TAC – Sustainable Urban Transportation Award (SUTA)

High Occupancy Toll (HOT) Lanes Pilot Project

Nomination

The HOT Lanes Pilot Branch, Policy and Planning Division, Ministry of Transportation Ontario (MTO) is nominated for TAC's Sustainable Urban Transportation Award for the development and implementation of Canada's first High Occupancy Toll (HOT) Lane.

Contribution to Sustainable Urban Transportation

On September 15, 2016 Ontario opened Canada's first High Occupancy Toll (HOT) lanes, piloting a new travel option for commuters that improves traffic flow, maximizes highway capacity, and helps manage congestion. The HOT lanes are located on 16.5 kilometres of the QEW in both directions, from Trafalgar Road in Oakville to Guelph Line in Burlington.

HOT lanes are intended to improve traffic flow, with the goal of maximizing highway capacity while continuing to provide a carpooling incentive. This approach, which has been adopted in several U.S. jurisdictions, can help to manage congestion by providing additional travel options for commuters. HOT lanes also complement other initiatives, such as GO Regional Express Rail that will increase GO Train trips by 50% over the next five years with more stops serving more communities and expanding sustainable transportation choices available to travellers.

Canada's Ecofiscal Commission recognized the announcement of the HOT lanes pilot as "a big step for the Toronto Area, and for Canada", noting that well-designed HOT lanes can help reduce congestion and its economic and environmental effects while benefiting people of all income levels (https://ecofiscal.ca/2016/01/13/ontarios-coming-hot-lane-pilot-project/). More specifically, the pilot was designed to support sustainable urban transportation by:

1) incentivizing carpooling, transit use and green vehicles by providing free access to the HOT lane;
2) providing an opportunity for single occupancy vehicles to access the HOT lanes for a fee, with a goal of improving traffic flow and reducing vehicle idling due to congestion;
3) establishing HOT lane permit fees that were not prohibitive for drivers based on income levels;

4) allocating HOT lane permits through a random draw to ensure fair access for all interested pilot participants; and
5) generating revenues to offset pilot operating costs.

To access the HOT lane as a single occupant driver in the pilot program, vehicle owners are required to apply for a permit. Successful applicants can then purchase a permit which is affixed to their vehicle to enable visual enforcement. Applying, purchasing and renewing the permit is delivered 100% online. The HOT Permit Online Application consists of three major modules: draw, purchase and renewal. The following is a high-level overview of how the program works:

Two months prior to the start of a permit cycle, applicants complete an online form to be entered into a draw to participate in the pilot. If selected, the participant is sent a link to access the online purchase module to pay for their permit. Once payment is completed, the order is received and fulfilled in 10 business days. The participant receives the permit and installs it on their front and rear windshields.

Two months before the end of the permit cycle, the participant receives an email reminding them to renew their permit for the next three month permit cycle Permit holders have the option to renew their permit for two additional terms before they are required to re-enter the draw. This both helps to assess customer interest in maintaining the permit, while ensuring additional drivers have an opportunity to participate in the pilot.

The HOT Lanes Pilot Office supports customers through access to a back-end administrative console. The HOT Lanes Pilot Office manages the program through the administrative console including the selection of pilot participants, electronic notifications to winners and non-winners and renewal reminders. If applicants or pilot participants have a question regarding the program or their permit, they can call a dedicated line at ServiceOntario to enquire.

Also key to ensuring that participation in the pilot was equitable and sustainable for all Ontarians across the income spectrum was deciding on a price point for permits and the duration for which they were valid. A term of three months was selected as the period for which a permit would be valid as it provides users with a sufficient period of time to assess the value of the HOT lanes prior to deciding on renewals and/or future permit purchases. It also limits the number of customer transactions required each year, and the number of times that expired permits need to be removed and replaced with new ones in the vehicle.

Permits are sold at a price of $180 per three month term (equivalent to $60 per month). In setting the fee, MTO considered fees charged in other jurisdictions and for other options (e.g. transit, other Ontario tolled highways), traffic modelling that considered drivers' value of time and willingness to pay, and cost recovery of pilot operating expenses. For regular travellers of the QEW, the cost of the permit for two-way travel on weekdays is less than $1.50 per trip. This enables an assessment of market demand for paying to access HOT lanes while ensuring that more Ontarians have an opportunity to participate in the pilot.

