



Report To: DSB Program Planning Committee  
From: Michael Maclsaac, Chief of EMS  
Date: April 22, 2015  
Re: Ambulance Response Time Standard - Issue Report

## Recommendation

That this report be taken by the Program Planning Committee as information on the Ontario Ambulance Response Time Standard (RTS) and how the EMS department has performed over the last year.

## Purpose

The purpose of this report is to not only provide the DSB Program Planning Committee with background on the Ontario Ambulance RTS but to also detail the results of our 2014 Response Time Performance Plan. A letter detailing our performance was submitted to the Ministry of Health & Long Term Care (MOHLTC) Emergency Health Services Branch (EHSB) Director as dictated in the [Ambulance Act O. Reg. 257/00](#) by the March 31<sup>st</sup> deadline. An update to this letter has subsequently been submitted after it was found that the initial MOHLTC Ambulance Dispatch Reporting System (ADRS) data was skewed which effected our performance.

## Background

In 2006 the provincial government established in conjunction with the Association of Municipalities of Ontario (AMO), a Land Ambulance Committee (LAC), to review a number of subjects including ambulance response time standards. Arising from that work on July 31, 2008 the provincial government made changes to the Ambulance Act, Response Time Performance Plans. These changes were to be phased in over three years and were expected to be fully in effect in 2011 however a series of delays caused the new standard to actually take effect in 2013.

Specifically relating to the standard, each Direct Delivery Agent (DDA) is to send their response time plan to the MOHLTC EHSB Director through their local Field Office no later than October 31 of each year. The report is to detail responses with targets for patients in sudden cardiac arrest, and patients presenting on the “Canadian Triage and Acuity

Scale" (CTAS) 1, 2, 3, 4, & 5. Then, by March 31<sup>st</sup> of each year the DDA will submit the same table completed with the actual times achieved in the year previous.

Important to note here is that these response times are based upon district not on Ambulance Service. In other words we are to report all data for calls in our area regardless of which ambulance service performed the call.

## **History**

Prior to the new standard, the previous emergency response time standard had been based on 1996 performance. The 1996 standard did not properly reflect recent patient demographics, did not account for growth and did not consider medical-based evidence regarding enhancements in patient care. It is important to note that emergency call volumes and stresses on the ambulance services have steadily increased over the years.

The new response time standard regulation is supported by the best available medical evidence and provides flexibility for each DDA to establish the percentage of time they expect to meet certain targeted times based on their local resources and in some categories allows each DDA to establish fully their own targets. For the first time, under this regulation DDA's will be allowed to count the time that any defibrillator was used to assist a victim of sudden cardiac arrest. This includes any public access defibrillator or fire service defibrillator. Additionally, although not currently utilized by Manitoulin-Sudbury DSB as part of typical deployment, Emergency Response Vehicles with one paramedic will continue to be calculated in the response time calculations.

The new standard response times will be measured against the severity of the patient condition as found by the paramedic as opposed to how the call was dispatched by local Central Ambulance Communication Centres (CACC's). The rationale for this methodology reflects a change in thinking towards focusing on patient outcomes as opposed to assigned dispatch priorities. Whereas the 90<sup>th</sup> percentile response time focuses on all calls dispatched as priority 4's, the new response time differs depending on the patient condition measured at scene. Using this measurement is similar to how medical evaluations are conducted and it is intended to propel all the stakeholders to continue the pursuit of system improvements that more accurately identify the patients in the greatest need.

The MOHLTC concurrently will be holding themselves accountable to a two minute target to dispatch emergency calls through the Central Ambulance Communications Centres (CACC's).

To appreciate the diversity in the new response time standard it is essential to understand the concept of the Canadian Triage and Acuity Scale (CTAS). CTAS is a method for grouping patients according to the severity of their condition as follows:

**CTAS 1: Severely ill, requires resuscitation**

- Requires resuscitation and includes conditions that are threats to life or imminent risk of deterioration, requiring immediate aggressive interventions (for example, cardiac arrest, and major trauma or shock states).

