



Report To: Manitoulin-Sudbury District Services Board  
From: Michael Maclsaac, Chief of EMS  
Date: November 27, 2014  
Re: Balanced Emergency Coverage 12 Month Update – Issue Report

## **RECOMMENDATION**

That the Board accept this report as the 12-month update regarding the Balanced Emergency Coverage changes made in the EMS Deployment Plan in June 2013.

## **REPORT**

### **Purpose**

This report will provide information on the statistical information from the period of a full year between June 1, 2013 to May 31, 2014. The review will be focused on the effect of the changes to the Deployment Plan as detailed in the [Balanced Emergency Coverage \(Standbys\) - Issue Report](#) of February 27, 2013. Since the initial change in the deployment plan on June 1, 2013, the Board was provided a [three month update report](#) and a [six month update report](#).

### **Background**

Previous reports detail the way we altered our deployment of ambulances in an attempt to greater capture the needs of the citizens within our communities with an aim of reduced response times. Yet again I will note that this alteration followed a review of 21 months' worth of data. The alteration of our Deployment Plan took effect June 1, 2013. In accordance with ensuring that we are doing the best that we can, evaluations have taken place at the three month and six month mark. This final update will take into account all seasonal aspects of the delivery of our service and will provide comprehensive information as to the effects of this deployment change. From this point forward we will continue to monitor our Deployment not merely in terms of this change but rather in an overall vision towards response times within our particular communities.

## History

The 21 months of data comprising the initial review revealed that balanced emergency coverage in our area statistically was, for the most part, an exercise in futility with just over 92% of the standbys resulting in going back to the original station having done nothing. In circumstances where calls occurred when on standby, 4.7% of the time the call response time was improved by being on standby (favourable standby) but 3.5% of the time the call response occurred in the area where the ambulance was originally located resulting in a unfavourable response time. In summary, placing ambulances in balanced emergency coverage situations resulted in inefficient, ineffective and sometimes detrimental results nearly 96% of the time.

After the change in deployment was made, we undertook a 3 and 6 month review. These reports generally revealed the following:

- There was less movement of ambulances combined with more positive results regarding response times.
- Both favourable and unfavourable standbys were increased, however the increase in favourable standbys was 3.1% while the increase in unfavourable standbys was 0.5%.
- Unnecessary standbys were decreased by nearly 66%.
- Code 8 standbys represented only 13% of all vehicle movements as opposed to 47%, which has been the average for the past 5 years.
- Finally, the overall impact of the unfavourable response was less than average for the most serious of patient with Code 4 returns making up 11% of the unfavourable responses.

## Methodology of Analysis Updated General Statistics

Each time a report is generated regarding this matter it is extremely important to reconfirm an understanding of the method of analysis. When analyzing the original plan we looked at whether it would have been better to stay at the station as opposed to proceeding to the standby location. Analyzing the new Deployment model we are looking at whether staying at our station was better than proceeding to the old standby.

The only way for us to track in this style is to rely on the MOHLTC ADRS Database. While we are cognizant of its inconsistencies, utilizing this database is the only way to achieve this review. This is the only database that tracks “perceived” code 8 standbys. We do not have an internal method to do so. The inconsistencies of the MOHLTC ADRS database is also the reason why we delay a review of the data.

Under the new deployment model, the ambulance does not move to a standby location, as often, so call numbers (and associated data) would not normally be generated. Sudbury CACC has continued to process standbys “on paper” while an ambulance is still at base which creates call data from which we can evaluate the effectiveness of this Deployment Plan. This allows us to gauge the effectiveness of the new system by seeing if these “perceived” standbys made matters more favourable or less favourable. We do not have such agreement with Sault Ste. Marie CACC nor Timmins CACC. The nature of dispatching between two different CACC’s, as is that case in our Northern stations, really

would make it unfeasible to suggest the same system would be able to function in a similar manner. As such, the statistics for Chapleau, Foleyet and Gogama below reflect 100% actual standbys.

