sup>6</sup> Ibid

<sup>7</sup> Polaris report, p.7

<sup>8</sup> Ibid

this reason that CAD records are most often used to design and assess fire and EMS systems. The second two concerns raised regarding the use of CAD records ignores two technologies used in 911 centers, including the City of Chicago's. Modern CAD systems automatically check for potential duplicate calls for a single incident. Based on industry guidelines, the 911 operator entering a call into CAD will automatically be alerted of this being a possible duplicate event.<sup>9</sup> Finally, standardized call prioritization systems have been shown to increase reliability in the 911 call intake process – and such a system is used in Chicago's 911 operations.

**Major Finding:** *The use of NFIRS data, rather than CAD data, represents a methodological drawback in assessing service demand requirements from a specific project or property.*

Polaris made a unique assumption in their methodology. Within EMS, calls can be classified as either basic life support (BLS) where the patient requires only a lower level of care, or advanced life support (ALS) where the patient requires a higher level of care, typically IV solutions and/or medication administration. Applied to both EMS and police related calls, the assumption was that only ALS calls would be considered. For BLS calls, the concept described was that a private ambulance provider would be called to handle these lower acuity calls. This would reduce the potential impact by 60% based on the Polaris methodology.<sup>10</sup>

The Village should cautiously consider this assumption for the following reasons.

- Haymarket's Chicago facility does not use private ambulance services for BLS calls
- The comparable sites used by Polaris reportedly do not use private ambulance services for BLS calls
- There is no detail on the operational or contractual aspects of this unique approach.
- Most importantly, there is no known basis to ensure a private ambulance service will remain in place throughout the project's existence. This will hamper the Fire District's ability to plan for and provide services.

Therefore, without careful consideration of this assumption, the Village could significantly underestimate the impact of Haymarket DuPage on public safety services.

Accordingly, the table below reflects the methodology employed by Polaris and their calculated impact,<sup>11</sup> as well as an adjustment to understand the Polaris calculations with all EMS calls included.

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<sup>9</sup> See APCO's 2012 Unified CAD Functional Requirements, Section 2.7 which can be accessed at <https://www.apcointl.org/resources/interoperability/unified-cad-project-ucads/ucad-functional-requirements>

<sup>10</sup> Polaris report, p. 17

<sup>11</sup> Polaris report - Tables 13 & 14; 19 & 20; 25 & 26

Table 1: Polaris Methodology for Impact on Public Safety - with & without BLS Call Included

Type Call	Polaris per bed Ratio	Haymarket DuPage Beds	Polaris Reported Demand - w/ Their Adjustment for ALS Calls Only	Haymarket DuPage Expected Demand - Polaris Methodology - Including All EMS Calls
EMS		240	19	<b>65.3</b>
<i>Recovery beds</i>	0.08	144	5	<b>11.5</b>
<i>Treatment beds</i>	0.56	96	14	<b>53.8</b>
Fire calls		240	7	<b>7.2</b>
<i>Recovery beds</i>	0.01	144	2	<b>1.4</b>
<i>Treatment beds</i>	0.06	96	5	<b>5.8</b>
Police Calls		240	73	<b>120.0</b>
<i>Recovery beds</i>	0.3	144	36	<b>43.2</b>
<i>Treatment beds</i>	0.8	96	37	<b>76.8</b>

**Major Finding:** The Polaris report anticipated EMS calls, and therefore their impact on public safety agencies, be reduced by 60% under the assumption that a private ambulance service could handle these lower priority calls. The Village should carefully consider this assumption.

## Methodology for Fitch Analysis

FITCH has consulted with nearly 1,000 communities in all 50 U.S. states and in 12 countries during its 35 year history. In the past five years alone, approximately 100 projects in urban, suburban and rural communities have assessed fire and EMS services. In nearly all of these projects, CAD data was the primary source for the analysis.