**CTAS 2: Requires emergent care and rapid medical intervention**

- Requires emergent care and includes conditions that are a potential threat to life or limb function, requiring rapid medical intervention or delegated acts (for example, head injury, chest pain or internal bleeding).

**CTAS 3: Requires urgent care**

- Requires urgent care and includes conditions that could potentially progress to a serious problem requiring emergency intervention, such as mild to moderate asthma, moderate trauma or vomiting and diarrhea in patients younger than 2 years.

**CTAS 4: Requires less-urgent care**

- Requires less-urgent care and includes conditions related to patient age, distress or potential for deterioration or complications that would benefit from intervention, such as urinary symptoms, mild abdominal pain or earache.

**CTAS 5: Requires non-urgent care**

- requires non-urgent care and includes conditions in which investigations or interventions could be delayed or referred to other areas of the hospital or health care system, such as sore throat, menses, conditions related to chronic problems or psychiatric complaints with no suicidal ideation or attempts.

Currently, paramedics assess patients utilizing the CTAS scale and report such to receiving facilities. Doctors and nurses also use CTAS ratings as a method to prioritize the order in which patients are seen in Emergency Departments.

**2014 Response Time Standard Targets**

As mentioned above Manitoulin-Sudbury DSB is required to report the targeted response time standard to the MOHLTC by October 31<sup>st</sup> of each year. Our 2014 targets were submitted on October 30, 2013. Additionally, we are required to submit our actual times by the following March 31<sup>st</sup> for each previous year. Upon deeper review post submission of our letter to the Director it was found that there were errors in the ADRS database that had to manually be corrected. This necessitated a second submission letter on April 13, 2015. The following table represents the listing the letter of our target times and actual times.

Patient Severity	Target Time	Actual Time	Percentage of Time Met Target	Call Volume
Dispatched SCA	6 minutes, <b>15%</b> of time	6 minutes, <b>26.4%</b> of time	100%	34
CTAS 1	8 minutes, <b>25%</b> of time	8 minutes, <b>24.6%</b> of time	100%	66
CTAS 2	25 minutes, <b>80%</b> of time	25 minutes, <b>83.6%</b> of time	100%	774
CTAS 3	25 minutes, <b>80%</b> of time	25 minutes, <b>84.0%</b> of time	100%	1718
CTAS 4	25 minutes, <b>80%</b> of time	25 minutes, <b>83.6%</b> of time	100%	973
CTAS 5	25 minutes, <b>80%</b> of time	25 minutes, <b>88.7%</b> of time	100%	80

**Current Issues**

The 2013 change in Ambulance Response Time Standard presented a different way of looking at ambulance responses in the province of Ontario. While it appears to improve on an antiquated method of tracking ambulance response, it conversely provides new challenges to many land ambulance providers. Establishing 6 different standards in place of one necessitates a more dynamic approach and analysis.

The establishment of a *response time target* based upon defibrillator application presents a unique issue to rural Ontario. A greater reliance on allied agencies, tiered agreements and public access defibrillator programs will increase an ambulance services chance of producing better responses to these types of calls. Conversely, the remoteness of our geographic area presents less opportunity to call upon these services than would be available in a denser population area.

In establishing a set *response time target* for response to CTAS 1 patients, the time standard is aggressively set in the best interests of patient outcome. However the ability of a remote rural land ambulance service to achieve the 8 minute timeframe a high percentage of the time is poor for a couple of factors. First, the call volumes for these types of calls are not great and just a few responses that do not meet the time criteria can drastically impact upon the overall percentage response. The second factor is that by nature rural communities in Ontario do not have the abundance of resources to allow for inherently quick responses.

Allowing DDA's to choose both the *response time target* and the *target percentage of time achieved* for CTAS 2, 3, 4, & 5 emergency calls, presents a unique challenge in how to determine both sets of numbers. First of all criteria must be set to ascertain the *response time target*. In looking at our data we set a standard of 25 minutes. We then set a standard of meeting that target 80% of the time. With this part of the standard featuring a double variable, each DDA can report differently which makes a comparison of services extremely impractical, if not impossible.

