



**ITS Canada**

**June 19, 2018**

**Niagara Falls, Ontario**

# **Anticipating Traffic Changes during Severe Weather**

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**CUSTOMER  
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# Overview

- When severe weather or disaster events strike, provincial and state agencies would like to anticipate how traffic will be impacted.
- This presentation will review recent examples of severe weather and the impact to traffic.



Hurricane Irma Evacuation  
September 2017

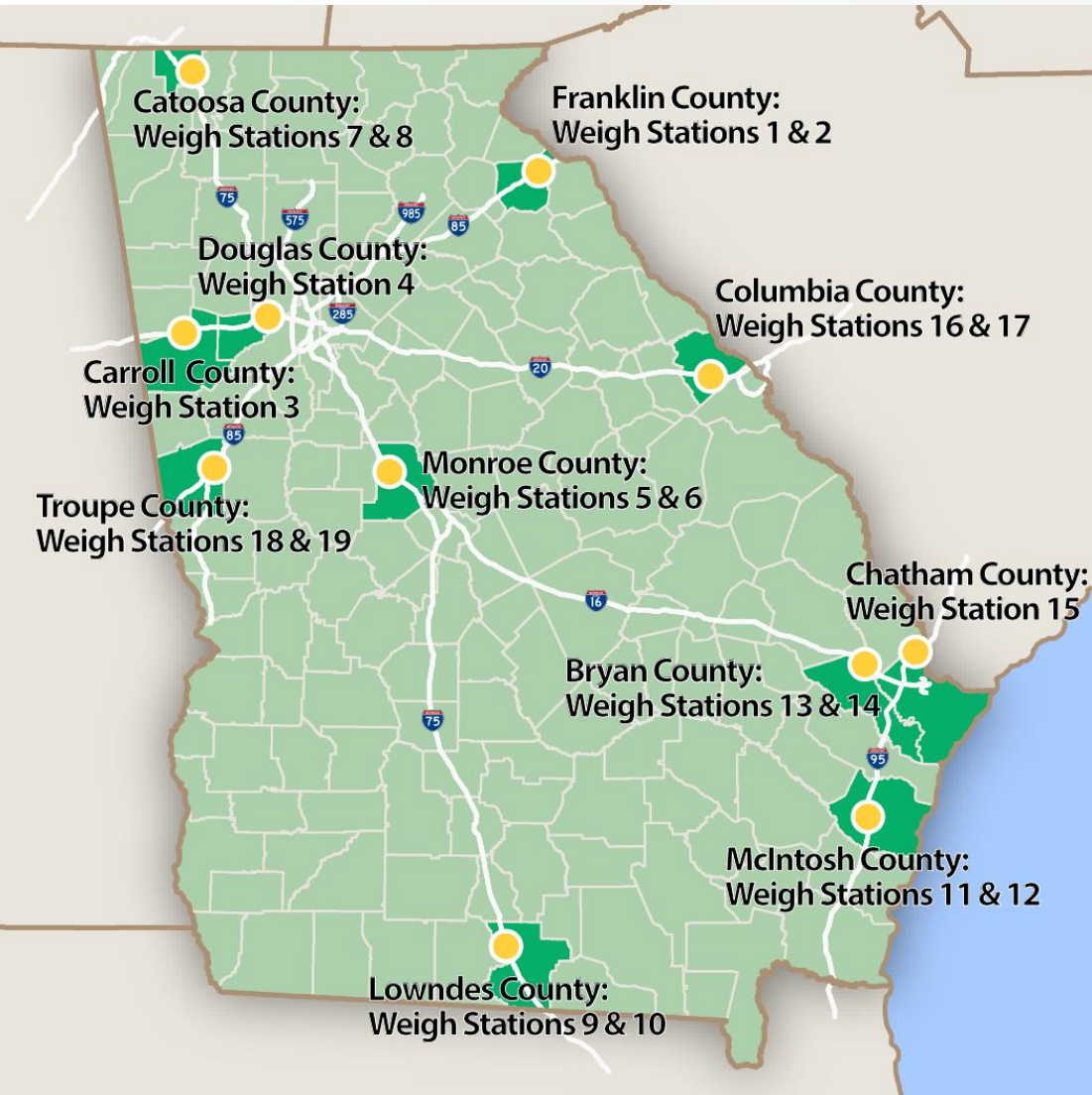


Nor'easters in the Maritimes  
March 2018





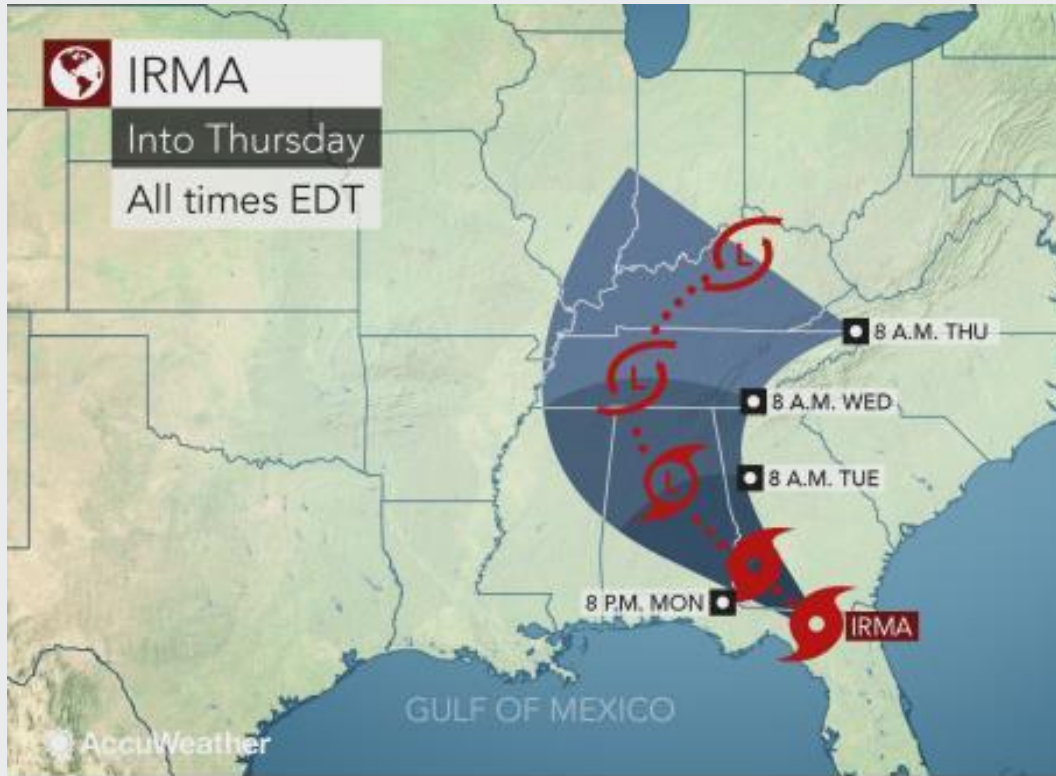
# Georgia Statewide WIM Project – 19 Weigh Stations