The reason CAD data is the preferred data source is quite simple – public safety personnel (fire, EMS, and police) must respond to what is known at the time of the 911 call, not what may be found and reported after the fact. A common illustration of this is an activated fire alarm in a nursing home or other type medical treatment facility. With no additional information, the fire department must respond as if a structure fire is occurring – requiring immediate and multiple units to respond. However, over 98% of the time the situation found after arrival is simply a malfunctioning fire alarm, or perhaps something that caused a small amount of smoke in one room. The CAD will reflect a response by the fire department appropriate for a structure fire – while the NFIRS report will reflect an accidental activation because of burnt toast. Fire and EMS systems must be designed based on what the community requires – and this is reflected in the CAD data.

Accordingly, based on the above discussion and consistent with FITCH’s practice, CAD data was provided and analyzed. This included data for addresses associated with Haymarket Chicago for both EMS and police related calls. In addition, FITCH was also provided call data obtained from FOIA requests for other facilities in the Chicago area. These will also be discussed below.

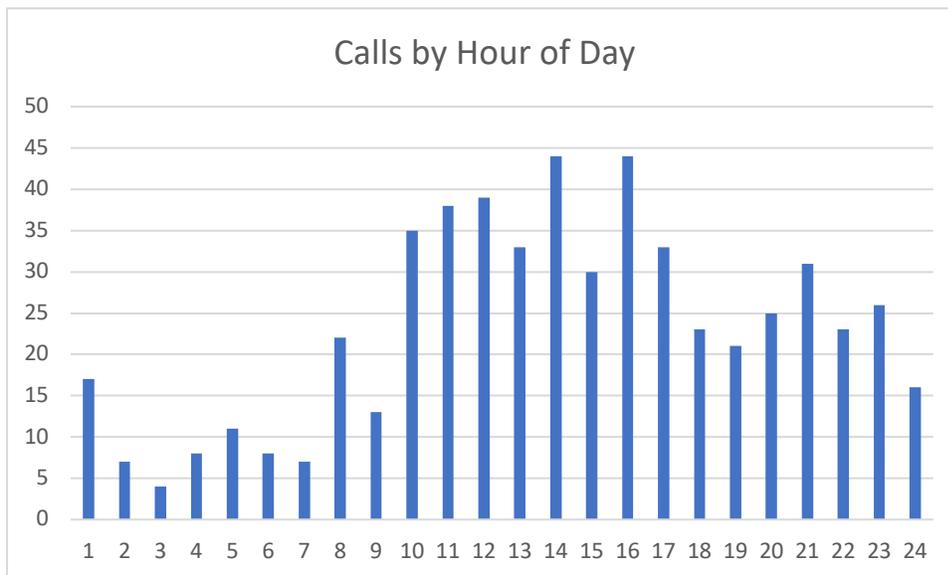
### EMS Demand at Haymarket Chicago

CAD data from Chicago 911 was provided for a number of years, though for the following analysis we limited this to the latest full calendar year of 2019 which represented 1,098 records for EMS incidents at addresses associated with Haymarket Chicago. A quick review of the information reflected multiple records for the same “event number”, same date/time, same location, and same incident type – likely reflecting a separate record for each of the multiple units assigned to the incident. This is a common CAD output format and is easily addressed by filtering the data to a unique event number. Doing so reduced the dataset down to 636 records. Of these remaining records, some did not reflect a fire department vehicle being dispatched. Accordingly, those without a unit being dispatched were filtered out leaving a total of 558 EMS incidents with a unique CAD event number and having a unit dispatched. This dataset was then used for the following analysis.

Based on the CAD disposition code, EMS calls at Haymarket Chicago reflect 39% as being ALS calls and 61% as BLS calls.

Typical of EMS activity nationally, call volumes are lower during nighttime hours and increase approximately 4-fold or greater during the daytime hours. This pattern would increase the risk of concurrent calls occurring during the busiest daytime hours.

Figure 1: Haymarket Chicago - EMS Calls by Hour of Day



Based on the CAD records, over half the records for Haymarket Chicago reflect the assignment of two or more units to the EMS call – most often a fire engine and a fire department ambulance. This analysis is reflected in the table below.