It must also be understood that as part of the standard all targets and actual performances are being publicly posted by the MOHLTC website. It has become truly evident that the

MOHLTC is interested in measuring services against the SCA and CTAS1 data entirely. Otherwise we assume there would have been a standard time set for each of the other CTAS levels.

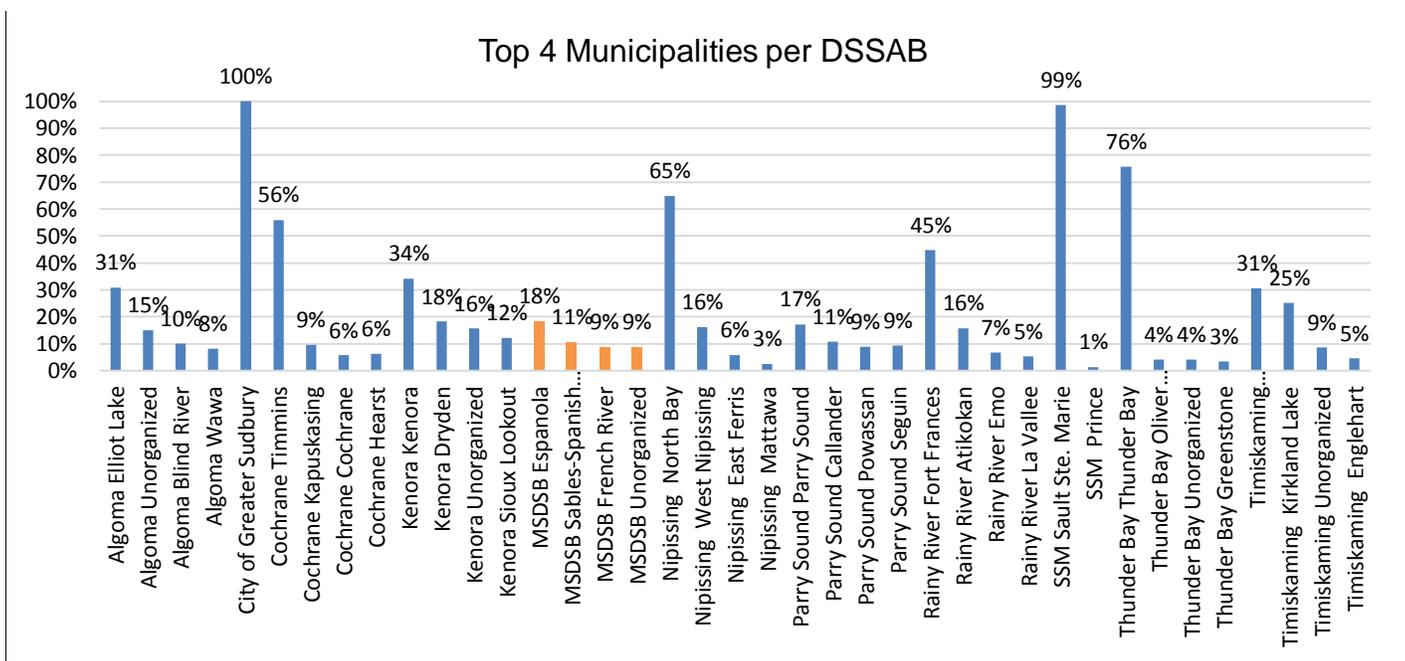
Currently, the only way to measure our responses in a manner that the MOHLTC wishes is to use their ADRS data. It has been highly noted by many industry experts as well as independent consultants that the ADRS data is severely flawed with much missing data. We have however utilized this data instead of our own ZOLL EPCR data due to the fact that we are responsible for all calls in our area and we do not have access to other ambulance service data through an internal PCR method. All this being said we do not believe the data to be reliable and have indicated as such numerous times to the MOHLTC.

