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# EVALUATION OF THE MOTOR VEHICLE TEST CENTRE

Evaluation and Advisory Services

Transport Canada

May 2016

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## Executive Summary

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The evaluation of the Motor Vehicle Test Centre (MVTC) was conducted by Transport Canada's Evaluation and Advisory Services to support departmental decision-making and planning. Although it has been included as part of the scope of past evaluations and reviews of the Motor Vehicle Safety Program, the MVTC by itself had never been the subject of an evaluation.

The MVTC, located in Blainville, Quebec, houses facilities enabling the department to conduct testing of automotive vehicles and related equipment, including child restraints. The centre includes a structural test laboratory, environmental chambers, crash laboratory, a pedestrian laboratory, and approximately 25 kilometres of test track.

The MVTC is owned by Transport Canada, and operated under a Government-Owned Contractor-Operated contract. The contractor is PMG Technologies Inc. Under this contract, the contractor is responsible for the operations and maintenance of the MVTC, the provision of compliance and research test services, the implementation of capital projects, and the marketing of the centre to third-party clients. Transport Canada pays the contractor an amount each year for the operation and maintenance of the MVTC and retains responsibility for capital expenditures and Payment in Lieu of Taxes to the municipality. The department also pays for testing services, including a minimum annual payment to the contractor for crashworthiness and human factors research as well as compliance tests. Public Services and Procurement (PSPC) is the contracting authority and Transport Canada is the technical authority for contract management.

### Evaluation Scope and Approach

The evaluation examined the issues of relevance (continued need) and performance (effectiveness, efficiency/economy). The evaluation did not examine alternative delivery models. The evaluation focused on the period from 2009-10 to 2014-15.

The evaluation was based on 14 interviews with 20 key stakeholders, a document review, and a review of administrative and financial information. The evaluation was conducted between September 2015 and February 2016.

### Major Findings

#### *Relevance*

Transport Canada has continued to require testing to fulfill its Motor Vehicle Safety Program's compliance and research programs, and to address Government of Canada priorities and commitments, including regulatory harmonization with the United States, and participation in the Government of Canada's Clean Air Agenda, among others. As the primary site of Transport Canada's motor vehicle safety compliance and research testing, the MVTC has been used by multiple programs within the department.

While there are other facilities that can conduct some motor vehicle testing in Canada, the MVTC has capabilities that other Canadian facilities do not offer, and is the most comprehensive

facility in the country. Other testing facilities exist in the United States, although there would be additional logistics and administration associated with their use by Transport Canada, and the value of the Canadian dollar would have a significant impact on costs of their use.

### *Performance – Effectiveness*

The capabilities of the MVTC largely met Transport Canada’s testing needs during the period examined. The modernization of the MVTC as part of the Economic Action Plan improved the MVTC’s testing capabilities, particularly through allowing moving-car to moving-car crash-testing capability through expansion of the crash laboratory. The improved capability has increased the range and quality of research done by Transport Canada. A new laboratory to research pedestrian impacts, added through the modernization, had had limited use by the department at the time of the evaluation.

There is a high level of satisfaction with the testing conducted by the contractor operating the MVTC, PMG Technologies Inc., and its testing is seen as high quality and reliable by departmental and third-party stakeholders. The MVTC has effectively provided Transport Canada with the information needed to monitor industry compliance with regulations and standards, and has contributed to providing a base of information to support decision-making related to the department’s regulatory framework. The MVTC has informed research that has also been shared externally to the department on crashworthiness, and ergonomics and crash avoidance. The MVTC has also been the major site for Transport Canada’s ecoTECHNOLOGY for Vehicles II Program (eTV) (part of Transport Canada’s Clean Transportation Initiatives), and supported research related to defects.

With the motor vehicle sector experiencing a period of fundamental technological change (including related to connected / autonomous vehicle and the use of alternative fuels), strategic planning on Transport Canada’s future testing needs and required capabilities in the medium- and long-term would help to guide decisions related to the MVTC. Also, the limited number of Transport Canada staff with the technical knowledge required to manage crashworthiness research at the MVTC is a risk to the department in managing crashworthiness research testing at the current level.

Some issues were noted with the oversight of MVTC operations. The contract in place during the evaluation period did not require the contractor to provide information that would improve departmental planning, including information related to the level of utilization of the various testing facilities at the MVTC. The MVTC has experienced past issues related to a lack of shared understanding between the department and the contractor of some contract terms, and the need for shared protocols related to communication and information exchange between MVTC Operations and the contractor. Additional forums for formal communication, and additional support for contract management from PSPC, have been added to improve oversight and management.

Issues were also noted with regard to the planning and management of capital projects, which contributed to variances between planned and actual capital expenditures in each of the years examined. The evaluation also noted that a systematic and comprehensive approach to asset and materiel management was a recognized gap, and more knowledge was needed related to this area and real property management.

### *Performance – Efficiency/Economy*

Total Transport Canada costs for the MVTC saw fluctuations, by year. Capital costs remained significant over the entire period, while Payment in Lieu of Taxes (PILT) and payments to the contractor for operations and maintenance saw an increase over the period. PILT increases had resulted from the increased value of the MVTC due in part to capital improvements over the period, while payments to the contractor for operations and maintenance were indexed to the Consumer Price Index.

Transport Canada receives a credit from the contractor for revenues from third-party use of the MVTC. This credit increased each year of the period examined due to increased third-party usage of the MVTC, and was **{ATIP REMOVED}** in 2014-15. However, this credit covered only **{ATIP REMOVED}** for the entire period. Potential ways to offset more of the costs of the MVTC should be explored, including increasing the credit rate for third-party revenues it receives under any future contracts.

### **Recommendations**

The evaluation includes three recommendations:

- Recommendation #1    Transport Canada should complete a strategic plan for the MVTC.
- Recommendation #2    Transport Canada should strengthen and undertake a more proactive role in its oversight of the MVTC.
- Recommendation #3    Transport Canada should examine ways to improve the cost-effectiveness of the MVTC, including through increasing the rate of credit it receives from third-party revenues.

### Overview of the MVTC

In support of Transport Canada's Motor Vehicle Safety Program, the Motor Vehicle Test Centre (MVTC), located in Blainville, Quebec, houses facilities enabling the department to conduct testing of automotive vehicles and related equipment. The objectives of the MVTC are to:

- Assess motor vehicles, child seats and booster seats on their compliance with current safety regulations and standards;
- Identify gaps in existing regulations and provide the scientific basis for the development of new regulations and standards to meet the evolving safety needs of Canadians; and
- Conduct ad-hoc testing to address suspected safety issues.

The MVTC was established by Transport Canada in 1978 on land previously owned by National Defence. The centre was operated by Transport Canada until 1996, at which time operation was transferred to PMG Technologies Inc. under the terms of a Government-Owned Contractor-Operated (GOCO) contract. In October 2007, Transport Canada signed a new contract with PMG Technologies Inc. for five years, with two optional five-year extensions possible. At the time of the evaluation, PMG Technologies Inc. was operating under the first of these optional contract extensions (from 2012-2017).

### MVTC Facilities

The MVTC site consists of approximately 545 hectares of land, six main buildings (including office space, common areas and laboratory facilities), and test tracks. The laboratory facilities and track consist of:<sup>1</sup>

- A structural test laboratory – including a chassis dynamometer, a vehicle test structure that applies large forces to a vehicle, a pendulum, a four-section vehicle scale, vehicle preparation area, computer and electronics laboratories, a machine shop, storage, and offices.
- Environmental chambers – including a chamber that can accommodate large transport vehicles, helicopters or small planes, and a small chamber that can accommodate a passenger vehicle.
- Crash laboratory – including test tracks and impact wall; an acceleration sled for testing crash-test dummies, child seats and other vehicle components; a track propulsion engine; a static rollover test device (for testing tipping point); a vehicle rollover test device; and other areas for testing and preparation.
- Pedestrian laboratory – a hydraulic impact system for conducting tests on impacts on pedestrians.
- Test tracks – approximately 25 kilometres of test track, including high-speed and low-speed tracks, a vehicle dynamic test area, an off-road track, a brake test area, and other testing areas.

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<sup>1</sup> Adapted from Transport Canada's Motor Vehicle Test Centre Environmental Scan (2013).