Table 2: Number of Units Assigned for Calls at Haymarket Chicago

# Units Assigned	Count
1	270
2	244
3	33
4	8
<b>Total</b>	<b>555</b>

Note: Some records missing units assigned data

Finally, FITCH attempted to validate the utilization rates derived by Polaris from using other comparable sites by applying those utilization rates to Chicago Haymarket. The Chicago facility is larger than the project proposed in Itasca. Detox bed types typically have higher utilization rates for medical services, and therefore the higher utilization rate used for treatment beds was also applied to ‘detox beds’. A limitation in CAD data is that neither CAD or NFIRS records can reflect what ‘type’ of bed an EMS is related to. Employing the Polaris methodology to Haymarket’s Chicago facility, one would expect a total 132 EMS calls per year. However, as

reflected in the table below, Chicago’s 911 records reflect an actual demand of 558 EMS calls in 2019.

Table 3: Chicago Haymarket Polaris Expected EMS Calls vs. Actual EMS Calls

Type Call	Polaris per bed Ratio	Haymarket Chicago Beds	Expected Calls per Polaris Methodology	Actual Calls per Chicago 911 Records
EMS		353	132	558
Recovery beds	0.08	137	11	
Treatment beds	0.56	184	103	
Detox beds	0.56	32	18	

Calculating of total per bed ratio of EMS calls at Haymarket Chicago – 558 calls from 353 beds – yields a per bed ratio of 1.58 EMS calls per bed. Finally this ratio was applied to the proposed Haymarket DuPage project. The table below is derived from Table 1 (above) and now adds the additional calculation using Chicago’s actual per bed ratio.

The advantage of this analysis is that it employs actual demand / utilization rates from the same facility operator, with a more similar facility (different types of beds), and employing an operation model with similar policies and procedures.

Type Call	Haymarket DuPage Beds	Polaris Reported Demand - w/ Their Adjustment for ALS Calls Only	Haymarket DuPage Expected Demand - Polaris Methodology - Including All EMS Calls	Fitch per Bed Ratio - Based on Haymarket Chicago's Actual Demand
EMS	240	19	65.3	<b>379</b>

While not one of the comparable sites used in the Polaris report, data that was provided for AMITA Health Alexian Brothers Behavioral Health Hospital in Hoffman Estates, a facility that provides mental health issues, addiction and behavioral disorder services. Based on data that was provided, this AMITA facility required just over 300 EMS related calls per year to their 141-bed facility. In Carol Stream where two facilities provide assisted or skilled medical care options, Belmont Village required 428 calls and Windsor Park required 269 calls from the fire district – both facilities which reportedly have an agreement with the same private ambulance service as proposed for Haymarket Itasca. These actual demands upon the local fire rescue agencies appears to support and align more closely with the Fitch estimate of 379 EMS calls for Haymarket DuPage.

**Major Finding:** *The Polaris analysis significantly underestimates the potential demand for EMS calls at the proposed Haymarket DuPage facility. Employing CAD data from Chicago 911 for the Haymarket Chicago facility, expected demand is estimated to be almost 20 times greater than reported elsewhere.*

Table 4: Increased Demand on Itasca Fire - Proposed Haymarket DuPage Project

Call Volume Impact	Call Count
Itasca Avg. Call Volume	1,636
Impact from Haymarket	379
Increase over Base	23.2%

This analysis reflects the impact on Itasca Fire Protection District would be 23.2% increase over the current community demands as reflected in the Polaris report. Based on these estimates, and the agency reported 56 minutes to handle an average call, this additional impact would result in Itasca Fire spending almost 354 hours, or the equivalent of approximately 15 days, handling EMS calls at the proposed Haymarket project.

#### Police Demand at Haymarket Chicago

Similar to the methodology employed for EMS calls, CAD data for calendar year 2019 was provided for Chicago Police responses to addresses associated with Haymarket Chicago. In total this represented 612 records. As before, this data was filtered to exclude records with a duplicate event number and those with no indication of a police unit being assigned. This resulted in 230 records available for analysis.

Temporal analysis reflects, as expected, a similar pattern of increased calls during daytime hours compared to nighttime.

A challenge for understanding demands on police activity at facilities such as the proposed Haymarket DuPage, must consider the local law enforcement agency’s policy regarding fire and EMS calls. For example, some agencies have a policy to respond on any incident – fire or EMS – made by their public safety colleagues. This approach is in place in the Village of Itasca. In other law enforcement agencies, police officers will only respond to a select few incident types or upon request of the responding fire or EMS agency. In the City of Chicago, this later approach is used. This is clear in light of the 558 EMS incidents at Haymarket Chicago, while 911 records for Chicago Police only reflect a total of 230 dispatched calls during the same period. Accordingly, without a policy change by Itasca Police, a minimum of 379 police calls to Haymarket DuPage should be anticipated to occur in conjunction with Itasca Fire Protection District’s EMS responses.