The following table mirrors the style of those created for the original, three month, and six month reports. Please recall that the original stats encompassed a timeframe of twenty-one months. The statistics surrounding the Code 8 column reflect, as noted above, the “perceived” standbys as well as any actual standbys requiring vehicle movement. A table later one will detail the actual standbys requiring vehicle movement against the previous 12 month period.

Station	Total Code 8's	Favourable	Unfavourable	Total Calls on Stby	Plus Minus	% Call on Stby	% Favourable Stby	% Unfavourable Stby
Chapleau	11	0	0	0	0	0.0%	0.0%	0.0%
Foleyet	8	0	0	0	0	0.0%	0.0%	0.0%
Gogama	8	0	0	0	0	0.0%	0.0%	0.0%
Killarney	19	0	0	0	0	0.0%	0.0%	0.0%
Noëlville	373	24	10	34	8	9.1%	6.4%	2.7%
Hagar	461	19	16	35	3	7.6%	4.1%	3.5%
Espanola	500	41	22	63	19	12.6%	8.2%	4.4%
Massey	767	51	42	93	9	12.1%	6.6%	5.5%
Gore Bay	585	28	10	38	18	6.5%	4.8%	1.7%
Mindemoya	789	88	13	101	75	12.8%	11.2%	1.6%
Little Current	1022	56	57	113	-1	11.1%	5.5%	5.6%
Wikwemikong	46	6	0	6	6	13.0%	13.0%	0.0%
<b>New Totals</b>	<b>4589</b>	<b>313</b>	<b>170</b>	<b>483</b>	<b>143</b>	<b>10.5%</b>	<b>6.8%</b>	<b>3.7%</b>
<i>After 6 months</i>	<i>2003</i>	<i>157</i>	<i>81</i>	<i>238</i>	<i>76</i>	<i>11.9%</i>	<i>7.8%</i>	<i>4.0%</i>
<i>After 3 months</i>	<i>1108</i>	<i>86</i>	<i>45</i>	<i>131</i>	<i>41</i>	<i>11.8%</i>	<i>7.8%</i>	<i>4.1%</i>
<i>Pre-Deployment Change Review of 21 Months</i>						<i>8.2%</i>	<i>4.7%</i>	<i>3.5%</i>

The data after a year still indicates that the change in deployment has improved upon our ability to respond. There are some differences at the twelve month mark as opposed to the six month report. Favourable standbys have gone down by one percentage point to 6.8%. Unfavourable standbys have also gone down by 0.2% now at 3.7%. It can be suggested that this 12 month review would be indicative of the full scope of what we expect to see going forward.

### Specific Data Analysis

Again within this report a more detailed analysis of station by station data was performed. Chapleau, Foleyet, Gogama, and Killarney have no data regarding favourable or unfavourable responses. There were 27 standbys performed over the course of the 12 months. These standbys again are most likely due to depleted resources and requests to the Field Superintendents to allow the standby.

For the remaining eight EMS stations further analysis can be done bringing the evaluation to a more granular level. Highlighting the areas of concern and areas of improvement and evaluating the current model directly against the former model can shed more light on this deployment change.

## Hagar & Noëlville

These two stations in Sudbury East have differing responsibilities. Noëlville does not move to a standby location and Hagar does move to standby at the Noëlville station when the Noëlville ambulance is on a call taking them to a hospital. A review of the Sudbury East area reveals the following when considering current standby location vs. former standby location

Station	New Deployment			Old Deployment		
	Favourable	Unfavourable	Actual Movement	Favourable	Unfavourable	Actual Movement
Hagar	19	16	363	11	24	461
Noëlville	24	10	15	10	24	373
Total	43	16	378	22	48	854