## Roles and Responsibilities

Roles and responsibilities related to the MVTC are outlined as follows:<sup>2</sup>

- **Transport Canada** is the owner of the property of the MVTC (including the land, facilities and equipment), and has ultimate authority for the use of the facility and grounds, as well as the work that is conducted within the MVTC.
- Transport Canada's **Motor Vehicle Safety Directorate** has funding and financial responsibility for Transport Canada's expenditures related to the MVTC.
- Within the Motor Vehicle Safety Directorate, and other areas of the department as required, **individual Transport Canada programs** determine their compliance and research testing needs, as well as the details associated with individual tests. While tests are conducted by the contractor, they are responsible for ensuring tests meet their needs.
- A small team of Motor Vehicle Safety Directorate staff members, **MVTC Operations**, is located at the MVTC, and is responsible for ensuring that the MVTC maintenance and operations are undertaken according to the terms of the contract. This team is also responsible for developing, in consultation with the contractor and other Transport Canada programs, the capital plans for repairs and upgrades to the facility, tracking capital projects, and monitoring financial aspects of the MVTC.
- **The contractor** is responsible for the operations and maintenance of the MVTC, the implementation of capital projects, and the provision of compliance and research testing services. It is also responsible for marketing the MVTC to attract third-party clients.
- **Public Services and Procurement Canada** (formerly Public Works and Government Services Canada) is the contracting authority, responsible for contract negotiations and amendments, as well as the provision of advice related to fiduciary elements.

## MVTC Expenditures

Under the terms of the contract, Transport Canada pays the contractor a fixed amount each year towards the costs of operating and maintaining the facilities and equipment. Transport Canada bears the costs of capital projects and Payment in Lieu of Taxes (PILT) (i.e., municipal taxes).

Capital projects at the MVTC generally include: 1) construction projects for the development of testing capability and for the upkeep of the facilities; 2) the purchase of testing equipment; and 3) the purchase of equipment required for the general operation of the facilities.

In addition to contract payments, capital costs and PILT, Transport Canada pays the contractor for testing done at the MVTC, based on predetermined rates for compliance tests (per test) and research (by hour), with a minimum annual payment to the contractor. For vehicle testing, Transport Canada purchases vehicles through its Fleet Operations unit, which is responsible of

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<sup>2</sup> Adapted from Kelly Sears' Governance Review Responsibility Matrix, 2014.



the life-cycle management of all vehicles procured in the Motor Vehicle Safety Directorate for testing purposes, including purchase, inspection, delivery, maintenance and disposal.

For testing done at the MVTC for third-party clients (i.e., clients other than Transport Canada), the contractor credits Transport Canada with the greater of 1) a guaranteed annual credit, or 2) a proportion of the gross revenues from these parties based on the amount of revenues from third-party usage accrued each year, between 16 % and 20 %.<sup>3</sup> Use of the MVTC by third-party clients helps offset the costs to the department of the MVTC and support's the contractor's financial sustainability.

Table 1 provides an overview of Transport Canada's MVTC-related expenditures from 2009-10 to 2014-15.

**Table 1: Transport Canada Expenditures Associated with MVTC, 2009-10 to 2014-15, \$ millions**

	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	Total
<b>Vote 1 – Operating Expenditures</b>							
<b>Transport Canada Salaries<sup>1</sup></b>	<b>0.16</b>	<b>0.23</b>	<b>0.15</b>	<b>0.22</b>	<b>0.25</b>	<b>0.25</b>	<b>1.28</b>
<b>Other Operating Costs:</b>	<b>9.84</b>	<b>7.92</b>	<b>6.99</b>	<b>7.10</b>	<b>9.75</b>	<b>8.95</b>	<b>50.55</b>
Payment In Lieu of Taxes	0.41	0.53	0.66	0.68	0.70	0.71	3.69
TC Other Internal Costs <sup>2</sup>	0.02	0.02	0.01	0.02	0.04	0.03	0.13
TC Testing	4.01	2.84	2.50	2.03	3.40	3.04	17.83
Vehicle Purchases	2.96	1.97	1.14	1.63	2.80	2.32	12.82
<b>Vote 5 – Capital Expenditures</b>							
General Purpose	2.19	1.70	0.37	0.75	1.67	2.05	8.74
Crashworthiness	4.89	10.75	1.33	2.02	2.60	1.33	22.92
Crash Avoidance	0	0	0	0	0.15	0.29	0.44
Compliance	0.09	0.06	0	0	0	0	0.15
<b>Total Vote 5 – Capital Expenditures</b>	<b>7.18</b>	<b>12.51</b>	<b>1.70</b>	<b>2.77</b>	<b>4.42</b>	<b>3.68</b>	<b>32.25</b>

<sup>1</sup> Includes Employee Benefit Plan.

<sup>2</sup> Transport Canada costs for legal services, consultation services, travel, training, information technology, etc.

\* Numbers may not add up to total due to rounding.

<sup>3</sup> Currently 20% of gross revenue for work of \$1 million or less a year, 18% for work over \$1 million but less than or equal to \$2 million a year, and 16% for work over \$2 million a year.

The most significant capital expenditures during the evaluation period were for projects funded under an Economic Action Plan initiative, the Modernization of Federal Laboratories:

1. Replacement and updating of the propulsion system and acceleration ramp for crash-testing;
2. A new laboratory space to house a Vulnerable Road User (VRU) Laboratory, referred to as the “pedestrian lab”; and
3. Replacement of road infrastructure.

These projects were funded under Budget 2009 at a cost of \$14.2 million over two years (\$4.5 million in 2009-10 and \$9.7 million in 2010-11).

## About the Evaluation

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The evaluation of the MVTC was conducted by Transport Canada's Evaluation and Advisory Services (EAS) to support departmental decision-making and planning. The evaluation was also conducted to help fulfill the department's requirement under the Treasury Board *Policy on Evaluation* (2009) that all direct program spending be evaluated. Although it has been included as part of the scope of past evaluations/reviews of the Motor Vehicle Safety Program, the MVTC by itself had never been the subject of an evaluation.

The evaluation was conducted between September 2015 and February 2016.

## Evaluation Scope

In accordance with Treasury Board's *Policy on Evaluation*, the evaluation examined the issues of relevance and performance. Under relevance, the evaluation examined the continued need for the MVTC. Under performance, the evaluation examined MVTC effectiveness—the MVTC's capabilities, compliance and research results, and oversight of MVTC operations—and economy/efficiency. The evaluation did not look at alternative delivery models for the MVTC.

The evaluation focused on activities conducted at the MVTC from 2009-10, when modernization of the facility as part of the Economic Action Plan began, through to 2014-15.

It should be noted that, under the issue of relevance, the evaluation did not collect new information on the alignment of the MVTC with government priorities (Core Issue #2 in the Treasury Board's *Directive on the Evaluation Function*) or with federal roles and responsibilities (Core Issue #3). Documents reviewed as part of evaluation planning demonstrated the MVTC's alignment in these areas:

- The MVTC supports activities clearly aligned with departmental strategic outcomes. The MVTC is the site of compliance and research testing that directly supports the Motor Vehicle Safety Program under Strategic Outcome #3 – a Safe and Secure Transportation System. The MVTC has also facilitated research in support of Strategic Outcome #2 – a Clean Transportation System. (Core Issue #2)
- New funding for MVTC modernization under Budget 2009 demonstrated that the facility was a federal priority during the period examined. (Core Issue #2)
- Section 20(1) of the *Motor Vehicle Safety Act* states that the Minister of Transport may “establish and operate facilities for the testing of vehicles, equipment and components, and acquire test equipment for that purpose”<sup>4</sup>, demonstrating alignment of the MVTC with federal roles. (Core Issue #3)

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<sup>4</sup> *Motor Vehicle Safety Act*, Section 20(1). Retrieved at: <https://www.tc.gc.ca/eng/acts-regulations/acts-1993c16.htm> .

## Evaluation Methodology

The evaluation included the following lines of inquiry:

- **Document review** – The evaluation examined relevant program documents, and background and contextual information. This included: previous reviews, evaluations and audits; foundational documents; briefing notes; contracts; external client satisfaction survey results; and a selection of documents on motor vehicle technologies and testing facilities.
- **Administrative and financial data analysis** – The evaluation examined program administrative documents and MVTC financial information, and compiled available information on MVTC activities and outputs in consultation with program areas making use of the MVTC.
- **Interviews** – 14 interviews with a total of 20 participants were undertaken with key stakeholders of the MVTC, including: 1) Transport Canada staff and managers involved in the MVTC oversight or who have been involved in compliance or research testing at the facility; 2) the contractor; 3) Public Services and Procurement staff; and 4) selected stakeholders external to the department familiar with the MVTC, including from private industry and the US Department of Transportation.