Innovation

Canada's first High Occupancy Toll (HOT) Lanes were a key government transportation commitment publicly announced in December 2015 and introduced to Ontario on September 15, 2016. The HOT pilot program and supporting retail and distribution system was developed and delivered in less than nine months as an online service. MTO and ServiceOntario collaborated to simultaneously develop policy, performance measures and program design, including an online digital retail service. This successful team approach ensured a key government priority was delivered within a compressed timeframe while introducing a new business model for digital services. Typically, to deploy an online service of this nature, it takes 12 to 18 months to deliver.

The HOT lanes Pilot team overcame this challenge through strategic collaboration, building on existing successful applications and applying an agile development approach. MTO partnered with ServiceOntario to develop the public facing online application, administrative back-end console, permit fulfillment process and contact center support for customer service functions. In order to make the online experience as positive as possible, a customer-centric service design approach was applied to understand the needs and journey of the target customer, while eliminating barriers to accessing the service. Utilizing this approach enabled the team to create an online experience that would be simple and easy for the target users and allow customers to apply/purchase anytime and anywhere at their convenience.

Working collaboratively with partners required open and frequent communication, flexibility to adopt each other's protocols and a dedicated team to deliver the service in the timelines required. The team, comprised of over 70 individuals from Executives to testers, collaborated through technical, policy and operational working groups; weekly project team meetings and status updates; and technical and service-oriented steering committees. This allowed program policies, operational procedures and the IT build to be developed simultaneously ensuring the ambitious timelines could be met.

Another factor which allowed the team to deliver the project in a short period of time was the ability to enhance existing applications, functionality and system interfaces based on the team's considerable system and online service delivery expertise. The team leveraged existing applications and templates, saving time and streamlining development efforts. Also, the team enhanced existing interfaces between ServiceOntario and MTO systems to implement business requirements, such as ensuring that only applicants with valid plate numbers who do not have fines can apply for a HOT permit. The team also had expertise in developing accessibility compliant and mobile-ready web templates which also helped to save time.

Lastly, the use of an agile development approach to deliver the online portal and back end components, proved to be the crucial factor in achieving this feat. With the first permit cycle taking place from October 1st, 2016 to December 31st, 2016, the team needed to have the draw module of the online application ready for go-live on August 1st, 2016; the purchase module on August 29th, 2016; and the renewal module on November 1st, 2016. In a series of overlapping sprints to design, develop, test and release each module of the online application to the public, the team was able to deliver the application in five months.

The partner collaboration and solution design combined with the best agile practices allowed for project fast-tracking and enabled the project team to launch this exclusively digital service in an extremely short time frame. To add to this success, for the first permit cycle, the team was able to launch the HOT lanes two weeks earlier giving the first round of permit holders a bonus of two weeks as an initial incentive to build interest in the pilot.

As part of the pilot, MTO also issued a Request for Information (RFI) for innovative technologies to support tolling, compliance and performance monitoring of HOT lanes. The RFI was seeking information on technology solutions for the following four aspects of HOT lanes delivery:

1) Customer billing based on using HOT lanes and distance travelled (i.e. technologies to accurately determine which lane a vehicle is occupying);
2) Dynamic toll pricing, managing HOT lane use and understanding travel patterns;
3) In-vehicle communication of toll rates and other relevant operational details (e.g. occupancy requirements); and
4) Compliance based on vehicle classification and vehicle occupancy.

A total of 19 companies made submissions covering a range of existing and emerging technologies to support an electronic tolling solution for permanent HOT lanes. MTO is proceeding with testing of the lane-by-lane accuracy of technologies that could enable less infrastructure intensive (and therefore more cost effective) tolling solutions, including mobile app, GPS and telematics based systems.

Based on the findings of the RFI, MTO is also partnering with the Ontario Ministry of Economic Development and Growth in a Small Business Innovation Challenge providing grants to Ontario-based small and medium enterprises for the purposes of developing prototypes that support automated vehicle occupancy detection. The RFI revealed that there were few viable options in the marketplace for automated vehicle occupancy detection.