Hagar Station	Noëlville Station
<ul style="list-style-type: none"> <li>• 16 unfavourable               <ul style="list-style-type: none"> <li>○ 3 Hagar</li> <li>○ 13 Noëlville</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 10 unfavourable               <ul style="list-style-type: none"> <li>○ all while at the Noëlville station</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• The 16 unfavourable calls occurred in the following areas:               <ul style="list-style-type: none"> <li>○ 6 St. Charles</li> <li>○ 5 Markstay</li> <li>○ 3 West Nipissing</li> <li>○ 1 Kukagami</li> <li>○ 1 French River</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• The 10 unfavourable calls occurred in the following areas:               <ul style="list-style-type: none"> <li>○ 3 St. Charles</li> <li>○ 3 Markstay</li> <li>○ 4 Warren</li> <li>○ 1 West Nipissing</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• The end result of the 16 unfavourable responses were as follows:               <ul style="list-style-type: none"> <li>○ 10 were cancelled calls</li> <li>○ 3 involved Code 3 patients</li> <li>○ 1 involved a Code 1 patient</li> <li>○ 1 patient refused transport</li> <li>○ 1 involved a Code 4 patient</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• The end result of the 10 unfavourable responses were as follows:               <ul style="list-style-type: none"> <li>○ 6 cancelled calls</li> <li>○ 1 involved a Code 4 patient</li> <li>○ 1 involved a Code 3 patient</li> <li>○ 1 involved a Code 1 patient</li> <li>○ 1 patient refused transport</li> </ul> </li> </ul>

## Espanola & Massey

Espanola and Massey are stations paired by geography in our Deployment Plan. Neither station regularly performs standbys. A review of the Espanola and Massey stations would reveal the following for current standby location vs. former standby location

Station	New Deployment			Old Deployment		
	Favourable	Unfavourable	Actual Movement	Favourable	Unfavourable	Actual Movement
Espanola	41	22	78	23	40	500
Massey	51	42	26	42	51	767
Total	92	64	104	65	91	1267

Espanola Station	Massey Station
<ul style="list-style-type: none"> <li>• 22 unfavourable               <ul style="list-style-type: none"> <li>○ all while remaining in Espanola</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 42 unfavourable               <ul style="list-style-type: none"> <li>○ 40 staying at the Massey Station</li> <li>○ 2 moving to the Espanola Station</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• The 22 unfavourable occurred in the following areas:               <ul style="list-style-type: none"> <li>○ 12 Sagamok</li> <li>○ 5 Massey</li> <li>○ 3 Serpent River</li> <li>○ 2 Shedden</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• The 42 unfavourable occurred in the following areas:               <ul style="list-style-type: none"> <li>○ 33 Espanola</li> <li>○ 2 Baldwin</li> <li>○ 1 Massey</li> <li>○ 1 Sagamok</li> <li>○ 2 Nairn Centre</li> <li>○ 1 Whitefish Falls</li> <li>○ 1 NEMI</li> <li>○ 1 Walden</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• The end result of the 22 unfavourable responses were as follows:               <ul style="list-style-type: none"> <li>○ 4 involved code 4 patients</li> <li>○ 8 involved code 3 patients</li> <li>○ 3 involved code 1 patients</li> <li>○ 7 were cancelled calls</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• The end result of the 42 unfavourable responses were as follows:               <ul style="list-style-type: none"> <li>○ 15 involved code 3 patients</li> <li>○ 13 were cancelled calls</li> <li>○ 7 involved code 4 patients</li> <li>○ 7 involved code 1 patients</li> </ul> </li> </ul>

## Gore Bay & Mindemoya

Gore Bay and Mindemoya are stations paired by geography in our Deployment Plan. Neither station regularly performs standbys. A review of the Gore Bay and Mindemoya stations would reveal the following for current standby location vs. former standby location.