## Evaluation Consideration

At the time of the evaluation, there were gaps in existing performance information on the MVTC. Performance measurement of the MVTC was an area identified in a 2015 Stewardship and Oversight Review, and recognized by the department, as requiring further attention. To mitigate this weakness, the evaluation of the MVTC was undertaken concurrently with the development by EAS of a Performance Measurement Strategy for the MVTC to inform future performance monitoring and reporting.

## Evaluation Findings: Relevance – Continuing Need

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**Finding 1:** There is a need for Transport Canada to conduct testing to complete its compliance and research program, and the MVTC has been the primary site to meet this need.

The legislated ability to conduct compliance and research testing is set out in the *Motor Vehicle Safety Act*, which states that the Minister may conduct any research, studies, evaluation and analyses considered necessary for the administration and enforcement of the Act, and undertake research and development programs (*Motor Vehicle Safety Act*, Section 20(1)).

### **Compliance Testing**

Responsibility for complying with the Canada Motor Vehicle Safety Standards rests with manufacturers, who conduct their own testing to self-certify their vehicles and equipment.<sup>5</sup> To provide additional assurance that manufacturers are complying with the standards and not sacrificing safety, Transport Canada's Motor Vehicle Safety Program conducts compliance tests each year on a sample of vehicles and child seats sold in Canada. Instances of demonstrated non-compliance can result in significant financial and potentially legal consequences for manufacturers.<sup>6</sup> Program stakeholders indicated that manufacturers' awareness of Transport Canada's testing program contributes to a high rate of manufacturer compliance.

The scope of compliance testing has increased in recent years. There has been an increase in the importation of vehicles and regulated equipment, more companies becoming involved in manufacturing, and an increasing complexity of new motor vehicle technology.<sup>7</sup> For example, the number of manufacturers of vehicles and other regulated equipment required to adhere to the *Motor Vehicle Safety Act* quadrupled between 1995 and 2004.<sup>8</sup>

According to Transport Canada's Compliance Engineering, Vehicle and Equipment Testing group, over 95% of the department's motor vehicle compliance testing budgets are spent at the MVTC. The remainder is spent on contracting specialized compliance testing services conducted at private facilities in the United States.

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<sup>5</sup> Canada Motor Vehicle Safety Standards (CMVSS) are sections within the Motor Vehicle Safety Regulations, Motor Vehicle Restraint Systems and Booster Seat Safety Regulations, and the Motor Vehicle Tire Safety Regulations, under the *Motor Vehicle Safety Act*.

<sup>6</sup> Issues of non-compliance of vehicles are resolved in collaboration with the manufacturers, or through administering warnings, administrative actions or other enforcements actions as set out in the *Motor Vehicle Safety Act*. Public Notices or Consumer Information Notices are issued when compliance issues are identified in child restraints.

<sup>7</sup> PricewaterhouseCoopers. Transport Canada – Review of the Road Safety and Motor Vehicle Regulation Directorate – Final Report. 2011. P.35.

<sup>8</sup> PricewaterhouseCoopers. Transport Canada – Review of the Road Safety and Motor Vehicle Regulation Directorate – Final Report. 2011. P.32.

Over the evaluation period, a total of 1,531 compliance tests were conducted for Transport Canada at the MVTC, including 1,116 vehicle-related tests and 415 tests on child seats. Vehicle-related testing generally covered four categories of tests: climate chamber and environmental testing, track testing, collision testing, and structural tests. Child seat testing includes dynamic testing, buckle release testing, energy-absorbing material testing, and inversion testing.

### ***Research Testing***

In addition to compliance testing, the Motor Vehicle Safety Program has required testing to conduct research in two main areas of study:

- Crashworthiness, which examines the ability of vehicles, and related equipment like child seats, to protect occupants during a crash; and
- Ergonomics and crash avoidance, which examines how vehicle design and human factors affect the occurrence of crashes.

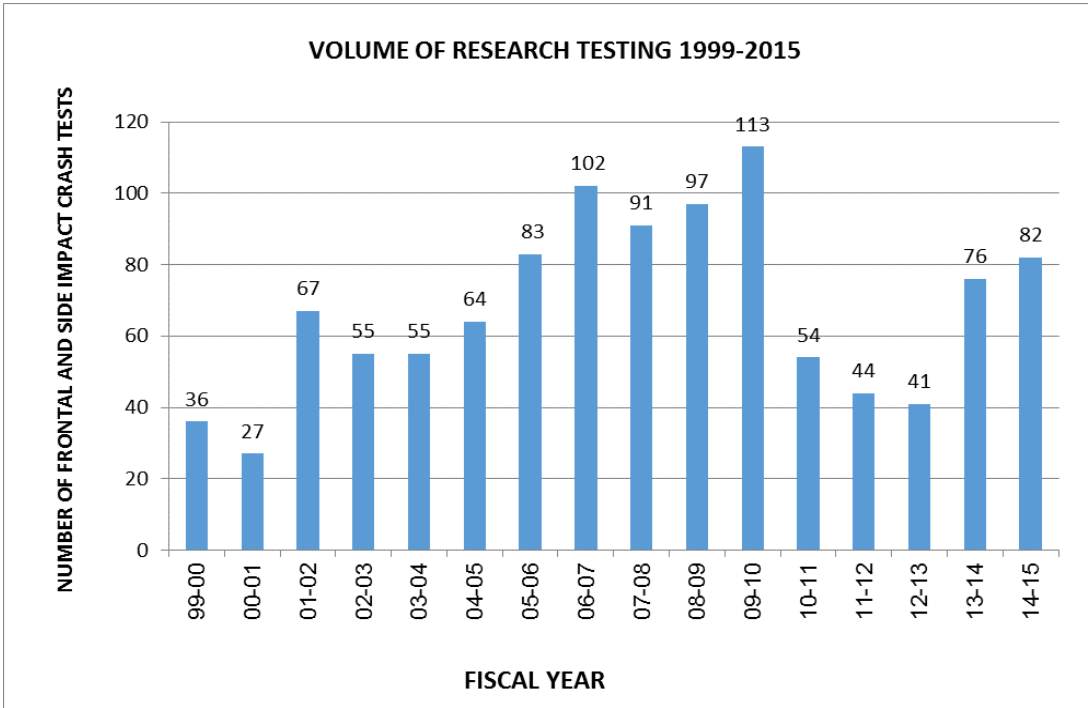
The primary purpose of this research is to determine the need for Transport Canada to develop new, or update existing, regulations and safety standards. It also provides key information for the content of these new requirements. This research is carried out to examine how well motor vehicles and related equipment are performing, and how testing can best be undertaken (including, for example, testing the effectiveness of crash-test dummies). In turn, this contributes to the safety of Canadians.

Moreover, motor vehicle and equipment testing also supports the harmonization of regulations with American and other international regulatory frameworks. Testing supports Canada's involvement in the Regulatory Cooperation Council to harmonize safety requirements between Transport Canada and the US National Highway Traffic Safety Administration (NHTSA), and efforts with other regulatory bodies to develop global vehicle safety regulations following Canada's signing of the "1998 Agreement", a United Nations Economic Commission for Europe (UNECE) treaty. Testing is conducted to ensure that harmonization is appropriate for the Canadian context and ensures the safety of Canadians. For example, research may include testing on snowy surfaces or in cold temperatures typical of Canada.

#### *Crashworthiness Research*

All of Transport Canada's crashworthiness research testing is conducted at the MVTC. Figure 1 shows the number of frontal and side impact crash-tests conducted for Transport Canada at the MVTC from 1999-00 to 2014-15. In total, 1,087 crash-tests were conducted over the 16-year period, with an average of 68 tests a year. According to Crashworthiness Research, the drop in number during 2010 to 2013 was due to the temporary shutdown required for the laboratory modernization and due to budgetary reasons.

**Figure 1: Number of MVTC Frontal and Side Impact Crash Tests Conducted for Transport Canada, 1999-00 to 2014-15**



Source: Transport Canada, Crashworthiness Research

In addition to crash-tests, Crashworthiness Research also performed between 15-20 sled tests<sup>9</sup> per year, except in 2011 when 90 sled tests were conducted for a project undertaken in cooperation with the Children’s Hospital of Philadelphia.

*Ergonomics and Crash Avoidance Research*

The MVTC is the site of Transport Canada’s crash avoidance research testing. Table 2 provides information on ergonomics and crash avoidance tests conducted at the MVTC from 2009 to 2015. As shown, the group conducted 4,357 tests over the period.

