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2018 Energy Consumption and Greenhouse Gas Emission Report

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INTRODUCTION

In 2006 the Ontario government set a benchmark for greenhouse gas emissions for each custodial ministry - ministries that manage government owned Target Class Facilities - to publicly report on how the government's energy consumption is tracking against the benchmark. Target Class Facilities are a subset of all government-owned facilities that have been identified as having energy conservation potential. In MTO's case, the Target Class Facilities are those that make up the Truck Inspection Station network i.e. facilities where ministry enforcement staff and police officers perform truck inspections to promote road safety and take corrective action, when necessary.

The purpose of the annual Energy Consumption and Greenhouse Emission report is to outline the ministry's progress in reducing GHG emissions. The 2018 report outlines progress made in the 2017 calendar year

DESCRIPTION OF THE MANAGED PORTFOLIO

Program Background:

On any given day over 100,000 trucks travel Ontario's highways. It is the role of the Ministry of Transportation's Commercial Vehicle Enforcement Program to monitor the condition of those vehicles and, when necessary, take corrective action. One method of accomplishing this task is through vehicle inspections. Ministry Transportation Enforcement Officers primarily perform the inspections¹ at one of 34² Truck Inspection Stations (TIS). Truck Inspection Stations are found at various highway locations in Ontario. Vehicles are subject to safety checks (of brakes, lights, couplings, etc.) and their loads checked for weight, height, length, width and axle spacing. Driver licences are also checked for validity and proper class of licence for the vehicle.

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Program Operations:

In 2009, the ministry completed an extensive review of its Commercial Vehicle Enforcement Program and developed a Strategic Enforcement Plan, the purpose of which was to maximize the strategic and operational effectiveness and efficiency of the Enforcement Program, focussing on the (then) 36 existing Truck Inspection Stations (TIS) across the Province. The ministry used industry best practices and highway criteria such as: traffic counts, points of entry, high volume corridors, major trade corridors and regional priorities, to prioritize the strategic value of each Truck Inspection Station and aligned it with ministry’s long-term Capital Investment Plan.

Through that review the ministry has identified seven high priority TIS which are being converted to larger Commercial Vehicle Inspection Facilities (CVIF), as funding becomes available. This has allowed the ministry to optimize the use of staffing resources i.e. staff continue to be transferred from less strategically critical sites to these new priority sites enabling MTO to operate more hours through a 24 hour period.

As the industry continues to improve the aerodynamics of commercial vehicles they continue to get less road clearance and consequently the ministry has introduced a strategy whereby inspection facilities will have recessed inspection lanes retrofitted. These lanes have imbedded heating for snow management

The combination of these initiatives, (recessed inspection lanes, 24-hour operations and the considerably larger CVIF sites) will impact energy consumption; however the ministry has taken that into consideration during the design phase of the planning.

Commercial Vehicle Inspection Facilities (CVIF):

Prior to the 1990s, the primary focus of these stations was weighing vehicles. Since that time, enforcement has shifted to focusing on driver and mechanical fitness, requiring more space for inspections and detention

The new state-of-the-art inspection facilities constructed or being constructed now sit on (approximately) a 3-hectare site and are equipped with new technologies such as licence plate readers and a queue management system that will prevent back-ups onto the highway. The sites include booths for officers to be stationed outside recessed inspection lanes, 12 truck bays, and a large triage area allowing effective screening, and inspections on those vehicles that have a higher likelihood of non-compliance. Employee safety has been enhanced in the building and inspection lanes, including more functional and efficient work space for officers to conduct their duties and improved illumination - including increased lighting for officer safety and better visibility for night time inspections.

PROGRESS REPORTING

Energy Performance:

The overall energy consumption at the Target Class Facilities increased by 1% in 2017 compared to 2016. The increase is mainly attributed to higher propane consumption as one of the TIS (Oakville North) was switched from electricity to propane heating source.

Energy Performance (ekwh)	2016	2017	2017 vs 2016
Electricity	1,871,151	1,863,903	0%
Natural Gas	88,910	92,112	4%
Propane	23,981	51,459	115%
Total	1,984,041	2,007,474	1%

A “Rolling five-year energy consumption summary” and an “Annual energy consumption report by location” are provided in the appendix.