### Statistical Analysis

A review of the posted 2013 data suggests that the targets for our area are low in comparison to our Northern counterparts. This is the second year of tracking on the new Response Time and we are noting some challenges; some predicated and others unexpected. The issues we see relate to the SCA and CTAS1 performance. When ranked against all other DSSAB's we are lowest in both targets and achievement. Upon noting this a number of factors were reviewed in an attempt to assess our statistics.

### Population Density

When looking at other DSSAB's there are some stark realizations when it comes to population density. To detail this at a high level the following table summarizes the 4 highest populated areas for each DSSAB.



The above summary reveals that the citizens in Manitoulin-Sudbury DSB live in less dense areas of population than in other DSSABs. This in turn has a drastically negative impact upon response times given the fact that we cannot possibly have ambulance stations in all areas of greater levels of population.

In addition to the above, we can look at the overall percentage makeup in each DSSAB of the top 4 municipal populations and the remaining number of municipalities making up the remainder of the DSSAB population. The following table provides a breakdown of that information.

DSSAB	Top 4 Municipal Population %	Remaining # of Municipalities	Remaining Population %
Algoma	64%	10	36%
Cochrane	77%	10	23%
Kenora	80%	6	20%
Manitoulin-Sudbury	47%	15	53%
Nipissing	89%	8	11%
Parry Sound	46%	16	54%
Rainy River	74%	7	26%
Thunder Bay	87%	12	13%
Timiskaming	69%	19	31%

From the above it is noted that only one DSSAB (Parry Sound) is within the same population density percentages as in our area.

Generally, our top populated communities account for less of a percentage of population than other DSSAB top communities. Understanding the principle that there will be a higher volume of calls in areas where there is a higher volume of people, these density figures present a limited chance of success in our area. Additionally, when you understand that our top 4 communities average 11.5% of our population with 15 other communities accounting for 53% of the population, it becomes difficult to achieve optimal response times without the benefit of additional resources.

From the information presented above it is evident that population density plays a large factor in the ability to respond to a medical emergency in a timely fashion. If a population is spread out it becomes more difficult to focus limited resources in optimal locations in an effort to achieve the aggressive response times detailed within the provincial Ambulance Response Time Standard.