<sup>9</sup> Sled testing offers a way to test products in simulated crash conditions, without the expense of having to crash a full vehicle.

**Table 2: Ergonomics and Crash Avoidance Research Tests at MVTC, 2009 to 2015**

Project	Description	Tests
15-passenger van / student transportation research	Phase I: Braking and static rollover testing	Emergency Stopping Distance: 70 tests Static Stability Factor: 84 tests  Tested 7 minivans and buses
	Phase II: Dynamic testing	Three dynamic methods (Step-input Steer, Sine with Dwell and Fishhook): 800 tests  Tested 3 minivans and buses
Crash mitigation braking research program	5 test configurations per vehicle and evaluating 2 different targets	1,357 tests  Tested 6 passenger vehicles
	4 test configurations per vehicle and evaluating 2 different targets	Approximately 2,000 tests  Tested 18 passenger vehicles
Electronic stability control research	Canadian Motor Vehicle Safety Standard 126	18 tests  Tested 6 passenger vehicles
Visibility-driver field of view	Measuring field of view using Faro arm at test center	28 tests  Tested 14 passenger vehicles

Source: Transport Canada, Ergonomics and Crash Avoidance

**Finding 2: While there are other facilities that can conduct some motor vehicle testing, the MVTC has capabilities that other facilities in Canada do not offer and is the most comprehensive facility in the country. Other testing facilities exist in the US, although there would be additional logistics and administration associated with Transport Canada’s use of these facilities.**

The evaluation did not conduct a full technical review of the capabilities of all of Canada’s testing facilities compared with the capabilities needed by Transport Canada to conduct its compliance and research programs. However, an environmental scan conducted by Transport Canada in 2013<sup>10</sup>, an Internet scan, and interviews suggested that the MVTC has capabilities that are unique in Canada. For example, only the MVTC can conduct moving-car to moving-car oblique crashes, and the MVTC is the only facility that can conduct child seat compliance testing in Canada. Furthermore, no other facility has the same range of testing capabilities in one centre.

Other Canadian facilities offer some testing capabilities that could be accessed by Transport Canada for certain types of testing. Private research and development facilities include, for example, the Hanna Test Centre in Alberta, and MGA Research Corporation laboratory in Mississauga, Ontario. These facilities include environmental chambers, some vehicle structure testing, and limited dynamic vehicle testing capabilities. In addition, facilities run or funded by governments include the Western Canada Testing Inc. in Manitoba and Saskatchewan, and the

<sup>10</sup> Transport Canada Road Safety Programs. Motor Vehicle Test Centre Environmental Scan. 2013.



Centre de Recherche Industrielle du Québec. Other federal research facilities are operated by the National Research Council and others.

Some research and testing facilities can also be found at Canadian universities, many focused on intelligent and green technology research. For example:

- The University of Waterloo has a crash sled and an impact barrier, and has announced a new research facility for intelligent green cars;<sup>11</sup>
- The University of Ontario (Oshawa) has an environmental chamber;
- The University of Alberta and the University of British Columbia are, together, developing test beds on vehicle information technology and connected vehicle technology and research; and
- The University of Windsor has research facilities examining clean diesel engine technologies.

According to interviews, the capacity for motor vehicle testing and research within universities is more limited in Canada than in the United States, where there has been more collaboration between universities, motor vehicle manufacturers, and the US Department of Transportation (US DOT). Interviews and documents suggest that, if an alternative to the MVTC was sought to fulfill Transport Canada's testing and capacity needs in Canada, there may need to be growth in university and private-sector testing capacity.

In the US there are numerous testing facilities including the Transportation Research Center, the Insurance Institute for Highway Safety, private testing facilities, and many other university-based facilities able to conduct motor vehicle-related research. The US DOT's NHTSA conducts its compliance program using more than 20 various contractors. Transport Canada's use of these facilities would have to take into consideration logistical issues and costs related to, among other issues, shipping vehicles across the border. The value of the Canadian dollar would have a significant impact on the cost of their use. Finally, the amount of administration related to contracting and contract management would need to be considered.

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<sup>11</sup> University of Waterloo. "University of Waterloo announces new research facility". Retrieved at: <https://uwaterloo.ca/news/news/university-waterloo-announces-new-research-facility>

## Evaluation Findings: Performance – Effectiveness

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The evaluation examined the effectiveness of the MVTC in three areas:

- MVTC capabilities;
- Compliance and research testing results; and
- Oversight of MVTC operations

### Effectiveness – MVTC Capabilities

**Finding 3: The modernization of the MVTC has improved its testing capabilities, particularly through allowing moving-car to moving-car crash-testing. The pedestrian laboratory has had limited use by Transport Canada, however.**

The evaluation examined the modernization of the MVTC undertaken through projects funded under the Economic Action Plan.

The new **propulsion system and acceleration ramp** replaced aging equipment and expanded the capabilities of the MVTC. This included allowing for new capacity to:

- Undertake moving-car to moving-car collisions in frontal and side impact;
- Test low-profile vehicles (with minimal ground clearance); and
- Increase test speed capacity.

Between 2011-12 and 2014-15, an average of 15 moving-car to moving-car crash-tests using this new capability were undertaken each year to support various research projects. For example, crash tests were undertaken as part of a cooperative program with the Ontario Provincial Police to evaluate the crashworthiness of police cruisers, and with Transport Canada's Environmental Programs to evaluate the crashworthiness of alternative-fuel vehicles. The new capability was used to evaluate the frontal offset barrier newly proposed by NHTSA, and a new crash-test dummy, THOR, being proposed by NHTSA.

The moving-car to moving-car crash-testing capability has increased the range and quality of research that can be done at the MVTC. It afforded Transport Canada the ability to conduct research on the impact of crashes on vehicle's rear occupants, which was seen as an important area of new research by the program. It was also noted by the program that the new crash-testing capability permitted the department to carry out highly representative crash reconstructions, and improved the available data from event data recorders on airbag deployment for defect investigations. Several internal and external stakeholders noted that the new crash-testing capabilities turned the facility into a world-class facility.

The **pedestrian laboratory** was expected to provide the capability to evaluate proposed pedestrian test methods including advanced instrumentation used in the measure of injury risk to pedestrians and cyclists. The pedestrian laboratory was used by Transport Canada for research related to Canada's adoption of a US standard on ejection mitigation (Standard 226), as part of ongoing regulatory harmonization. No other use of the pedestrian laboratory by the department was noted. It was suggested in interviews that more Transport Canada research

staff resources would have been necessary to undertake additional research using this laboratory.

**Road infrastructure** was replaced to update the road network and aqueduct, which were more than 30 years old at the time of the modernization and in need of replacement to ensure the safety of personnel and to protect motorized equipment circulating on the roads.

Overall, interviews suggested that the modernization of the MVTC contributed to attracting private clients to the MVTC and raised the profile of the facility. For example, following the modernization, the MVTC was awarded the “Crash Test Facility of the Year” in 2012 by the industry publication Automotive Testing Technology International.<sup>12</sup>

**Finding 4: The capabilities of the MVTC largely met Transport Canada’s needs during the period examined.**

Overall, Transport Canada users indicated that the capabilities of the MVTC have largely met their testing needs.

All compliance testing can all be conducted at the MVTC, with the exception of the testing of lights, tires, and brake fluid. The conduct of these tests at other facilities was not felt to constitute a gap in MVTC capabilities given that these are highly specialized tests and were a small portion of Transport Canada’s total compliance testing.

Users of the MVTC for research were positive about the capabilities during the period examined. Interviewees identified a few capabilities that did not exist at the MVTC that would have been useful:

- The ability to undertake crash-testing outside, in order to allow for testing of vehicles containing liquids and chemicals like Liquefied Natural Gas, and hydrogen fuel cells. (New funding for an outside crash barrier was subsequently provided as part of Budget 2016);
- Equipment for testing electronic stability control for trucks;
- A track ISO-certified to ensure it is sufficiently quiet to test for noise levels; and
- A facility to store and manage batteries of electric vehicles to meet safety and environmental standards.