- 19 weigh stations with existing Ramp WIM systems.
- Project was to add:
  - Mainline WIM
  - LPR and USDOT electronic screening
  - Signalling of commercial vehicles via blank-out message signs
- Full upgrade of existing Ramp WIM system.
- Installation Timeline
  - 532 days
  - Sept 2015 to Feb 2017
- Maintenance Acceptance pending
  - Planned for May 18, 2018



# Hurricane Irma - Evacuation



## Hurricane Irma

Formed: Wed Aug 30, 2017

Dissipated: Wed Sep 13, 2017

**“An estimated 6.3 million people have been ordered to evacuate.”**

**“The dramatic mass exodus from South Florida could become one of the largest evacuations in US history, CNN senior meteorologist Dave Hennen said.”**

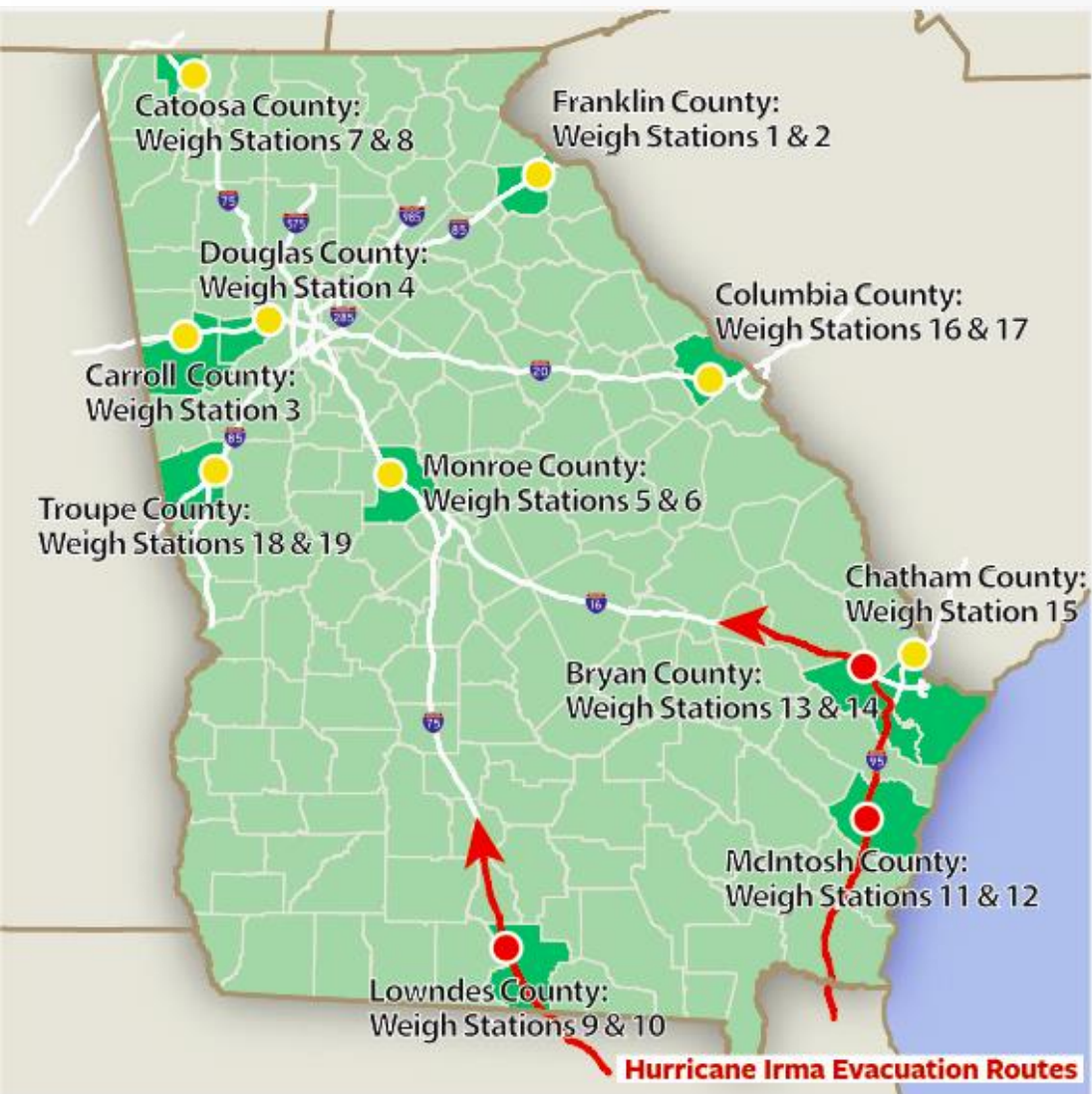
**“There was bumper-to-bumper traffic late Friday in northbound lanes of I-95 south of Savannah, Georgia, CNN senior producer Bill Kirkos reported.”**