These efforts support Canada's innovation sector by providing an opportunity to test emerging traffic management and tolling technologies. Findings will inform investment decisions in fully electronic HOT lane solutions for implementation by 2021. The development of Ontario-based solutions could not only enhance operations of future HOT and HOV lanes in the province, but also be marketing opportunities to other jurisdictions in Canada and beyond.

Transferability to Other Canadian Communities

Jurisdictions across Canada are seeking new ways to manage congestion, promote alternatives to single occupancy travel and generate revenues for public investments such as transit. The introduction of HOT lanes in Ontario demonstrates, in a Canadian context, how managed lanes and road pricing can help achieve public sector priorities. To date, no other Canadian community has implemented HOT lanes. However, HOT lanes are a proven concept currently used in many jurisdictions across the United States. The pilot will help MTO refine its implementation to suit Ontario and ensure they are an effective part of the transportation network. This includes maximizing the opportunity to include HOT lanes in future highway expansions. Due to planned construction, Highway 427 was identified as the earliest opportunity to introduce an HOT lane with electronic tolling which is expected in 2021.

MTO is also gaining insight about customer behaviour and needs from the pilot, along with highway network impacts that result from providing motorists with additional options such as HOT lanes. The Ministry is collecting data on highway performance and customer satisfaction, using on-line and mail-out surveys to reach pilot participants and other highway users.

MTO's efforts to build awareness of the HOT pilot and promote permit sales have also leveraged tactics employed during the 2015 Pan Am Games to encourage alternative travel choices. Efforts to keep the Greater Toronto and Hamilton Area moving during the largest multi-sport event Canada has ever hosted demonstrated that targeted messaging on transportation impacts and options through multiple channels can effectively build awareness and influence travel decisions. For the pilot, this meant using digital message signs, social media and traditional media sources to inform the public that HOT lanes were being implemented and to remind drivers that carpoolers can use the HOT lane for free (see Appendix).

The pilot is a way to introduce HOT lanes and mobility pricing to the region while generating information and results to inform the long term network approach. MTO is committed to ensuring the most customer-centric and cost effective solution is implemented for the region prior to making large infrastructure investments. The HOT lanes pilot will help generate key learnings and experience on which to base such decisions. Learnings from the pilot will be available to other Canadian communities to draw on as they consider solutions to their own local transportation challenges.

Results to Date

Initial results from the pilot have been positive. Interest in the pilot was high for the first term of the pilot (Sept. 15 to Dec. 31, 2016) with more than 3,400 applications received for the initial 500 permits made available. For the second term of the pilot (Jan. 1 to Mar. 31, 2017), demand continued to be strong with 2,142 new draw applications in addition to more than 400 renewals. In total, 412 term 1 permit holders (82%) renewed for term 2 with 371 new permits made available based on available lane capacity for a total of 744 permits sold. The application and renewal period for term 3 of the pilot closed on February 28, 2017 with an additional 1,639 applications and 626 renewals (84% of term 2 permit holders) for the 750 permits available, indicative of the ongoing level of interest and value that drivers see in HOT lanes as a travel option.

This value is demonstrated in the time savings that carpoolers and HOT permit holders benefitted from during the first term of the pilot. On average, over the course of the first term of the pilot weekday commuters saved more than 22 minutes during peak hours. This included a savings of more than 8 minutes during the morning peak hours (7:00-9:00 am eastbound) and approximately 15 minutes during the afternoon peak period (4:00 – 6:00 pm westbound).

As part of the HOT permit renewal process, all HOT Lane Pilot participants were asked a series of questions about their experience to date while renewing their permit. When

asked why they decided to renew, most respondents (87%) said because the permit provides time savings, 49% said travel reliability and 28% cited the value the permit offers (participants could select multiple factors). 87% of respondents said they were Satisfied or Very Satisfied with their experience using the HOT lanes during the first term (5.1% answered Unsatisfied or Very Unsatisfied).

When asked about the value of the HOT lanes: 87% agreed or strongly agreed that HOT lanes provide a significant increase in reliability; 68% agreed or strongly agreed that HOT lanes help maximize capacity on the highway; and 64% agreed or strongly agreed that HOT lanes improve traffic flow on the highway.