**Finding 5: The limited number of Transport Canada staff with knowledge related to crashworthiness research is a risk to the department sustaining its success in using the centre for this type of testing.**

The evaluation found that the limited number of Transport Canada staff with knowledge of crashworthiness research is a risk to the effective use of the MVTC. Although the contractor undertakes the actual testing, Transport Canada staff work closely with the contractor to ensure that testing is appropriate to address its research questions. There is a need for Transport Canada staff members to understand the technical capabilities of the MVTC to develop research

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<sup>12</sup> Automotive Testing Technology International. “2012 Awards winners announced”. Retrieved at: <https://www.automotivetestingtechnologyinternational.com/articles.php?ArticleID=470> .

projects, and to undertake research in new areas of inquiry. At the time of the evaluation, there was one Transport Canada Full-Time Equivalent conducting crashworthiness research for the department.

There is a risk for the department that a lack of technical resources within the department could result in the MVTC being under-utilized and future research programs not being completed. Future losses in capacity could also result in an over-reliance on the contractor's technical knowledge, and would be a risk to making informed decisions on capital planning related to crashworthiness research.

**Finding 6: The sector is in the midst of a period of significant technological change, which will have an impact on future testing needs in the medium- and long-term. Strategic planning would help to guide future planning related to the MVTC.**

Motor vehicle technology is in the midst of a period of rapid and fundamental change, which is expected to continue. This includes significant advancements in the area of connected vehicles, vehicle automation, the development of autonomous (i.e., self-driving) vehicles,<sup>13</sup> and related vehicle cyber-security. Other changes include more alternative-fuel vehicles, including electric vehicles, hybrids, fuel cells, compressed and liquid natural gas, liquid propane, and hydrogen. Many of these technologies have not been extensively tested.<sup>14</sup> The Motor Vehicle Safety Program's US counterpart, NHTSA, concluded, in its Priority Plan, that it views the new technologies emerging in the next 10 to 20 years as perhaps the most fundamental shift in drivers' relationship with their vehicles in 100 years.<sup>15</sup>

While recognizing the ongoing importance of crashworthiness research, NHTSA has anticipated that research in crash avoidance will play an increasing role in motor vehicle safety. Planning for this new emphasis has already begun in the US, where a new authority, the *Moving Ahead for Progress in the 21<sup>st</sup> Century Act* (MAP 21), was approved by Congress to allow the government to work collaboratively with vehicle manufacturers and suppliers on crash avoidance. NHTSA is also undertaking an examination of its needs and available capabilities related to crash avoidance research. Transport Canada will similarly need to determine how its crash avoidance testing will change and grow in the future.

These technological changes are sparking competition and innovation in different jurisdictions related to the testing of vehicles and new technologies, including in Ontario<sup>16</sup> as well as in the

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<sup>13</sup> Anderson, James M *et al.* Autonomous Vehicle Technology: A Guide for PolicyMakers. RAND Corporation 2014. Retrieved at: [http://www.rand.org/content/dam/rand/pubs/research\\_reports/RR400/RR443-1/RAND\\_RR443-1.sum.pdf](http://www.rand.org/content/dam/rand/pubs/research_reports/RR400/RR443-1/RAND_RR443-1.sum.pdf)

<sup>14</sup> National Highway Traffic Safety Administration. "Overview of NHTSA Priority Plan for Vehicle Safety and Fuel Economy, 2015 to 2017". P.21.

<sup>15</sup> National Highway Traffic Safety Administration. "Overview of NHTSA Priority Plan for Vehicle Safety and Fuel Economy, 2015 to 2017". P.3.

<sup>16</sup> Ontario Ministry of Transportation. "Ontario First to Test Automated Cars on Roads in Canada: Province Supports Innovation in Transportation Technology." Newsroom, October 13, 2015. Retrieved at: <https://news.ontario.ca/mto/en/2015/10/ontario-first-to-test-automated-vehicles-on-roads-in-canada.html>

US, United Kingdom,<sup>17</sup> and Japan.<sup>18</sup> The US, for example, has recently seen collaboration between the University of Michigan, the Michigan Department of Transportation, and automakers, in the development of a 23-acre mini metropolis where autonomous cars can be tested.<sup>19</sup> In Canada, there is also an expanding range of research and testing being undertaken at universities in areas such as connected, autonomous, and intelligent vehicles, including at the University of Waterloo,<sup>20</sup> the University of Alberta, and the University of British Columbia.<sup>21</sup>

These changes will require planning and priority setting with regard to the testing capabilities that Transport Canada will require to meet its testing needs in the longer-term (e.g., 5- to 10-year horizon), and what role Transport Canada and the MVTC should optimally play in this testing. This would include identifying future and potential testing needs, determining to what extent these needs can/should be met at the MVTC, and what changes at the MVTC (in terms of capabilities, equipment, capacity) may be required, if any. At the time of the evaluation, capital projects at the MVTC were identified through the departmental Five-Year Investment Plan process; however, strategic and systematic planning and visioning would help to guide these decisions.

As part of this exercise, Transport Canada could also assess whether it would be possible and appropriate for the MVTC to take on additional roles in supporting innovation in motor vehicle technologies, including through acting as a site for development and testing of new technologies. Such an assessment should be undertaken in consultation with other potential stakeholders/partners, including industry, universities, Natural Resources Canada, the National Research Council, the Natural Sciences and Engineering Research Council (NSERC),<sup>22</sup> and others. This would align with the 2015 *Canada Transportation Act Review*, which recommended that Transport Canada develop a long-term action plan for transportation technologies and innovation, and that an innovation lens be brought to future federal infrastructure investment decisions.<sup>23</sup>

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<sup>17</sup> Department of Transport (United Kingdom). *The Pathway to Driverless Cars: Summary Report and Action Plan*. February 2015. Retrieved at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/401562/pathway-driverless-cars-summary.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/401562/pathway-driverless-cars-summary.pdf)

<sup>18</sup> Young, Angelo. *Self-Driving Cars: Japan Wants to International Business Times*, February 26, 2015. Retrieved at: <http://www.ibtimes.com/self-driving-cars-japan-wants-establish-global-standard-autonomous-vehicle-technology-1829404>

<sup>19</sup> Naughton, Keith and J. Green. "Crash-Testing Driverless Cars in a Robot City." *Bloomberg Business*, April 2, 2015. Retrieved at: <http://www.bloomberg.com/news/articles/2015-04-02/driverless-car-test-city-in-michigan-will-have-robot-pedestrians>.

<sup>20</sup> University of Waterloo. "University of Waterloo announces new research facility for intelligent green cars". Retrieved at: <https://uwaterloo.ca/news/news/university-waterloo-announces-new-research-facility>

<sup>21</sup> University of Alberta. *Centre for Smart Transportation – Facilities*. Retrieved at: <http://www.transportation.ualberta.ca/en/Research/Facilities.aspx>

<sup>22</sup> For example, NSERC created the Developing Next-generation Intelligent Vehicular Networks and Applications (DIVA) Network to develop new vehicular technologies and applications.

<sup>23</sup> Minister of Transport. *Canada Transportation Act Review Report – Pathways: Connecting Canada's Transportation System to the World*. 2015. P.82.

Transport Canada’s strategic planning would benefit from the department conducting a thorough and detailed environmental scan of the testing facilities available for use by Transport Canada. While an environmental scan was undertaken in 2013 to provide information on Canadian motor vehicle testing facilities, it did not systematically assess the capabilities of these facilities against the specific technical needs of the department. For example, it is not clear to what extent other available facilities are (or could be) equipped to test against the specific requirements of the Canada Motor Vehicle Safety Standards.

## **Effectiveness – MVTC Compliance and Research Testing Results**

**Finding 7: There is a high level of satisfaction with the testing conducted by the contractor at the MVTC.**

The MVTC is viewed as a first-rate testing facility by Transport Canada users, third-party users and among international stakeholders in the field. This was evident from interviews with internal users, Transport Canada client surveys conducted previously by the program, as well as a survey of third-party users completed for the contractor by a survey consultant.

Transport Canada users of the facility singled out several aspects of the contractor’s testing services for praise, including:

- The technical knowledge and expertise of the contractor;
- The professionalism, dedication and efficiency of the staff;
- The flexibility and responsiveness of the contractor in making adjustments to the work activities performed, as needed; and
- The quality of the data received from testing (including the video footage) and the quality of the instrumentation.

Some users noted delays with the scheduling of some testing, as the contractor tries to accommodate the needs of both Transport Canada and its third-party users.

A 2011 client satisfaction survey of 56 third-party clients, conducted for the contractor by a private survey company, found high levels of satisfaction. Ninety-eight percent (98%) of survey respondents indicated that they were satisfied or very satisfied with their experience with the MVTC. In evaluation interviews, international stakeholders familiar with the MVTC also indicated that the testing was high quality and the contractor was delivering competent and professional testing services.