Station	New Deployment			Old Deployment		
	Favourable	Unfavourable	Actual Movement	Favourable	Unfavourable	Actual Movement
Gore Bay	28	10	45	13	25	585
Mindemoya	88	13	573	17	84	789
Total	116	23	618	30	109	1374

Gore Bay Station	Mindemoya Station
<ul style="list-style-type: none"> <li>• 10 unfavourable               <ul style="list-style-type: none"> <li>○ all occurred while staying in the Gore Bay Station</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 13 unfavourable               <ul style="list-style-type: none"> <li>○ 3 unfavourable while staying in the Mindemoya Station</li> <li>○ 4 at Manitoulin East Airport</li> <li>○ 6 at Little Current Station</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• The 10 unfavourable occurred in the following locations:               <ul style="list-style-type: none"> <li>○ 5 Mindemoya</li> <li>○ 2 M'Chigeeng</li> <li>○ 2 Assiginack</li> <li>○ 1 Espanola</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• The 13 unfavourable occurred in the following areas:               <ul style="list-style-type: none"> <li>○ 2 in Gore Bay</li> <li>○ 6 in Wikwemikong</li> <li>○ 1 in Mindemoya</li> <li>○ 1 in Sandfield</li> <li>○ 3 in M'Chigeeng</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• The end result of the 10 unfavourable responses were as follows:               <ul style="list-style-type: none"> <li>○ 5 involved code 3 patients</li> <li>○ 4 were cancelled calls</li> <li>○ 1 involved a Code 4 patient</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• The end result of the 13 unfavourable responses were as follows:               <ul style="list-style-type: none"> <li>○ 2 involved code 1 patients</li> <li>○ 6 involved code 3 patients</li> <li>○ 3 were cancelled calls</li> <li>○ 2 involved code 4 patients</li> </ul> </li> </ul>

## Little Current & Wikwemikong

Little Current and Wikwemikong are stations paired by geography in our Deployment Plan. Neither station regularly performs standbys. A review of the Little Current and Wikwemikong stations would reveal the following for current standby location vs. former standby location.

Station	New Deployment			Old Deployment		
	Favourable	Unfavourable	Actual Movement	Favourable	Unfavourable	Actual Movement
Little Current	56	57	321	57	56	1022
Wikwemikong	6	2	46	6	2	46
Total	62	59	367	63	58	1048

Little Current Station	Wikwemikong Station
<ul style="list-style-type: none"> <li>• 57 unfavourable               <ul style="list-style-type: none"> <li>○ 52 occurred while staying in the Little Current Station</li> <li>○ 4 occurred while at the Espanola Station</li> <li>○ 1 occurred on standby in M'Chigeeng</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 2 unfavourable               <ul style="list-style-type: none"> <li>○ both occurred while being on standby at the Little Current Station</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• The 57 unfavourable occurred in the following areas:               <ul style="list-style-type: none"> <li>○ 38 in Wikwemikong</li> <li>○ 3 in M'Chigeeng</li> <li>○ 2 in Espanola</li> <li>○ 5 in Assiginack</li> <li>○ 4 in Little Current</li> <li>○ 2 in Mindemoya</li> <li>○ 1 in Sheguindah</li> <li>○ 1 in Gore Bay</li> <li>○ 1 In Whitefish River</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• The 2 unfavourable both occurred in Wikwemikong</li> </ul>
<ul style="list-style-type: none"> <li>• The end result of the 57 unfavourable responses were as follows:               <ul style="list-style-type: none"> <li>○ 14 were cancelled calls</li> <li>○ 17 involved code 1 patients</li> <li>○ 10 patients refused transport</li> <li>○ 11 involved code 3 patients</li> <li>○ 5 involved a code 4 patient</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• The end result of the 2 unfavourable responses were as follows:               <ul style="list-style-type: none"> <li>○ 1 involved a code 3 patient</li> <li>○ 1 involved a code 4 patient</li> </ul> </li> </ul>

## Total Analysis

Below is a grand total review of what occurred under the new deployment model vs. what would have occurred under the old deployment model. A summary from the 3-month mark and 6-month mark is shown as well.