<https://www.cnn.com/2017/09/08/us/hurricane-irma-evacuation-florida/index.htm> - Sept 9, 2017





# Hurricane Irma - Evacuation Routes



Georgia VWS Landing Page | Virtual Weigh Station - Summary

Secure | <https://ga-bryan-wb.site.irdinc.com:8443/#summary>

ird Summary Vehicles Bryan WB GA\_Virtual

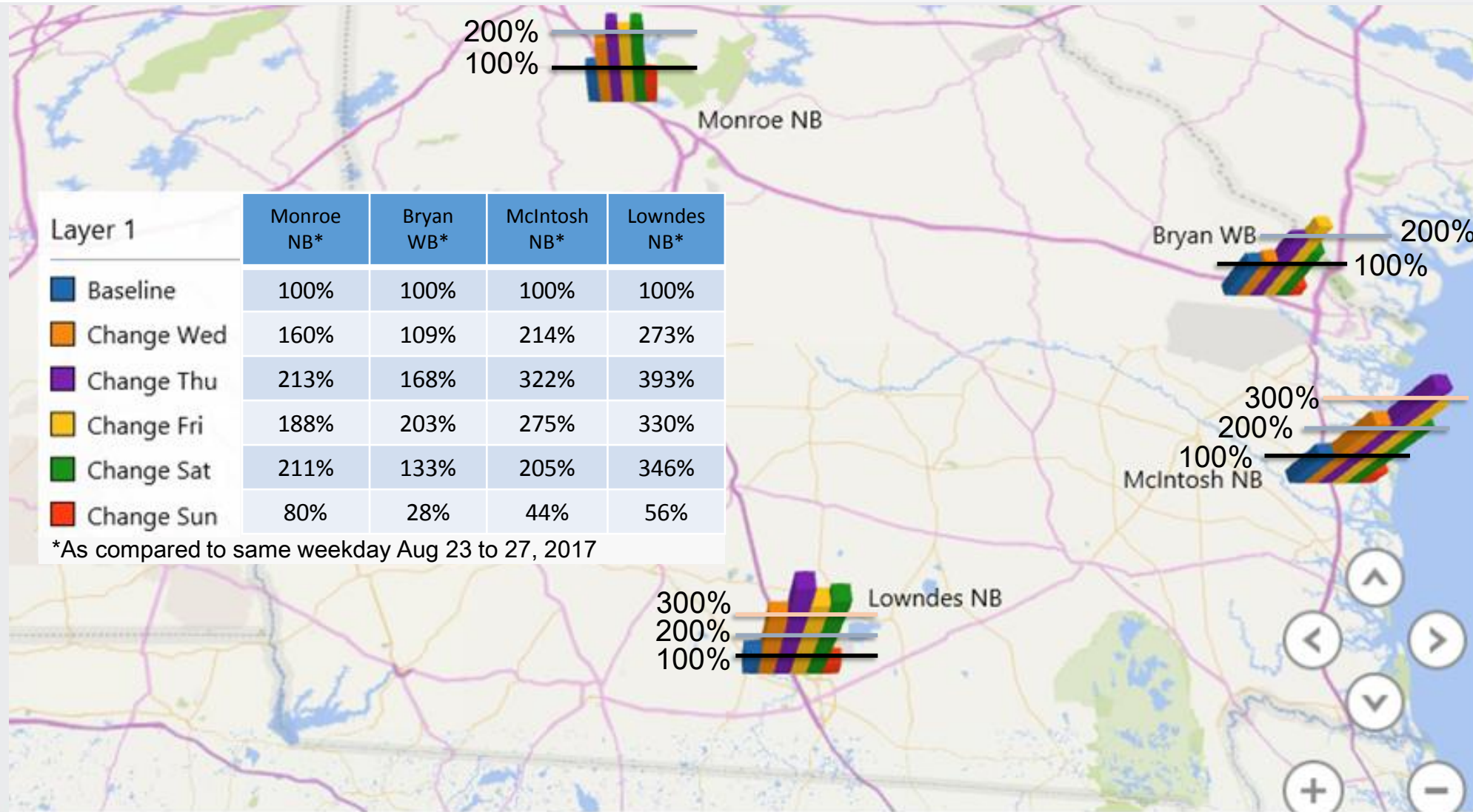
Last update: Thursday, September 7, 2017 06:21:44 PM GMT-04:00

Bryan WB	Average Speed	Average Occupancy	Vehicle Count
Main Drive	59.93 mph	5.75 %	1003
Main Pass	67.55 mph	6.41 %	1521
Ramp Exit	0.00 mph	0.00 %	4
Byp Drive	66.35 mph	5.68 %	1058
Byp Mid	0.00 mph	0.00 %	0
Byp Pass	73.14 mph	4.16 %	1468
Ramp Sensor	0.00 mph	0.00 %	4
Ramp	0.00 mph	0.00 %	4
Scale Report	0.00 mph	0.00 %	0
Scale Bypass	0.00 mph	0.00 %	4
Scale Sensor	0.00 mph	0.00 %	0
Lane 15	0.00 mph	0.00 %	0