GHG Emissions Performance:

By the end of 2017, MTO has been tracking at 74% GHG emissions reduction for the Target Class Facilities over 2006 baseline and an 11% reduction over 2016. The reduction is mainly due to the phase out of coal electricity generation and a resultant lower electricity emission factor. Going forward into the future reporting years it is not expected that there will be emission factor increases or decreases to the magnitude of the coal phase out

Emissions Performance (eCO ₂ tonnes)	2006	2016	2017	2016 vs 2006	2017 vs 2006	2017 vs 2016
Electricity	292.4	67.4	50.9	-77%	-83%	-24%
Natural Gas	9.5	16.0	16.6	69%	75%	4%
Propane	0.0	5.0	10.8	NA	NA	115%
Total	301.8	88.4	78.2	-71%	-74%	-11%

A “Rolling five-year GHG emissions summary” and an “Annual GHG emissions report by location” are provided in the appendix.

CHALLENGES, RISKS AND OPPORTUNITIES

Program Requirements:

MTO is faced with the challenge of reducing emissions while improving the performance of the managed portfolio. Highway safety is of paramount concern so there is every expectation that the strategic plan to grow the Commercial Vehicle Inspection Facilities (part of TIS network) will proceed on schedule. That growth, which includes considerably larger facilities and longer working hours, will challenge any goal to substantially reduce energy consumption. That noted, the ministry has repeatedly demonstrated a proactive approach to achieving that goal.

New Facilities:

As new facilities are built they are added to the energy and emissions reporting, contributing to increase in GHG emissions. Although new facilities utilize the most modern energy management practices, the energy reduction goal is negatively impacted as each new build is net new added energy.

ENERGY CONSERVATION STRATEGIES

Long Term Planning

The ministry is committed to reviewing the existing alternate energy generation initiative with a view to its possible expansion

To improve the efficiency and performance in MTO facilities, the ministry will continue to promote energy conservation.

The ministry will continue to develop and manage energy data collection and reporting processes to help identify conservation opportunities.

New Technology:

To lessen the impact of the increased illumination and decrease maintenance requirements at CVIF facilities, more efficient LED lighting is being installed on bollards and pole mounted luminaires.

Geothermal heating and cooling has been provided for the heating and cooling systems of the new CVIF buildings. Foyers have been designed into the floor-plan to minimize airflow on exterior doors.

Buildings are pre-ducted from outside (small electrical manholes) underground into the electrical room to facilitate future solar panel installation, permitting maximum sizing of solar panels as ground mount units.

Communication and Awareness:

The Ministry of Transportation has proactively implemented a variety of communication methods to increase employee awareness of greening initiatives in its facilities.

There are a number of ‘Green Teams’ established throughout the ministry to promote greening strategies and initiatives.

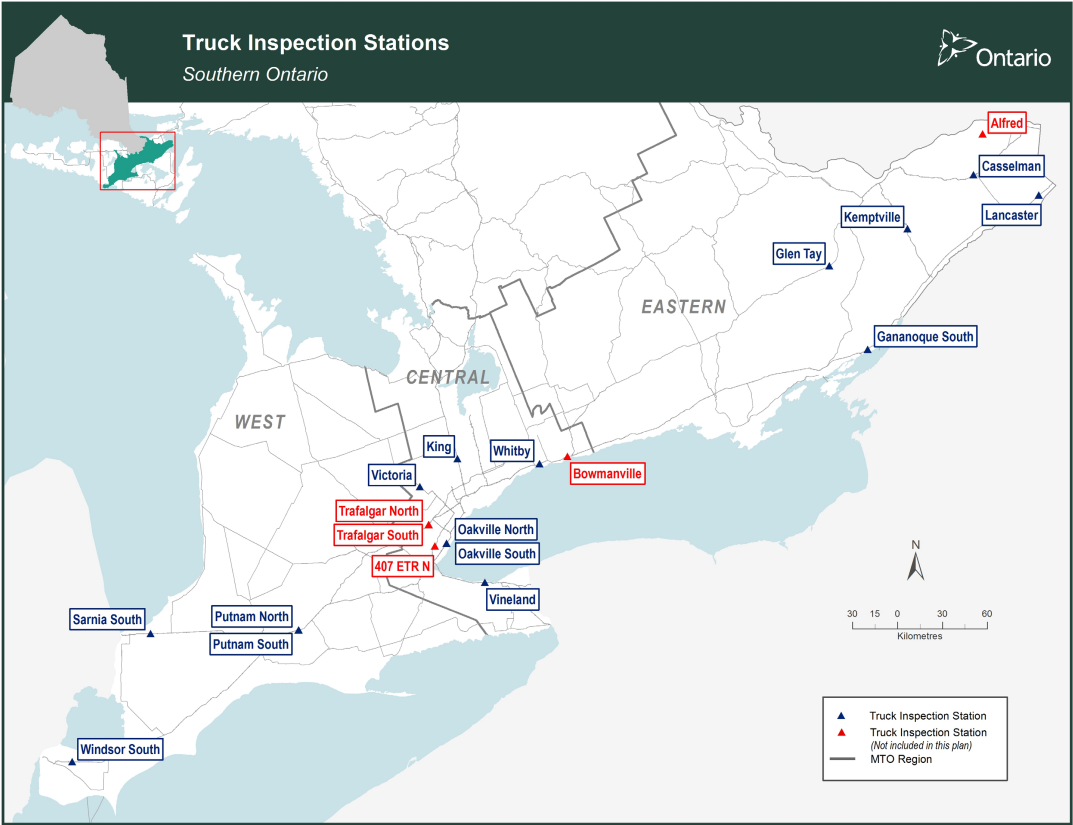
MTO is also an active participant in Earth Day and has a formal documented inter-ministerial program named ‘Sustainability inSight’³ which supports and encourages employee engagement in energy management.