	New Deployment			Old Deployment		
	Favourable	Unfavourable	Actual Movement	Favourable	Unfavourable	Actual Movement
3 month	86	44	375	63	67	1091
6 month	157	81	825	118	120	1982
<b>12 month</b>	<b>313</b>	<b>170</b>	<b>1513</b>	<b>179</b>	<b>304</b>	<b>4589</b>

This 12-month review continues to affirm that the change in deployment is effective. Favourable responses still outnumber unfavourable ones under the current model and a predicted account of what would have occurred under the old deployment model shows that there would have been a far greater number of unfavourable responses than favourable.

Lastly, a breakdown on the return priority of the calls that occurred in an unfavourable response will highlight the actual needs of the patient who has experienced a possible extended response time. The return priorities in those situations reveal the following:

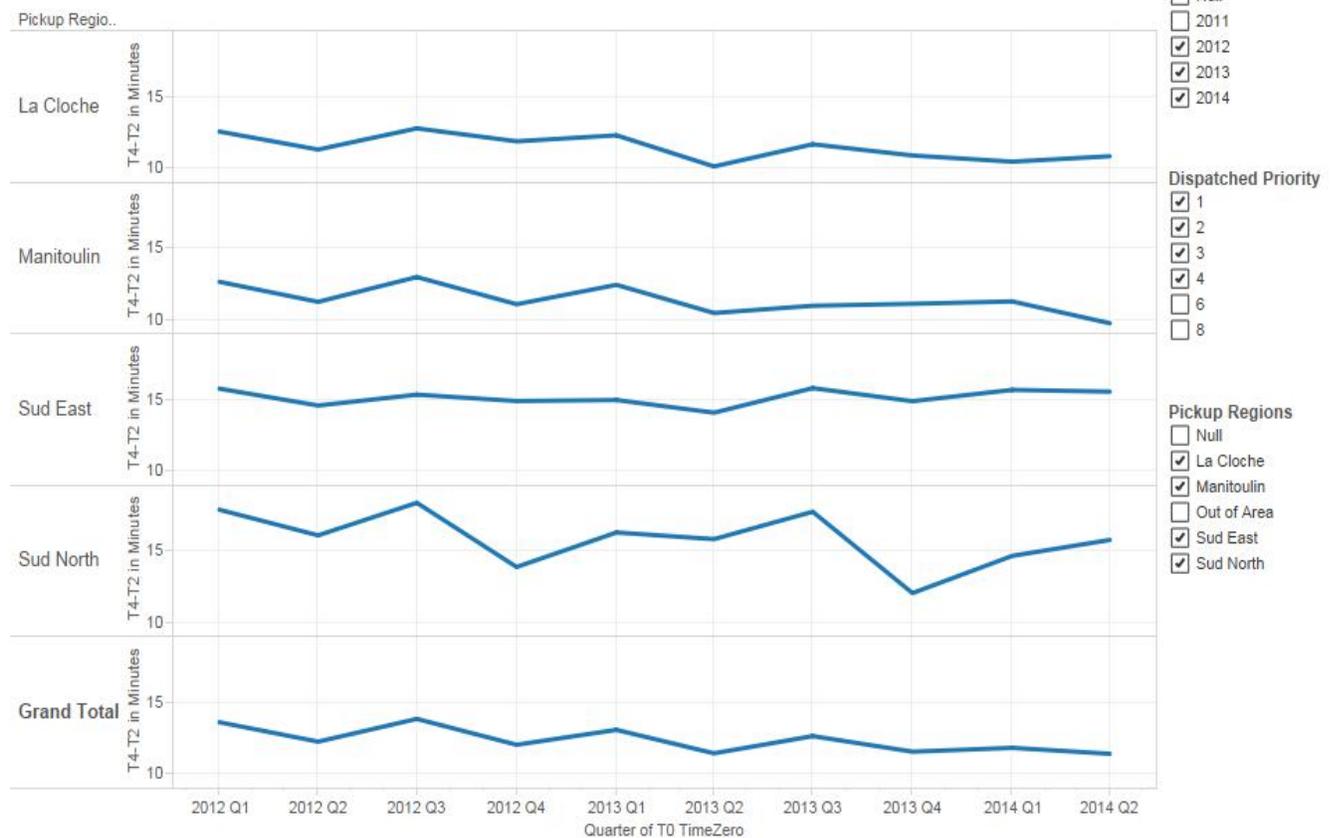
- 42% of the calls were either cancelled prior to the ambulance arriving on scene or the patient refused transportation
- 31% of the calls were Code 3 returns
- 14% of the calls were Code 4 returns
- 13% of the calls were Code 1 returns