# Inbound Evacuation Routes

## %Change in traffic - Wed Sept 6 to Sun Sept 10, 2017



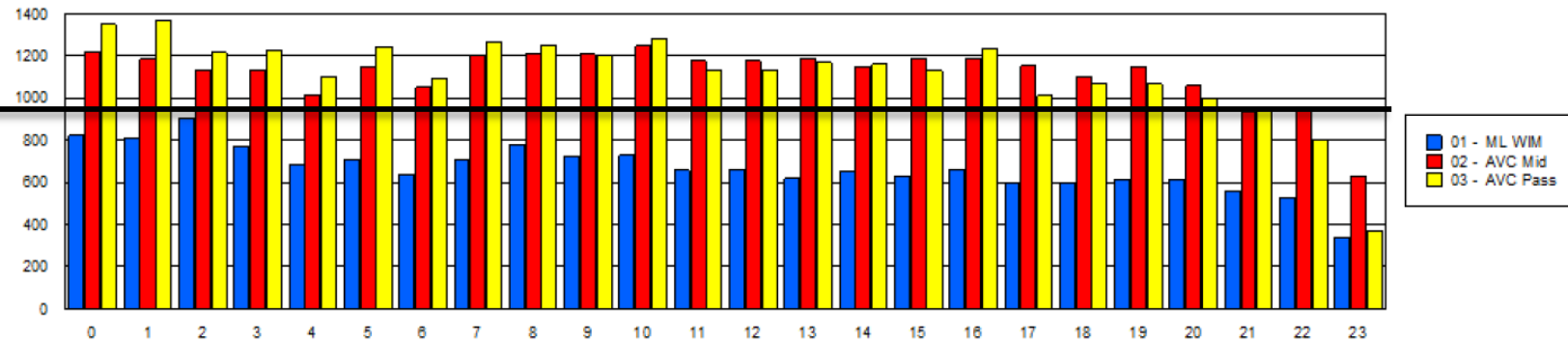
# Lowndes NB Volume - Sat Sept 9 versus Sat Aug 26

Average 989  
per hour for  
each lane

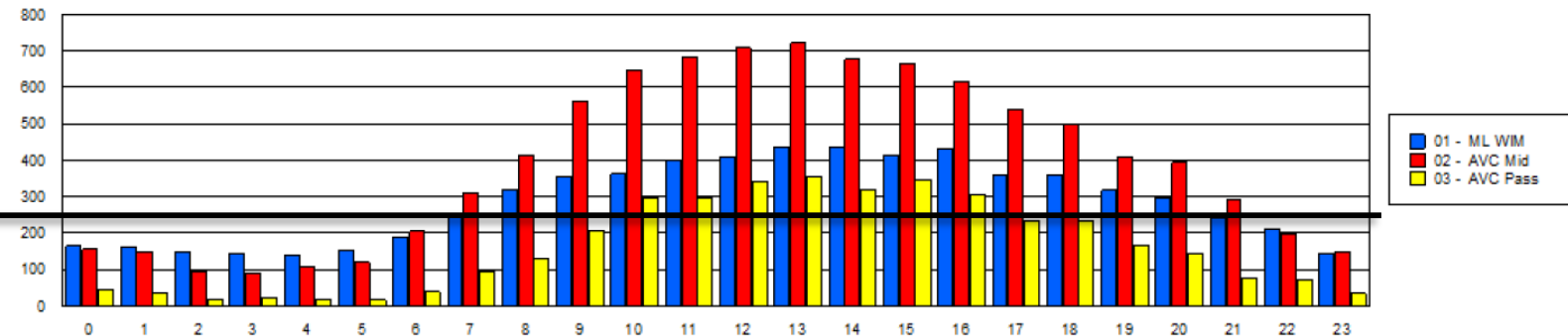
**346%**  
increase



Average 279  
per hour for  
each lane



Lane by Hour – Sat Sept 9, 2017



Lane by Hour – Sat Aug 26, 2017

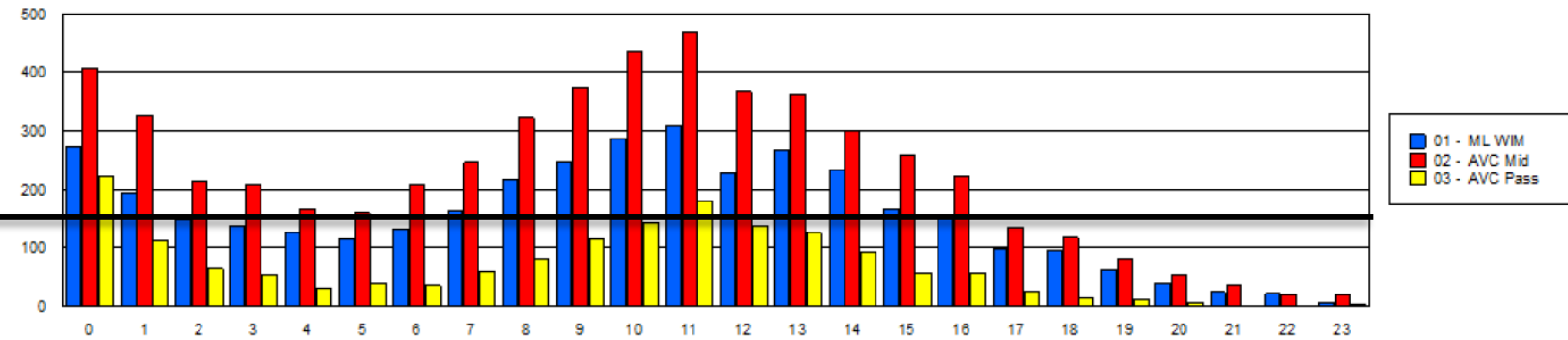
# Lowndes NB Volume – Sun Sept 10 versus Sun Aug 27