APPENDICES

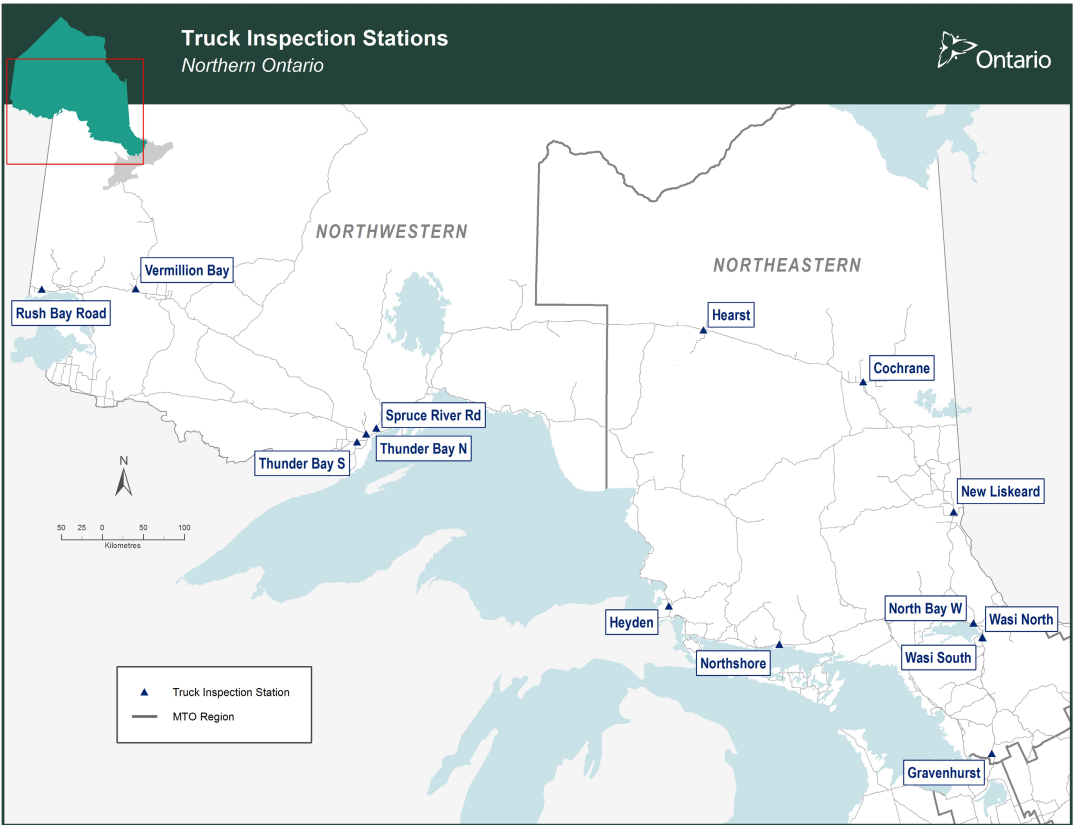
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TIS Locations – Southern Ontario