**Finding 8: The MVTC has effectively provided Transport Canada the information it has needed to monitor industry’s compliance with regulations and standards.**

The MVTC has provided Transport Canada the information it has needed to undertake oversight and enforcement activities. As a result of the testing, the Compliance Engineering, Vehicle and Equipment Testing group was able to identify both safety-related and non-safety-related non-compliance cases<sup>24</sup> and conduct follow-up actions, such as an issuance of notice of non-compliance, a recall or a production change. Table 3 below shows the tracking of non-compliance issues identified as a result of vehicle compliance testing.

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<sup>24</sup> Non-safety related concerns can include, for example, issues related to labeling of products.

**Table 3: Vehicle Non-Compliance Issues Identified through Compliance Testing**

Year	# of Safety Related Non-Compliances	# of Non-safety Related Non-Compliances
2009-10	0	0
2010-11	5	2
2011-12	1	7
2012-13	0	1
2013-14	0	2
2014-15	0	5
<b>Total</b>	<b>6</b>	<b>17</b>

Source: Transport Canada, Compliance Engineering, Vehicle and Equipment Testing

Transport Canada also verifies that child restraints comply with Canada Motor Vehicle Safety Standards. Issues with non-compliance lead to the issue of a Public Notice, whereas a Consumer Information Notice is issued when there is a problem with a child restraint product that does not relate to a compliance issue or defect. During the evaluation period, numerous non-compliance notices and recalls were issued as a result of testing conducted at the MVTC.

**Finding 9: The MVTC has contributed to Transport Canada having a useful base of information to support decision-making related to the department’s motor vehicle regulatory framework.**

The evaluation found that a high proportion of motor vehicle standards developed or amended by Transport Canada were informed by research testing conducted at the MVTC. Transport Canada’s (rolling) motor vehicle Regulation Plan was examined to assess to what extent the MVTC was being used to inform regulatory projects being led by the Motor Vehicle Safety Program’s Standards and Regulations group. At the time of the evaluation, the plan included 30 projects (in progress or about to commence), including the development of new safety standards and the analysis and revision of existing standards. Of the 30 projects:

- Nine (9) had made or were making use of the MVTC for testing; and
- Fourteen (14) were expected to, or could potentially, use the MVTC for testing in the future, according to the program.

Of the seven projects on the Plan that were not expected to make use of the MVTC for testing, two had no requirement for any testing (e.g., were administrative amendments to a regulation), and only three were identified as requiring very specialized capabilities that did not exist at the MVTC.

Some examples of MVTC testing undertaken or planned for these projects includes:

- Crash-testing to develop new side impact regulations harmonized with US regulations;
- Pedestrian laboratory testing for a new regulation on ejection mitigation (e.g., side-impact and rollover-initiated side curtain airbags);

- Testing in the crash-test laboratory and main laboratory related to potential standards for seatbelts on buses; and
- Crash-testing related to new standards for side impacts related to child restraints, including potential introduction of the use of 10-year-old child dummy in the standard.

Testing conducted at the MVTC has informed Transport Canada decisions related to its regulatory framework.

- Example 1: Motor Vehicle Safety Research at MVTC – 15-Passenger Van
- Example 2: Motor Vehicle Safety Research at MVTC – Electronic Stability Control
- Example 3: Motor Vehicle Safety Research at MVTC – Child Seats

**Finding 10: MVTC testing has informed research that has been shared externally to the department.**

The results of MVTC testing were disseminated outside of the department through publications, media events, and presentations to stakeholders in Canada and internationally.

During the period from 2009 to fall 2015, crashworthiness research based on MVTC testing resulted in 10 (external) technical publications, six media events, 21 technical presentations, and 26 internal reports. The crashworthiness research conducted at the MVTC also included international activities and collaborative work. This included, among other work:

- Research on child restraint misuse conducted in collaboration with the Children’s Hospital of Philadelphia and child seat manufacturers;
- Development and evaluation of a side impact procedure for child protection in cooperation with NHTSA; and
- Evaluation of crash-test dummies, including, for example, the World Side Impact Dummy (WorldSID) in collaboration with NHTSA and ISO Working Groups

In addition, crash avoidance research was shared externally through, for example:

- A presentation with the Council of Motor Transportation Administrators, for research on 15-passenger van safety; and
- A partnership with the Canadian Automobile Association and the Fédération Internationale de l’Automobile for research on electronic stability control.

Interviews indicated that testing conducted at the MVTC supported regulatory work in the US and work conducted under the auspices of the Global Technical Regulations of the United Nations.

In addition, researchers can inform manufacturers of the result of their research through test notifications. During the period from 2009 to fall 2015, seven test notifications were provided to manufacturers related to issues noted in crashworthiness research. Furthermore, crashworthiness research conducted at the MVTC resulted in industry being aware of emerging research and using this information to inform the design of their vehicles.



**Finding 11: The MVTC has supported Transport Canada's research on clean transportation.**

The MVTC was being used extensively in the department's ecoTECHNOLOGY for Vehicles II Program (eTV), part of Transport Canada's Clean Transportation Initiatives, which are designed to help reduce air pollutants and greenhouse gas emission from transportation. The eTV initiative is led by the Environmental and Transportation Programs within Transport Canada. The MVTC has been used by the eTV program since 2007.

In 2011 to 2015, eTV used the MVTC to conduct safety and performance testing on new and emerging advanced vehicle technologies for light-duty and heavy-duty vehicles. These results are, in turn, used to inform regulatory development, including regulations, codes, standards, as well as informing consumer and industry education programming around energy efficiency.

The evaluation found that most of the eTV projects that were ongoing at the time of the evaluation were making use of the MVTC for testing (11 of 19 projects). MVTC testing is undertaken in collaboration with Motor Vehicle Safety Program staff, the National Research Council, Environment and Climate Change Canada, with the contractor staff, or undertaken directly by eTV program engineers.

**Finding 12: The MVTC has supported research related to defects and potential recalls.**

The MVTC has also helped the department with defect investigations. The Defects Investigations and Recalls group primarily uses its own facilities in Gatineau, Quebec except in cases where it has needed to use the MVTC for dynamic testing it cannot do in its smaller and more limited facility. The Defects Investigations and Recalls group indicated that it has made use of the MVTC for dynamic (track) testing approximately once every two years. Members of the group indicated that they anticipated their use of the MVTC could increase in the future due to new motor vehicle technologies.

Specifically, Defect Investigations and Recalls division has:

- Used the MVTC for dynamic testing as part of defect investigations;
- Been provided information on potential defects identified during research testing undertaken at the MVTC; and
- Used data from event data recorders of vehicles crash-tested at the MVTC, as part of investigations of airbag non-deployment. This data was generally collected from the facility three to four times a year.

The information garnered from MVTC testing resulted in recalls. For example, dynamic testing was undertaken at the MVTC related to front suspension coil springs in Nissan Versas, and power steering at Mazda and General Motors, which subsequently led to recalls.

## Effectiveness – Oversight of MVTC Operations

- {ATIP REMOVED}

**Finding 14:** Issues were identified related to a lack of shared understanding of contract terms and the need for better communication and information exchange between MVTC Operations and the contractor. Additional forums for formal communication, and additional support for contract management from Public Services and Procurement Canada, have been added to improve oversight and management.

Some issues were encountered in contract management during the period examined. First, in some cases there was a lack of common understanding between Transport Canada and the contractor of contract terms. PSPC was consulted by Transport Canada to verify or clarify contract terms related to capital projects—such as on issues related to sub-contracting, task authorization, tendering practices and rates, among others—in order to ensure compliance.

Also, interviews suggested that information exchange between the contractor and MVTC Operations could be improved. This would include, for example, more regular and timely information from the contractor on the timing of the use of facilities by third-party clients, as well as reaching a common understanding on protocols regarding accessing the testing areas by Transport Canada staff to ensure third-party users' confidentiality.

To help address these types of issues and to formalize communication between the three parties, an overseeing operating committee, comprised of Transport Canada, PSPC and the contractor, was established in April 2015. Two meetings were held in 2015 and it is expected to continue to meet on a quarterly basis. In addition, regular meetings had been set up between Transport Canada and PSPC staff to discuss contract management issues. According to interviews, these additional opportunities to share information have been useful through making communication more structured, and involving all relevant stakeholders to address contract-related issues.

In addition, as of 2016-17, Transport Canada has begun providing dedicated funding to PSPC to obtain additional staff time and resources to support MVTC contract management.