Average 151  
per hour for  
each lane

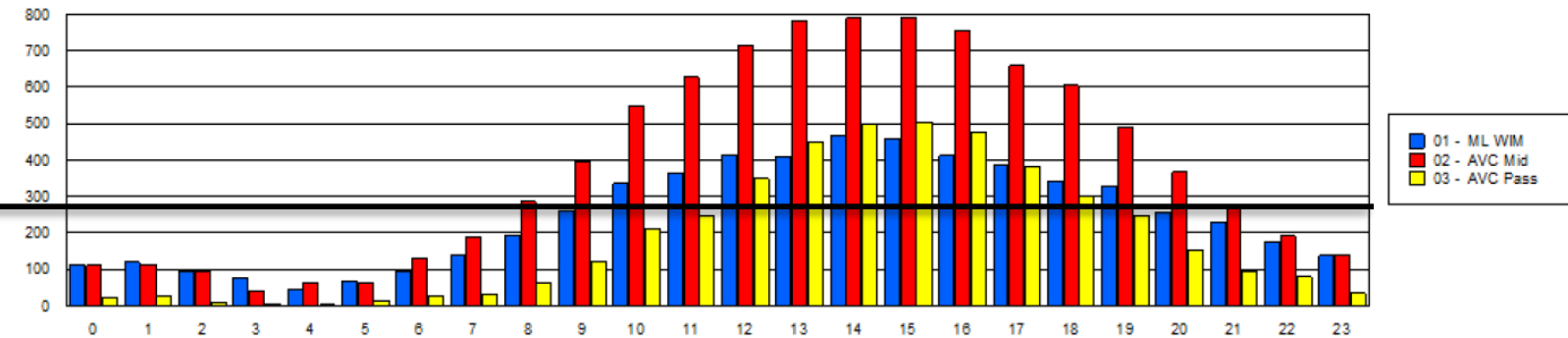
**56%**  
decrease



Average 270  
per hour for  
each lane



Lane by Hour – Sun Sept 10, 2017



Lane by Hour – Sun Aug 27, 2017

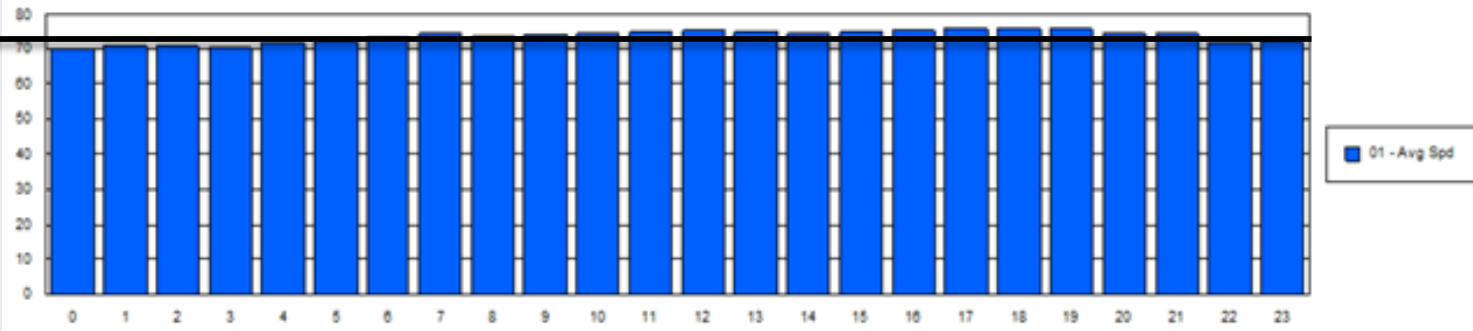


# Lowndes NB Speed By Hour Fri Sept 8 versus Fri Aug 25

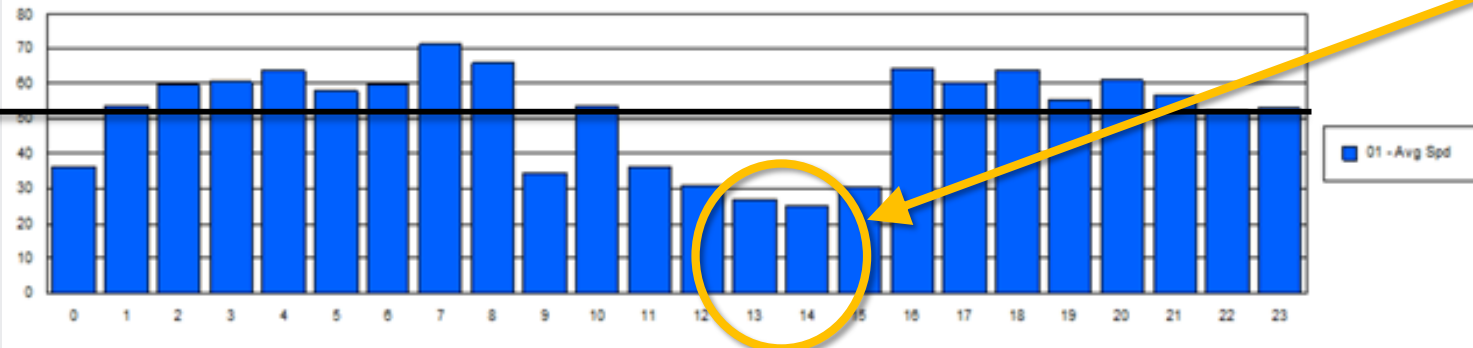
**73 MPH**  
Average  
speed hour  
across all  
lanes