## Impact Upon Ability to Respond

Lastly, over the course of analysing the change in deployment there has been a suggestion that there could be an overall improvement to call response times. As detailed in the [2015 EMS Response Time Standard – Issue Report](#) of October 2014 we witnessed a substantial improvement in ability to respond to Sudden Cardiac Arrests within the MOHLTC mandated 6 minute timeframe in 2014. That improvement can, at least in part, be attributed to the change in vehicle deployment.

Furthermore, a review of data as shown in the chart below details a regional look at general response times. Accompanying the chart is a table that details the volume of calls again by region. You will note that call volumes appear to have stabilized through the last 2 years, however please understand that there has generally been a modest increase in Code 3 and 4 emergency calls coupled with a similar decrease in Code 1 and 2 non-urgent responses. This is indicative of a few factors, namely the aging population (increasing emergency needs), and the non-urgent patient transportation system (decreasing the amount of EMS non-urgent activity).

## Response Times by Region



## Call Volumes by Region

Pickup Region..

La Cloche	429	421	554	471	535	456	456	450	414	435
Manitoulin	676	680	836	672	703	640	773	728	601	647
Sud East	199	208	241	171	177	207	260	181	155	194
Sud North	163	163	208	157	166	169	173	130	106	134
Grand Total	1,467	1,472	1,839	1,471	1,581	1,472	1,662	1,489	1,276	1,410

Quarter of T0 TimeZero

A quick look at the chart above would suggest a minimal drop in response times. However it must be noted that in the grand total row the high in response times was 13:48 in the second quarter of 2012. The low in response times is 11:24 which has just occurred in the second quarter of 2014. A difference in two minutes and 24 seconds represents an immense improvement when speaking of response times. Additionally the first, third, and fourth quickest quarterly times have occurred since implementation of the new Deployment Plan.

## Conclusion

At every incremental review point over the last year, the change in deployment has shown much benefit. The statistics after 3 months were greater than expected. The 6 month data continued to prove the effectiveness of the change. Now that a years' worth of information has been reviewed the full impact of this change cannot be understated; the deployment change has shown a greater than expected success. Statistically, the change has shown that while there has been an increase in unfavourable responses, the increase

in favourable responses has been far greater. Anecdotally, when the Paramedics have been asked about the front line impact of the deployment change very few highlight negative experiences due to this deployment change. They are generally experiencing better response times while being left on the side of the road on standby far less. Not only has this been an effective change, it has also improved on overall efficiency. Lastly, we have been able to adjust our Response Time Standard Performance Plan submission to the MOHLTC for 2015 due to the improved response times we are now seeing. This is at least in part an accomplishment due to the altered deployment plan.

Now that this deployment change has been intensively reviewed from a statistical perspective over the course of one year, the focus of EMS administration will now shift to monitoring response time capabilities from a municipal perspective. Future statistical gathering will focus on how the current deployment plan is functioning in relation to response times instead of focusing on favourable vs. unfavourable standbys and “what would have been”. Constant review to ensure that we are meeting the needs of the citizens within our communities is a main priority of the EMS department and will continue to occur by monitoring the deployment of our resources to best serve those needs.