The evaluation found that Transport Canada could play a more proactive role in oversight in the future, if it is able to get richer information in the future on elements like facility utilization and costs, and with a complete inventory of MVTC assets with lifecycle information, more data analysis could be undertaken as part of ongoing oversight. As the contract was up for renewal at the time of the evaluation, these information elements should be considered in the next version of the contract.

**Finding 15:** There were constant variances between planned and actual annual expenditures for capital projects, and gaps existed in the capital planning, management and implementation.

Variances in capital expenditures occurred in all six years examined in the evaluation. Except in 2010-11 when the variance was 6% of the original estimated budget for that year, all other years saw significant variances, including lapses of 52% and 39% of the original annual estimates in 2011-12 and 2014-15, respectively, and between 20% and 22% in additional funding required in 2009-10, 2012-13 and 2013-14.

**Table 4: Capital Expenditures – Estimates, Actuals and Variances, 2009-10 to 2014-15**

Year	Estimate (Planned)	Actual	Variance (Actual - Estimate)	Variance as % of Estimate
	\$ millions			
2009-10	5.95	7.18	+1.23	21
2010-11	13.29	12.51	-0.78	6
2011-12	3.52	1.70	-1.82	52
2012-13	2.27	2.77	+0.50	22
2013-14	3.68	4.42	+0.74	20
2014-15	6.06	3.68	-2.38	39

Key gaps and areas for potential improvement for capital project planning and management were identified:

{ATIP REMOVED}

- Second, it was indicated in interviews that more coordination among all programs within the Motor Vehicle Safety Directorate (and other programs of the department), would ensure that the collective needs of the department were reflected in capital planning. More coordination among the programs was initiated and it is anticipated by MVTC Operations that these practices will be further formalized to improve capital decision-making.
- Finally, it was noted that the Motor Vehicle Safety program would benefit from more training/knowledge in real property management.

**Finding 16:** A systematic and comprehensive approach to asset and materiel management was a recognized gap in Transport Canada oversight of the MVTC, and additional capacity is required in this area.

The evaluation found that MVTC Operations lacked up-to-date inventories of asset and materiel items at the time of the evaluation. Also, existing consumable and non-consumable inventories did not include life-span and life-cycle status information, which is a barrier to informed decision-making related to the replacement and repair of materiel assets, and capital project planning.

Moreover, interviews and administrative data showed that there was a lack of clear distinction of definitions related to the various inventories required under the contract. For example, some items that were consumable in nature were included in the non-consumable inventory. In addition, consumable and non-consumable inventories could be further categorized as capital assets, materiel assets and consumable items to differentiate different categories of asset and non-asset items, which require different types of decision-making. MVTC Operations indicated that it was beginning an asset inventory at the time of the evaluation. Additional knowledge/training for MVTC Operations in this area would be beneficial, particularly in identifying the lifecycle status of each item.

## Evaluation Findings: Performance – Efficiency/Economy

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The following section presents the findings related to the efficiency/economy of Transport Canada's use of the MVTC.

**Finding 17: The total Transport Canada costs for the operation and improvement of the MVTC fluctuated over the evaluation period. Payment in Lieu of Taxes and contract payments increased over the period. Capital costs were significant across the whole period.**

For the six-year period of 2009-10 to 2014-15, the total Transport Canada costs for the operation and improvement of the MVTC was \$53.44 million, including capital expenditures (60% of total costs), contract payments for operations and maintenance (30%), PILT (7%), and Transport Canada internal costs for salaries, training and legal services, etc. (3%). (This total does not include the costs of testing or of vehicles used in testing.) See Table 5 for details. The evaluation found that the total Transport Canada costs fluctuated over the evaluation period.

Contract payments and PILT showed an upward trend. **{ATIP REMOVED}** PILT increased from \$0.41 million in 2009-10 to \$0.71 million in 2014-15, an increase of 73%. This increase was a result of the higher value of the MVTC following real property improvements.

Transport Canada's internal costs (i.e., salaries for MVTC Operations, training, legal services) increased during the evaluation period by 56%, from \$0.18 million in 2009-10 and \$0.28 million in 2014-15. These costs remained relatively unchanged over the last three years examined, however.

In addition, over the evaluation period, a total of \$32.25 million was spent on MVTC capital projects, which made up the largest proportion of all categories of Transport Canada costs (60% of Transport Canada's MVTC costs over the period). Of this, however, \$14.2 million (44%) was funding under the Economic Action Plan's program to modernize federal laboratories, which was additional capital funding provided to the department. Other capital projects included sled system development in 2013-14, among other projects.

Capital expenditures were the highest category of costs in most years. During the MVTC laboratory modernization, capital costs made up 70% and 79% of Transport Canada's total costs in 2009-10 and 2010-11, respectively. In the years following laboratory modernization, capital investments continued to constitute the largest share of costs, comprising 43% of total Transport Canada costs for the MVTC in 2012-13, 54% in 2013-14, and 49% in 2014-15.

**Table 5: Overview of Transport Canada Costs for the MVTC, 2009-10 to 2014-15**

{ATIP REMOVED}

**Finding 18:** While Transport Canada invested significantly in MVTC capabilities, and spent an increasing amount on maintaining the MVTC during the evaluation period, the department's use of the MVTC did not see a similar trend.

In 2014-15, Transport Canada spent {ATIP REMOVED} on the conduct of testing at the MVTC, lower than the {ATIP REMOVED} spent in 2009-10 during the first year of laboratory modernization. As indicated in interviews and documents, the amount of testing done at the MVTC was reduced from 2010-11 to 2012-13 due to the construction work undertaken for laboratory modernization and a reduction in budgets. However, no significant increase in testing followed laboratory modernization. Transport Canada's funded {ATIP REMOVED} million and {ATIP REMOVED} million in testing at the MVTC in 2013-14 and 2014-15, respectively; both these years saw less testing conducted than in 2009-10.

Transport Canada costs to conduct one dollar of testing were calculated. Over the six years, \$3.00 was spent on other MVTC costs for every one dollar of Transport Canada testing funded, and \$2.49 was spent when considering only the years following laboratory modernization (from 2011-12 to 2014-15) (see Table 6 below). When only considering capital costs related to general facility management<sup>25</sup> other than those related to specific testing capabilities, Transport Canada MVTC costs for every one dollar of testing conducted was \$1.68 over the evaluation period, and \$1.79 for the years following the modernization.

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<sup>25</sup> From 2009-10 to 2014-15, \$8.74 million was spent on capital projects related to facility management, and \$23.52 million for testing-related capital projects in crashworthiness, crash avoidance and compliance. Refer to Table 1 for more details.

**Table 6: MVTC Costs to Transport Canada for each \$1 of Testing Conducted**

Year	Testing Costs	Total Other Transport Canada MVTC Costs	TC MVTC Costs per \$1 of Testing Conducted
	\$ millions		
2009-10	4.01	10.21	\$2.55
2010-11	2.84	15.86	\$5.58
2011-12	2.50	5.20	\$2.08
2012-13	2.03	6.43	\$3.17
2013-14	3.40	8.22	\$2.42
2014-15	3.04	7.51	\$2.47
<b>Total</b>	<b>17.83</b>	<b>53.44</b>	<b>\$3.00</b>
<b>Post-modernization:</b>			<b>\$2.49</b>

**Finding 19:** Third-party use of the MVTC, and the corresponding credits from third-party use provided to Transport Canada, increased during the period. {ATIP REMOVED} Revenues from third party clients increased during the evaluation period, which resulted in a higher value of credit provided to Transport Canada from this use. With the exception of 2010-11 during the MVTC modernization, third-party revenues increased throughout the years examined and more than {ATIP REMOVED}. The proportion of total testing revenues from third-parties (as opposed to from Transport Canada) has remained steady since modernization, at between {ATIP REMOVED}

**Table 7: {ATIP REMOVED}**

The contractor conducted various activities to increase third-party use of the MVTC. This included maintaining relationships with third-party clients, maintaining and improving the testing capabilities of its technical staff, marketing to potential clients, and exploring international markets. The contractor exceeded its own revenue targets for third-party clients during the evaluation period. {ATIP REMOVED}

Despite the increase in third-party use, the credited amount provided to Transport Canada from third-party revenues did not significantly offset the department’s costs for the MVTC. The credits were equal to between {ATIP REMOVED} of Transport Canada’s total MVTC costs each year (not including the costs of testing), as shown in Table 8. Over the entire period examined, the credits covered 4% of Transport Canada costs.