**30%  
decrease**  
↓

**51 MPH**  
Average  
speed hour  
across all  
lanes



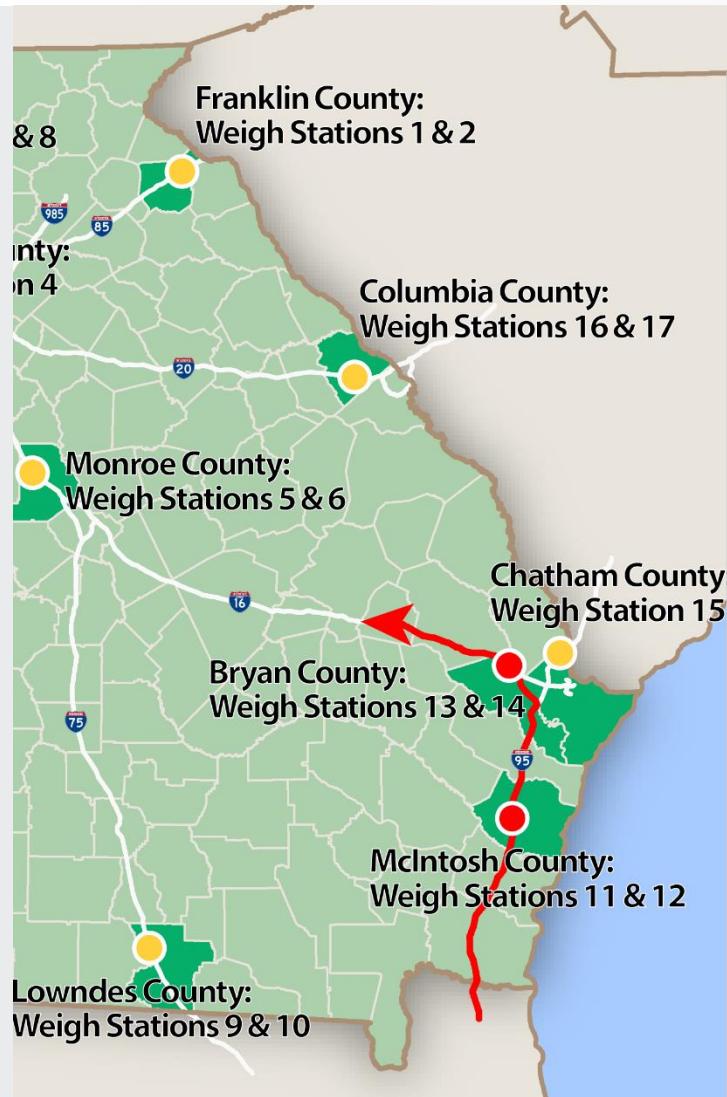
Average Speed by Hour – Fri Aug 25, 2017



Average Speed by Hour – Fri Sept 8, 2017

**As low as  
25 MPH**

# Bryan EB - Georgia contra-flow operations Sept 9, 2017



Vehicle	Class	Axle	Length (ft)	Speed (mph)	GVW (lb)
9756	8	4	47.1	65	26,912
Max GVW (lb)		Max GVW (%)			
67,500		40			

2017-09-09 05:59:40 AM EDT  
Main Drive  
Bryan EB



! sign override



Vehicle	Class	Axle	Length (ft)	Speed (mph)	GVW (lb)
9767	0	0	0.0	0	0
Max GVW (lb)					
0					

2017-09-09 07:59:00 AM EDT  
Main Pass  
Bryan EB



! truck not in WIM lane  
x loops hit in wrong order



Vehicle	Class	Axle	Length (ft)	Speed (mph)	GVW (lb)
9771	0	0	0.0	0	0
Max GVW (lb)					
0					