## Details Regarding the SCA Response Target

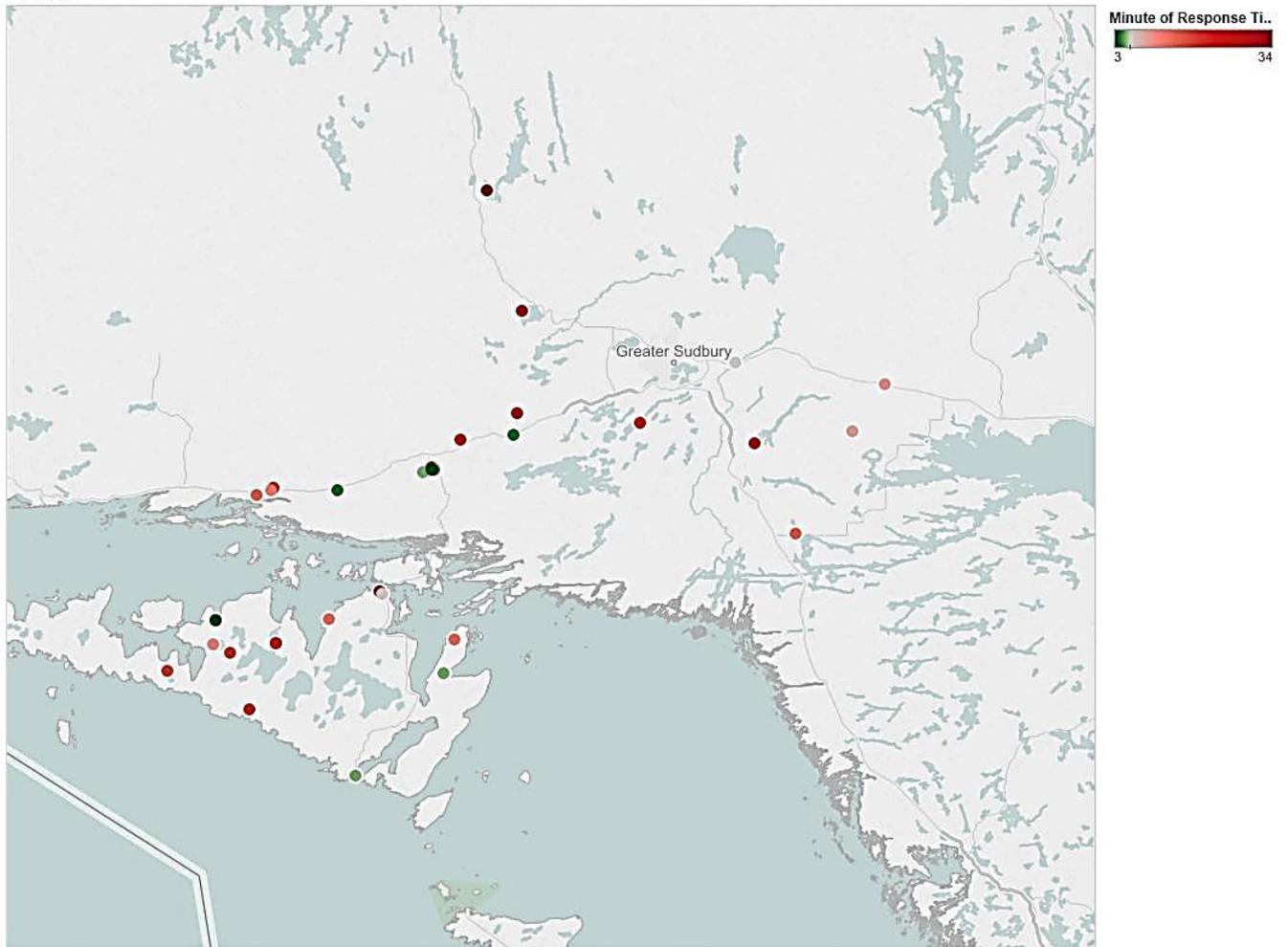
As noted, we monitor closely our ability to respond to the most serious of patients, those in cardiac arrest. Before we look at our data we should note some facts as detailed by the Heart & Stroke Foundation of Ontario surrounding cardiac arrest patients;

- Up to 40,000 cardiac arrests occur each year in Canada. That's one cardiac arrest every 12 minutes. Without rapid and appropriate treatment, most of these cardiac arrests will result in death. Thousands of lives could be saved through public access to automated external defibrillators.
- As many as 85% of all cardiac arrests occur in homes and public places (Vaillancourt & Stiell, 2004).
- After more than 12 minutes of ventricular fibrillation, the survival rate from cardiac arrest is less than 5% (Hazinski et al, 2004).
- For every 1 minute delay in defibrillation, the survival rate of a cardiac arrest victim decreases by 7% to 10% (Larsen et al, 1993).
- Combined with CPR, the use of an AED may increase the likelihood of survival by 75% or more (Weisfeldt et al, 2010).

It is important to understand that cardiac arrests in our communities represent 0.5% (34 out of 6,834) of patient calls.

A total review of our SCA calls reveals some interesting information. As noted earlier in this document, we met the 6 minute SCA response target 26.4% of the time. Below is a map detailing the general locations of our SCA's and a table of other facts surrounding these calls. Please note, for visual purposes one SCA occurring in our most Northern area is not visible on this map.

SCA Map



Map based on average of Pickup Longitude (SCA) and average of Pickup Latitude (SCA). Color shows details about Response Time (SCA) Minute. Details are shown for CallNum (SCA) and PickupTown (SCA). The data is filtered on Response Time (SCA) Minute, which has multiple members selected.