**Table 8: Credits Provided to Transport Canada Compared to Total Transport Canada MVTC Costs, 2009-10 to 2014-15**

Year	Transport Canada Total Costs	{ATIP REMOVED}	{ATIP REMOVED}
	\$ millions		
2009-10	10.21	{ATIP REMOVED}	{ATIP REMOVED}
2010-11	15.86	{ATIP REMOVED}	{ATIP REMOVED}
2011-12	5.20	{ATIP REMOVED}	{ATIP REMOVED}
2012-13	6.43	{ATIP REMOVED}	{ATIP REMOVED}
2013-14	8.22	{ATIP REMOVED}	{ATIP REMOVED}
2014-15	7.51	{ATIP REMOVED}	{ATIP REMOVED}
<b>Total</b>	<b>53.44</b>	<b>{ATIP REMOVED}</b>	<b>{ATIP REMOVED}</b>

It should be noted that there is a limit to the extent to which third-party use of the MVTC can be increased. Use of the testing track, for example, is constrained by climate and {ATIP REMOVED}

**Finding 20:** The evaluation suggests that more could be done by Transport Canada to offset departmental costs for the MVTC, including increasing the credit rate received from the contractor for third-party use.

***Increasing Transport Canada’s Credit from Third-Party Usage of the MVTC***

Increasing the credit that Transport Canada receives from third-party use of the MVTC could potentially offset more departmental costs. The credit return regime (of between 16% and 20% of third-party revenues) was put into place, in part, to ensure the contractor did not have an unfair advantage over competitors through using Transport Canada’s facilities and capital assets at no cost. The current credit levels may no longer be appropriate given Transport Canada’s significant capital investment in the MVTC.

The amount to which an increased credit could further offset Transport Canada costs is not without its limits, however. For example, even if the credit had been double their rate during the evaluation period, the share of Transport Canada’s MVTC costs offset would have increased to {ATIP REMOVED} based on third-party credits following the MVTC modernization.



Any re-assessment of the credit rate should balance Transport Canada needs with those of the contractor, which undertakes the marketing required to attract third-party clients, and which must remain financially sustainable.

### ***Other Potential Ideas to Reduce Costs***

As identified in interviews, one measure that could potentially improve the cost-efficiency related to the MVTC is to relocate the function of Fleet Operations of the Motor Vehicle Safety Directorate to the MVTC site. At the time of the evaluation, vehicles were first shipped to Fleet Operations located in the National Capital Region for verification before being shipped to the MVTC in Blainville, with the Fleet Operations staff travelling frequently between Gatineau, Quebec and the MVTC.

{ATIP REMOVED}

### **Finding 21: The evaluation noted aspects of the MVTC that enabled cost savings.**

Several aspects of the MVTC that contributed to cost savings to the department were noted in the evaluation:

- As a facility capable of multiple types of testing, the MVTC allows Transport Canada to, in many cases, re-use vehicles for multiple tests, including for different Transport Canada programs, or examine different aspects in the same test;
- The MVTC allows for track time to be shared by multiple programs within Transport Canada at the same time at no additional costs; and
- Vehicles do not have to be licensed before they are tested at MVTC, as would be necessary if testing were done on public roads.
- It was also noted that the proximity of the MVTC (within a two-hour drive) to Transport Canada's staff located at National Headquarters has enabled staff to work closely with the contractor in planning and overseeing testing – thereby increasing Transport Canada staff capacity and providing additional quality assurance in a more cost-effective manner than if testing facilities were located further from Transport Canada staff and at multiple locations.

It was noted that the GOCO model may reduce the level of administration required by the department. It was suggested that the time Transport Canada required to manage one contract for the MVTC was less than that if the department was required to contract testing services under multiple contracts, as well as the costs associated with shipping vehicles to different, and potentially more distant, locations for use in testing.

## Conclusions and Recommendations

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The MVTC continues to provide relevant services for Transport Canada. The MVTC is a unique, “all-in-one” facility, offering capabilities not offered by other facilities in Canada. It appears that, in the absence of the MVTC, to complete its compliance and research programs, Transport Canada would have to contract testing at multiple facilities, including in the United States, which would involve additional logistical efforts.

The evaluation noted some key strengths of the MVTC. First, there is a high level of satisfaction among Transport Canada and third-party clients with the MVTC and its testing capabilities. It is widely seen as a first-rate testing facility, and the modernization of the laboratory with funding from the Economic Action Plan increased the range of the testing capabilities of the laboratory. Second, there is a high level of satisfaction with the testing conducted by the contractor. Stakeholders from within and outside of Transport Canada noted the professionalism and expertise of testing staff, and the quality of the data and documentation produced.

The evaluation noted numerous positive impacts of testing conducted at the MVTC. This included providing Transport Canada with the information it needed to monitor industry compliance with regulations, supporting decision-making related to the department’s regulatory framework, and supporting Transport Canada research on clean transportation. Several specific examples of MVTC testing that contributed to the department’s regulatory decisions were noted, including related to 15-passenger vans, electronic stability control, and child seats.

The evaluation identified areas requiring further attention:

- The department would benefit from more strategic and systematic planning related to the MVTC and its testing capabilities. The motor vehicle sector is in a period of profound change that is going to affect the types of capabilities the department needs for its testing. Furthermore, there is a lack of strategic vision for the MVTC to guide long-term planning, and past MVTC capital planning has not been consistently systematic in involving all relevant stakeholders.
- There is a limited number of Transport Canada staff with technical knowledge related to crashworthiness research.
- {ATIP REMOVED}
- Given the significant and growing costs to the department of the MVTC, ways to offset more of Transport Canada’s costs for the MVTC should be explored, including through increasing the credit rate.

The evaluation includes three recommendations, presented in the following table with supporting detail.

Recommendation #1: Transport Canada should complete a strategic plan for the MVTC.

- The context in which the MVTC operates is in a period of significant change as a result of profound innovations in motor vehicle technology and related changes to testing.
- There is a lack of a strategic vision for the MVTC to guide longer-term planning.
- A strategic plan for the MVTC should include an examination of the types of capabilities that will be needed for future Transport Canada research priorities and compliance testing, the optimal role for Transport Canada and the MVTC in providing these capabilities, and investments needed for the MVTC to meet these needs, if any. This planning should also examine what other facilities are available to conduct testing, and position the MVTC within this context.
- The strategic plan should also examine whether MVTC should (and could) play any additional roles in supporting motor vehicle sector innovation beyond its core functions for Transport Canada.

Recommendation #2: Transport Canada should strengthen and undertake a more proactive role in its oversight of the MVTC.

- {ATIP REMOVED}
- Particularly with more and better data, a more proactive oversight role could be taken by the Motor Vehicle Safety program to advise on decision-making through trend and financial data analysis.
- More knowledge/training is required for the Motor Vehicle Safety program related to asset and materiel management, and real property management.
- The Motor Vehicle Safety program could also expand its current operational role to include more responsibilities such as taking a centralized role in capital project planning and asset management by leading the processes among all Motor Vehicle Safety Program groups.

Recommendation #3: Transport Canada should examine ways to improve the cost-effectiveness of the MVTC, including through increasing the rate of credit it receives from third-party revenues.

- Third-party usage of the MVTC is an important element of cost-savings for Transport Canada.
- Particularly given significant capital investments in the MVTC, the current rate of credit that the department receives for third-party revenues should be revisited for any future contracts.
- Other potential means of cost-saving could be examined as part of the strategic planning process.

## Management Action Plan

#	Recommendations	Proposed Actions	Forecast Completion Date	OPI
1	Transport Canada should complete a strategic plan for the MVTC.	<p>A number of projects have been undertaken to address gaps with a view to an ultimate strategic plan for the MVTC.</p> <p>Based on existing projects and the Comprehensive Review, a strategic plan for the centre will be developed.</p> <p>Considerations for the strategy would include, but not be limited to: program direction, capital investment, cost recovery through 3<sup>rd</sup> party rentals and performance measures.</p>	<p>Strategy for TC's use of the MVTC</p> <p>December, 2017</p>	Safety & Security
2	{ATIP REMOVED}	{ATIP REMOVED}	{ATIP REMOVED}	Safety & Security
3	Transport Canada should examine ways to improve the cost-effectiveness of the MVTC, including through increasing the rate of credit it receives from third-party revenues.	{ATIP REMOVED}	Contract in place December 2017	Safety & Security