2017-09-09 07:59:31 AM EDT  
Main Pass  
Bryan EB

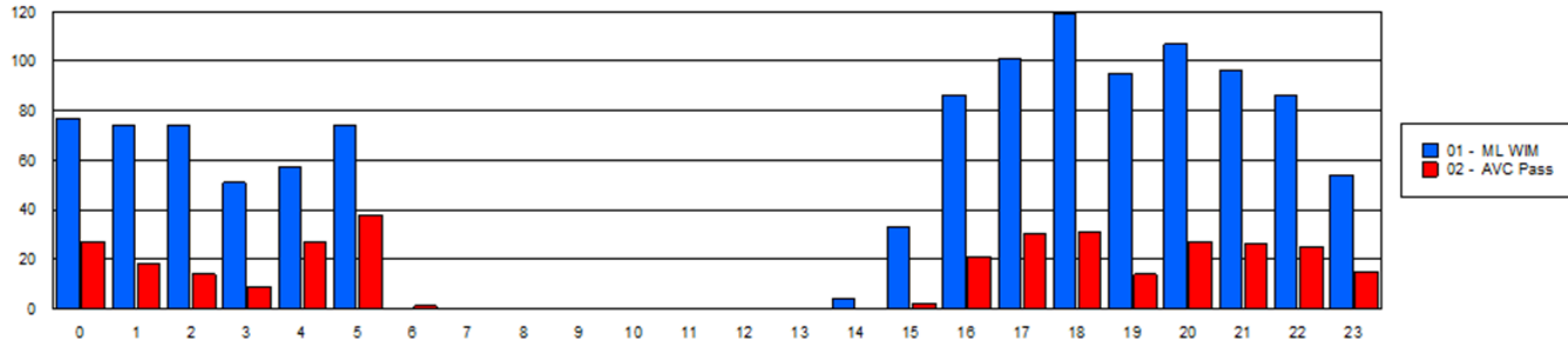


! truck not in WIM lane  
x loops hit in wrong order

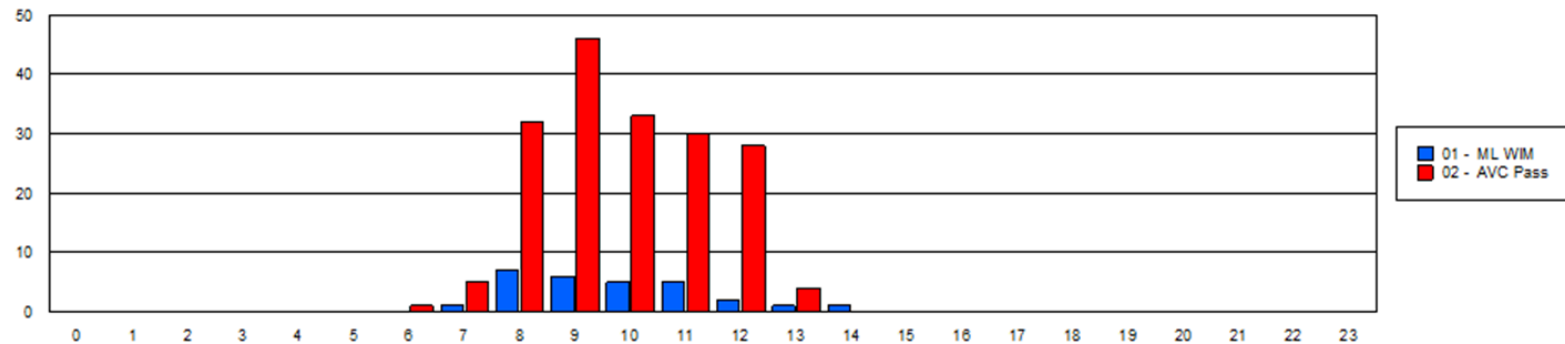




# Bryan EB - Contra-flow Sept 9, 2017 - 6AM to 2PM



Lane by Hour for Sat September 9-2017 – Bryan EB



Lane by Hour for Sat September 9-2017 – Bryan EB



- 207 contra-flow vehicles
- All Personal Vehicles





# Bryan EB - Georgia contra-flow operations

Bryan EB Mainline 2017-09-09 10:18:52



**Both sides of  
I-16 with  
traffic flow  
Westbound**





# Bryan EB - Georgia contra-flow operations



Vehicle	Class	Axle	Length (ft)	Speed (mph)	GVW (lb)
10169	0	0	0.0	0	0

2017-09-09 01:10:52 PM EDT  
Main Pass  
Bryan EB

Max GVW (lb)  
0



⚠ truck not in WIM lane  
❌ loops hit in wrong order



Vehicle	Class	Axle	Length (ft)	Speed (mph)	GVW (lb)
10171	0	0	0.0	0	0

2017-09-09 01:11:54 PM EDT  
Main Pass  
Bryan EB

Max GVW (lb)  
0



⚠ truck not in WIM lane  
❌ loops hit in wrong order



Vehicle	Class	Axle	Length (ft)	Speed (mph)	GVW (lb)
10174	5	2	23.2	88	8,084

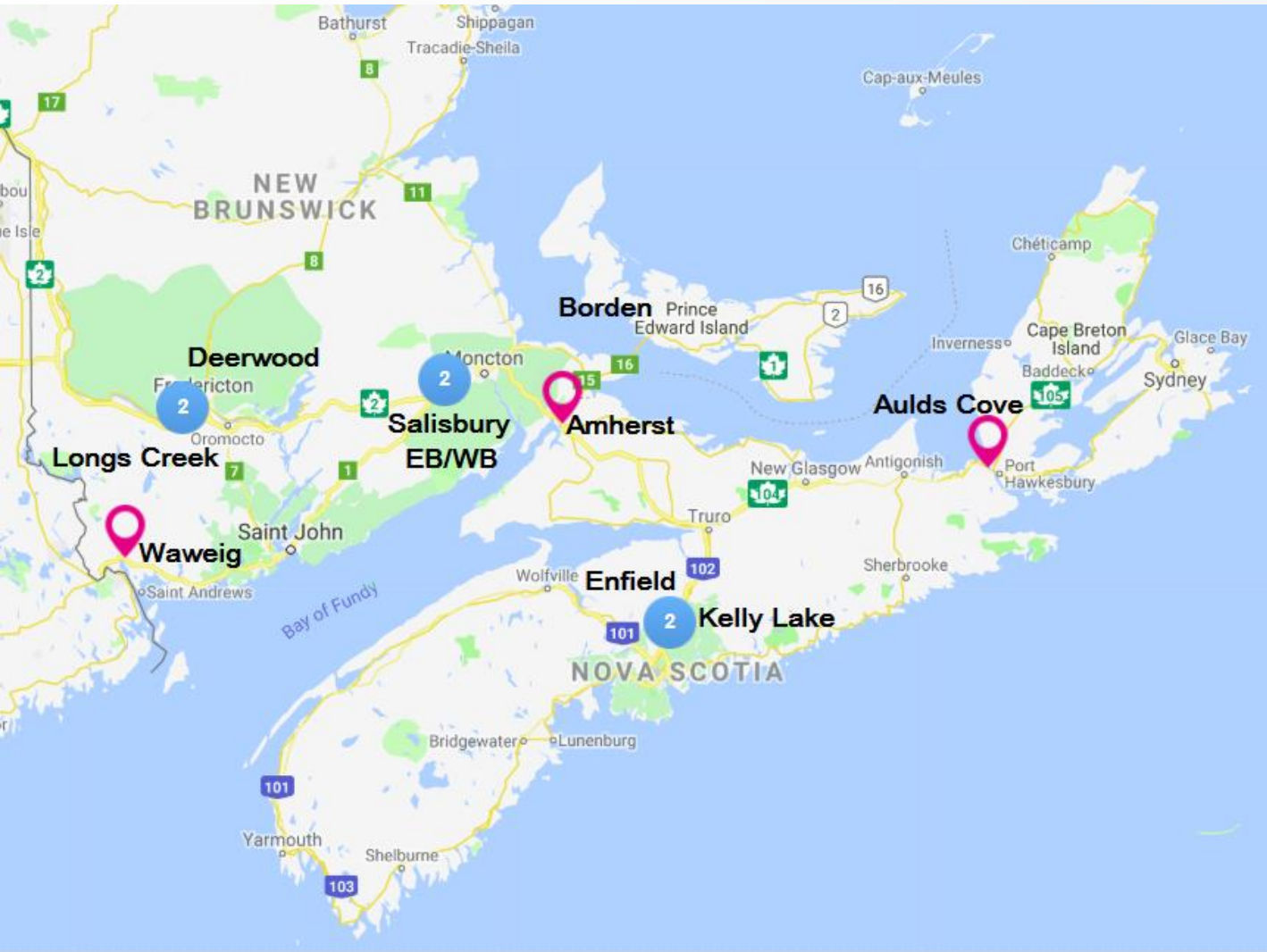
2017-09-09 02:09:46 PM EDT  
Main Drive  
Bryan EB