Type Call	Haymarket DuPage Beds	Polaris Reported Demand - w/ Their Adjustment for ALS Calls Only	Haymarket DuPage Expected Demand - Polaris Methodology - Including All EMS Calls	Fitch per Bed Ratio - Based on Haymarket Chicago's Actual EMS Demand & Continuation of Itasca Police Existing Practice
Police Calls	240	73	120.0	379

**Major Finding:** *Based on Itasca Police Department’s existing practice of responding to essentially all fire and EMS related calls, the Polaris report underestimates the potential demand on police for responding to EMS related calls at the proposed Haymarket DuPage facility. Alternatively, the police department could modify its practices and not respond to such calls. The Village should consider the impact from these two policy alternatives.*

## Conclusions

The analysis above highlights several issues. From a methodological perspective the use of NFIRS data which reflect what was found after the event, instead of CAD data which must be used to at the time of the emergency to determine what public safety units must be dispatched, limits the ability to answer the question – what is the impact a specific project will have on public safety? FITCH routinely uses CAD data and was able to address the issues raised by Polaris. Further, the decision to exclude 60% of EMS calls, lower acuity BLS events – without a clear understanding of how that will be accomplished, how reliable that service will be, and for how long that approach will be in place - must be answered definitively before policy-makers should consider that option. With no other site being identified using a private ambulance for emergency calls, including Haymarket Chicago, building such an assumption into an analysis introduces an increased risk for the Village.

These issues result in the Polaris analysis significantly underestimating the impact on public safety from the proposed project.

As outlined in the Introduction section, in addition to understanding the impact a proposed project will have the community, it is also important for policy-makers to evaluate the resources necessary to meet that demand. As for this second issue, it is FITCH's assessment that **currently** the Itasca Fire Protection District has sufficient capacity to absorb the increased demand from the proposed Haymarket DuPage project. However, there are two issues that arise from that assessment.

First, an addition of 379 calls from the project will increase overall workload on the fire district by an estimated 23.2%. Even though within the expected overall capacity of the agency, there will be an increased probability of concurrency, or collisions of incidents, with the increased workload. For example, there will be times when a response to the existing District's service area will be impacted because the single ambulance is already engaged on a call at the proposed Haymarket project. This possibility always exists, but the chances increase with the addition of more calls – and at some future time will occur. The analysis represent a well-known fact in EMS – certain type of occupancies, such as medical and certain institutional uses, require much greater level of services. As noted in the Polaris report, the prior Holiday Inn use at this project's proposed location only demanded an average of 6 EMS calls per year.<sup>12</sup> This alone does not suggest all new projects or growth should stop, but it leads to the second issue.

Nationally, growth in EMS calls for the U.S. fire service has been increasing significantly for some time. For example, according to the NFPA, fire-based EMS calls have increased by 49.4% over the past 10 years, representing an approximate 5% growth rate annually. Over the past 3 decades the rate of increase in EMS calls has been 228.5% or 7.6% per year.<sup>13</sup> This trend will require the Fire District to reinvest, or add more units and personnel, at some point in the

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<sup>12</sup> Polaris report, Chart 12.

<sup>13</sup> NFPA. (2019) US Fire Experience Survey. Accessed at <https://www.nfpa.org/News-and-Research/Data-research-and-tools/Emergency-Responders/Fire-department-calls-on-11/20/2020>.

future. With the addition of projects that significantly add demand for fire department EMS services, that need will arrive sooner than otherwise would be needed. While this challenge technically impacts the Fire District, the financial and/or service impacts will be felt by the entire District's service area – including those residents and businesses within the Village.

***RECOMMENDATION:*** *The Village should consider both the increased risk of simultaneous calls needing an ambulance response, and the expectation of having to add additional units & personnel sooner than otherwise expected, during their deliberations on future growth in the community.*



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