TIS Locations – Northern Ontario



Rolling Five-Year Energy Consumption Summary

Energy Performance (ekwh)	2013	2014	2015	2016	2017
Electricity	2,321,771	2,142,196	2,142,034	1,871,151	1,863,903
Natural Gas	109,520	122,106	100,088	88,910	92,112
Propane	70,338	42,825	25,599	23,981	51,459
Total	2,501,629	2,307,127	2,317,721	1,984,041	2,007,474

Rolling Five-Year Greenhouse Gas Emissions Summary

Emissions Performance (eCO ₂ tonnes)	2013	2014	2015	2016	2017
Electricity	153.2	87.8	87.7	67.4	50.9
Natural Gas	19.7	22.0	18.0	16.0	16.6
Propane	14.7	9.0	5.4	5.0	10.8
Total	187.7	118.8	111.1	88.4	78.2

Annual Energy Consumption and Greenhouse Gas Emissions Overview by Location

Location ⁴	Electricity (kwh)		Natural Gas (m ³)		Propane (litres)		GHG Emissions eCO ₂ (tonnes)	
	2016	2017	2016	2017	2016	2017	2016	2017
Windsor	231,298	188,090			2,551	1,850	12.3	8.0
Sarnia South	187,440	195,660			694		7.8	5.3
Putnam North	159,397	170,880					5.7	4.7
Putnam South	193,320	230,361					7.0	6.3
Vineland	73,757	48,615	1,270	1497			5.1	4.2
Oakville North	84,585	57,232				5,113	3.0	9.5
Oakville South	44,489	40,996	981	841			3.5	2.7
Victoria	43,732	42,216					1.6	1.2
Whitby	39,330	38,919	2,109	1651			5.4	4.2
King City	60,047	73,287					2.2	2.0
Bowmanville*								
Gananoque	58,377	59,204					2.1	1.6
Glen Tay	28,210	27,315					1.1	1.1
Kemptville	7,247	7,626					0.3	0.2
Alfred*								
Casselman	66,736	63,822					2.4	1.7
Lancaster	10,994	10,509	4,068	4,742			8.1	9.3
Heyden	65,812	91,763					2.4	2.5
Cochrane	37,015	37,894					1.3	1.0
New Liskeard	37,383	38,628					1.3	1.1
Northshore	40,935	36,600					1.5	1.1
Hearst	17,726	15,641					0.6	0.4
Red Rock*								
Spruce River Road	42,000	36,964					1.5	1.0
Thunder Bay North	23,232	22,910					0.8	0.6
Thunder Bay South	17,980	18,084					0.6	0.5
Vermillion Bay	26,602	25,900					1.0	0.7
Gravenhurst	28,417	32,559					1.0	0.7
Rush Bay Road	33,720	33,645					1.2	0.9
North Bay West	37,846	35,064					1.4	1.0
Wasi North	60,672	50,678					2.2	1.4
Wasi South	112,854	129,841					4.1	3.5
Trafalgar North*								
Trafalgar South*								
407 ETR - East*								
TOTAL	1,871,151	1,863,903	8,428	8,731	3,245	6,963	88.4	78.2
% Change	0		-4%		-115%		-11%	

¹Inspections conducted off-site or at lay-bys (temporary roadside arrangements) are outside the scope of this report as they are not considered facilities with energy saving potential.

² The Truck Inspection Station network is made up of 34 permanent sites. Previous reports indicated 33 sites but in 2016 the Kemptville site was commissioned. The report addresses energy consumption at 29 of the 34 truck inspection stations. 2 of the 5 stations (Alfred and 407 ETR - East) are not under MTO's control and are therefore out of scope. The other 3 stations (Bowmanville, Trafalgar North and Trafalgar South) are not metered separately from the highway; therefore information on actual energy consumed at these stations is not available.

³Sustainability inSight, an innovative strategy for Ontario's Ministry of Transportation focused on social, environmental and economic sustainability.

⁴ Locations marked with an asterix are either out of scope (Alfred & 407 ETR - East) or decommissioned (Red Rock) or not metered separately from Highway (Bowmanville, Trafalgar North and Trafalgar South).

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