# of calls performed by DSB	24 of 34
# of calls appearing to have occurred outside of DSB area	5 of 34
# of calls performed by external EMS provider	4 of 34 (12%)
# of calls performed in under 6 minutes	9 of 34
Avg. distance of the 25 calls over 6 minutes (to reach 21 km in 6 minutes you would need to drive 210 km/h)	21km
Avg. response time of the 25 calls over 6 minutes	17 min. 53 sec.
# of calls where responding crew was on callback: 2 of 34 (6%)	2 of 34 (6%)
# of calls where responding crew was not the geographically ideal (Massey responded to Espanola, Mindemoya responded to LC, Wikwemikong responded to LC)	3 of 34

One last item to note on both the 6 and 8 minutes response times is that the time starts from the moment the paramedics receive the call for service. There is a MOHLTC standard allowance of 2 minutes to receive the call and be mobile to the call. So in essence the 6 and 8 minutes are really 4 and 6 minutes of actual travel time. Basically, travelling at a very fast 80 km/h, the cardiac arrest would have to occur within 8 km of the station for the ambulance to get there in 6 minutes. Understanding that most ambulance

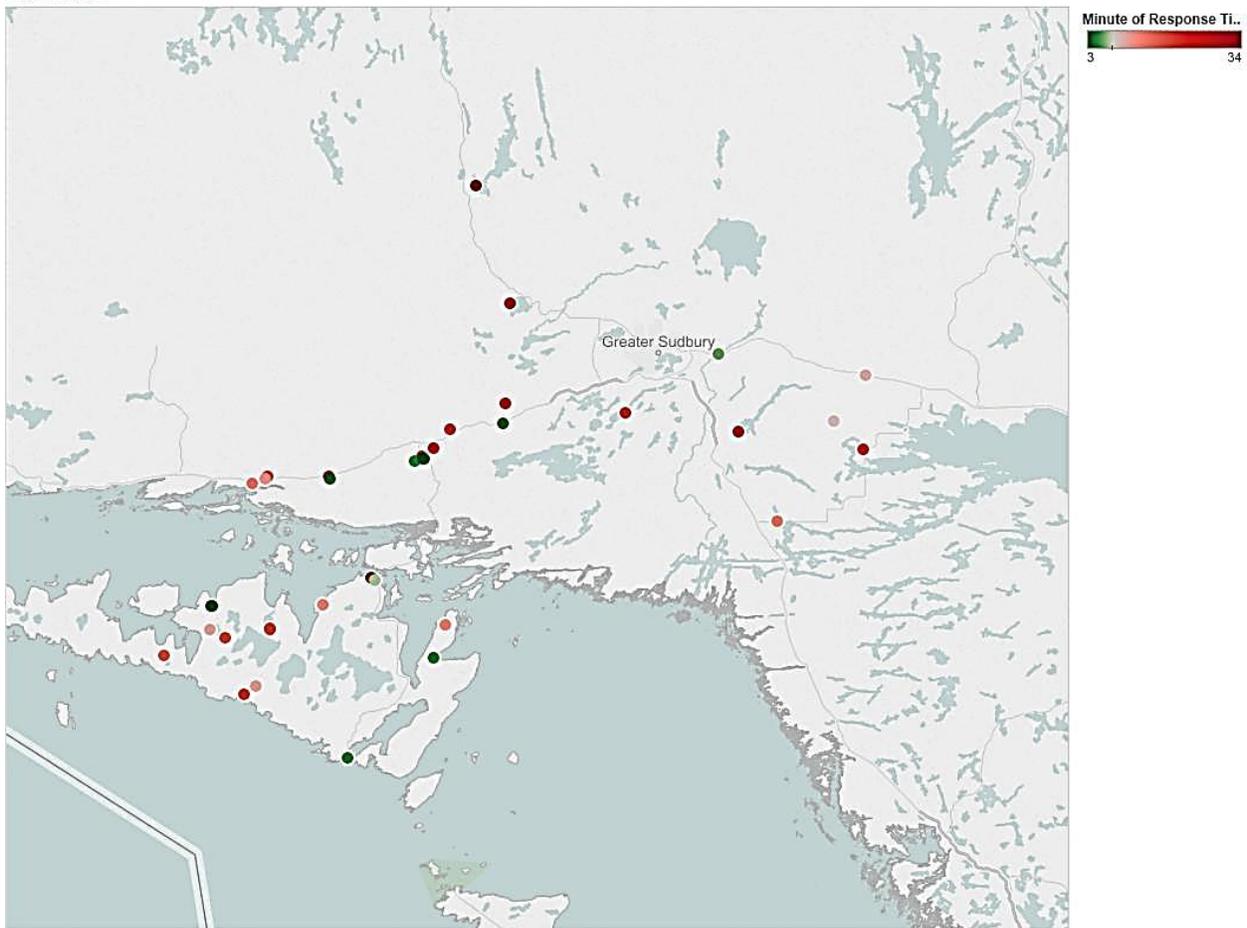
stations are based in residential or populated areas travelling that fast would be quite dangerous.