Max GVW (lb)	Max GVW (%)
40,000	20



⚠ sign override

# Maritimes Weigh Stations - CVO with Mainline WIM



## Site Type Legends



CVO



TWO SITES AT ONE LOCATION

- New Brunswick
  - Waweig
  - Longs Creek
  - Deerwood
  - Salisbury EB
  - Salisbury WB
- Prince Edward Island
  - Borden
- Nova Scotia
  - Amherst
  - Enfield
  - Kelly Lake
  - Aulds Cove

WIM = Weigh-In-Motion

CVO = Commercial Vehicle Operations



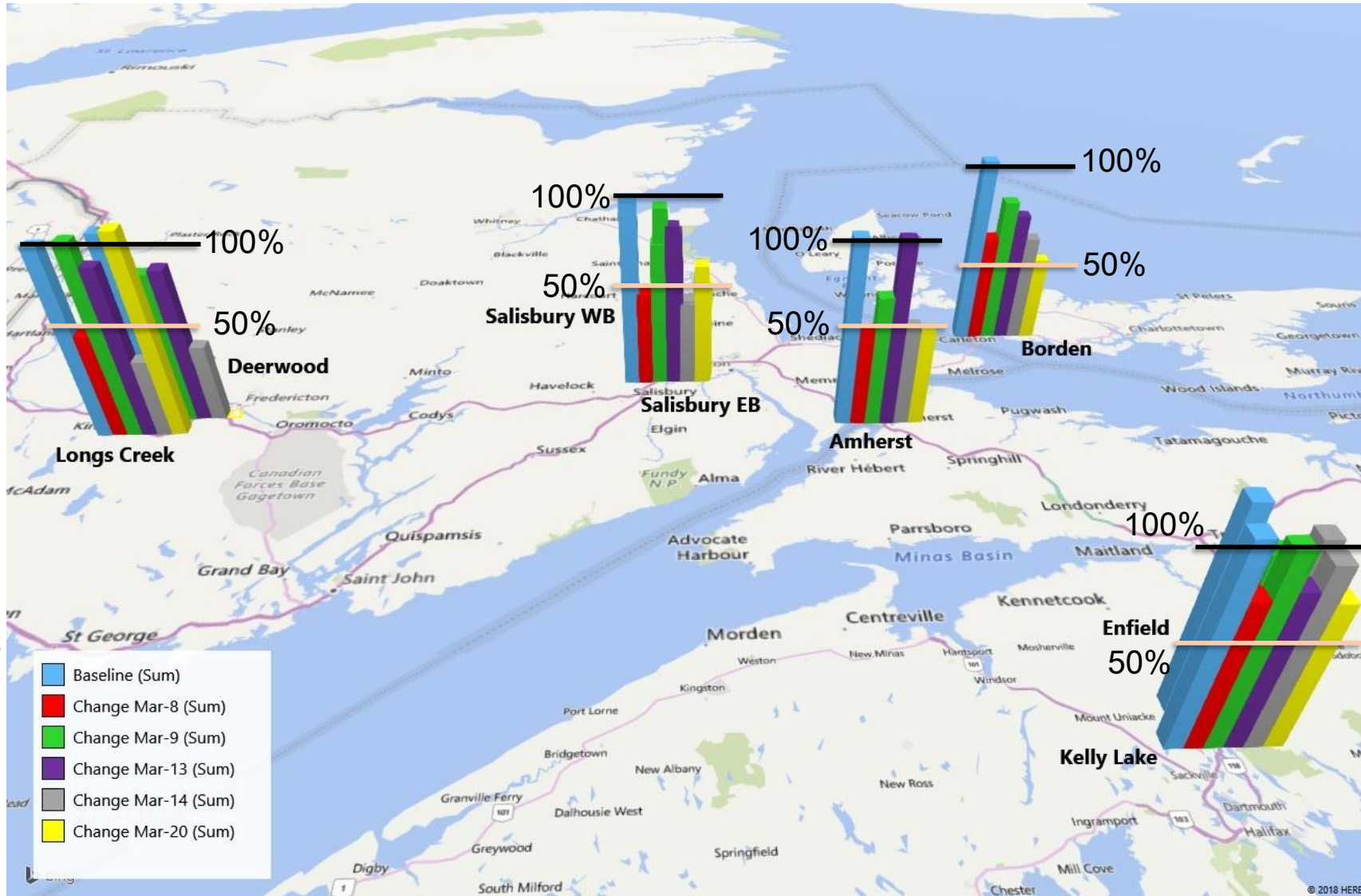
# Nor'easters causing decrease in traffic

## Nor'easter 1

Change  
Thursday  
March 8, 2018  
27% to 54%  
decrease



Change  
Friday  
March 9, 2018  
0% to 30% decrease



Note: Data review was limited to a few sites in each province.

## Nor'easter 2

Change  
Tuesday  
March 13, 2018  
1% to 29%  
decrease



Change  
Wednesday  
March 14, 2018  
12% to 59%  
decrease



## Nor'easter 3

Change  
Thursday  
March 20, 2018  
0% to 54%  
decrease



# Developing Predictive Models – Refining Response Plans

- Traffic data from these severe weather events could be further reviewed to develop a predictive model for how similar weather and emergency events in the future could affect traffic.
- This could assist provincial and state agencies to refine response plans for future severe weather events.





# THANK YOU

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