### Details Regarding the CTAS1 Response Target

The second most important criteria as detailed by the MOHLTC in assessment of response times are the CTAS1 calls. CTAS1 calls account for 0.95% (65 Out of 6,834) of patient calls. All things noted the MOHLTC has decided to measure EMS response on the basis of calls that make up less than 1% of overall patient complaints. Granted, these complaints are the most serious of calls but again as detailed above in the case of Sudden Cardiac Arrest, the chances of survival are extremely poor at best.

As noted earlier, we met the 8 minute CTAS1 response target 24.6% of the time. Below is a map detailing the general locations of our CTAS1's and a table of other facts surrounding these calls. Please note again, for visual purposes one CTAS1 occurring in our most Northern area is not visible on this map.

CTAS 1 Map



Map based on average of Pickup Longitude and average of Pickup Latitude. Color shows details about Response Time Minute. Details are shown for Call Num. The data is filtered on Pickup Town, which has multiple members selected.

# of calls performed by DSB	49 of 65
# of calls appearing to have occurred outside of DSB area	6 of 65
# of calls performed by external EMS provider	10 of 65
# of calls performed in under 8 minutes	16 of 65

Avg. distance of the 25 calls over 8 minutes (to reach 23 km in 8 minutes you would need to drive 173 km/h)	23km
Avg. response time of the 25 calls over 8 minutes	18 min. 24 sec.
# of calls where responding crew was on callback: 2 of 34 (6%)	3 of 65 (4.6%)
# of calls where responding crew was not the geographically ideal (Massey responded to Espanola x3, Mindemoya responded to LC, Wikwemikong responded to LC)	5 of 65

Again the MOHLTC standard allowance of 2 minutes to receive the call and be mobile to the call must be noted. If you were to travel at 80 km/h a CTAS 1 call would have to occur within 10.6 km of the station to make it within 8 minutes.

## Conclusion

Having now 2 years' worth of data to rely upon, we can look to try and improve the way we deliver services in an attempt to be more responsive to our citizens. We need to continue to review staffing levels to assess if enhancements could improve responsiveness. We continually review at our EMS Deployment Plan to assist in how we deploy our resources in the most effective and efficient manner possible. We currently operate a pilot project non-urgent patient transportation service and actively participate on the interim leadership group tasked at seeking a permanent non-urgent model. Lastly, we are looking at how our recently started Community Paramedicine effects future call volumes.

On the surface it appears as though it will be hard to achieve better response times with such urban based, population dense standards. Community programs such as Public Access Defibrillation and Tiered Response programs can go a long way in assisting where resources are just not close enough. We will continue to review this matter on a regular basis and make any improvements where possible.

The DSB did approve a [5-Year EMS Staffing Plan](#) in June 2013 which will be reviewed by the Program Planning Committee this spring. As staff prepare to present an updated 5-Year EMS Staffing plan, the Response Time Standard results will to be considered in order to determine and recommend EMS priorities to the Board.