The risk taken to offer the service exclusively online is proving to be the right choice. When asked about the processes and systems in place to renew their permits, 89% of respondents were Satisfied or Very Satisfied with the on-line renewal process and 91% were Satisfied or Very Satisfied with the ease of use of the renewal website. Less than 2% were not satisfied with the experience.

The number of applications received in the first round (3,400) was higher than projected and contact center call volumes were only 10% (267 calls) of the estimated call volume. In addition, 36.7% of the applications were received via mobile device (phones and tablets). These results are indicative of the high-quality, customer-focussed design that went into designing the online customer interface. This also demonstrates the demand for online services and, relative to the low number of contact centre calls, further suggests that the on-line application and purchase process was intuitive and easy for customers to complete.

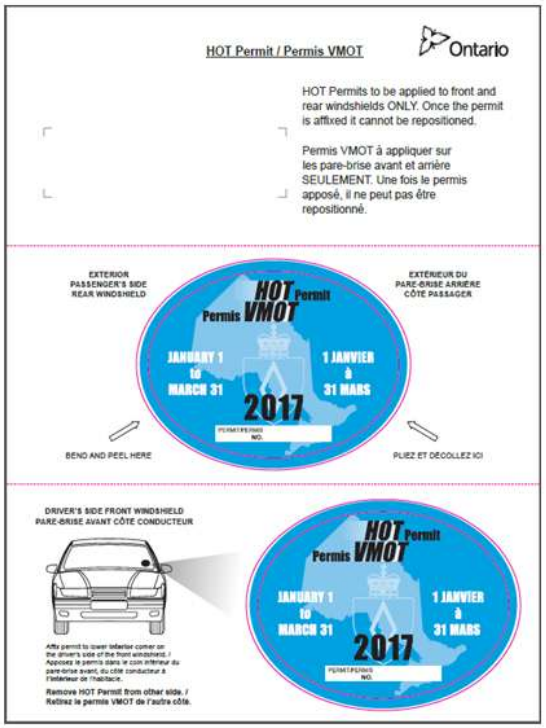
In addition to monitoring network performance and utilizing that information to evolve the program, the HOT Lanes Pilot office uses Google Analytics tools along with other internal reporting tools, to collect robust web analytics to track web traffic trends and patterns as well as gather the opinions of Ontarians about the HOT Pilot. The web analytics report helps to realign promotional programs to boost citizen’s participation in the HOT Pilot. Improvements to date have increased the customer conversion rate to 51%, which demonstrates a 55% increase.

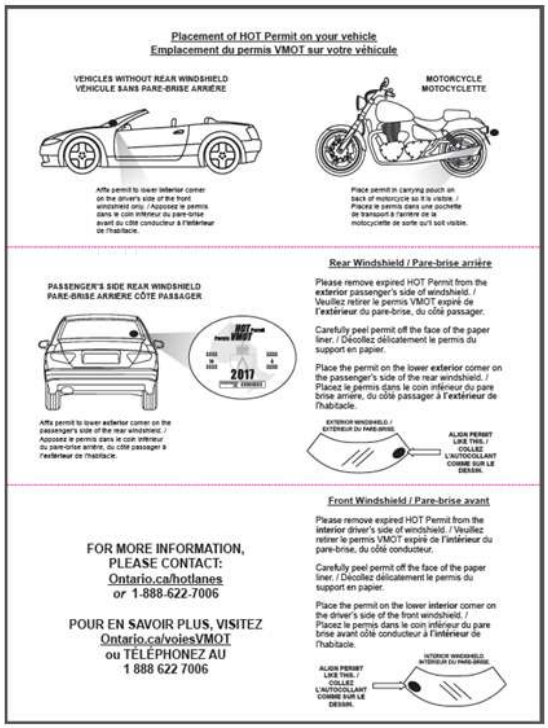
Overall, this new pilot project is an example of how the government disrupted the current service delivery paradigm to meet the evolving needs of customers in the digital age by converging technology, information, good program design and a rapid development approach with the goal of delivering an efficient, easy to use online experience that promotes and encourages sustainable travel options.

APPENDIX

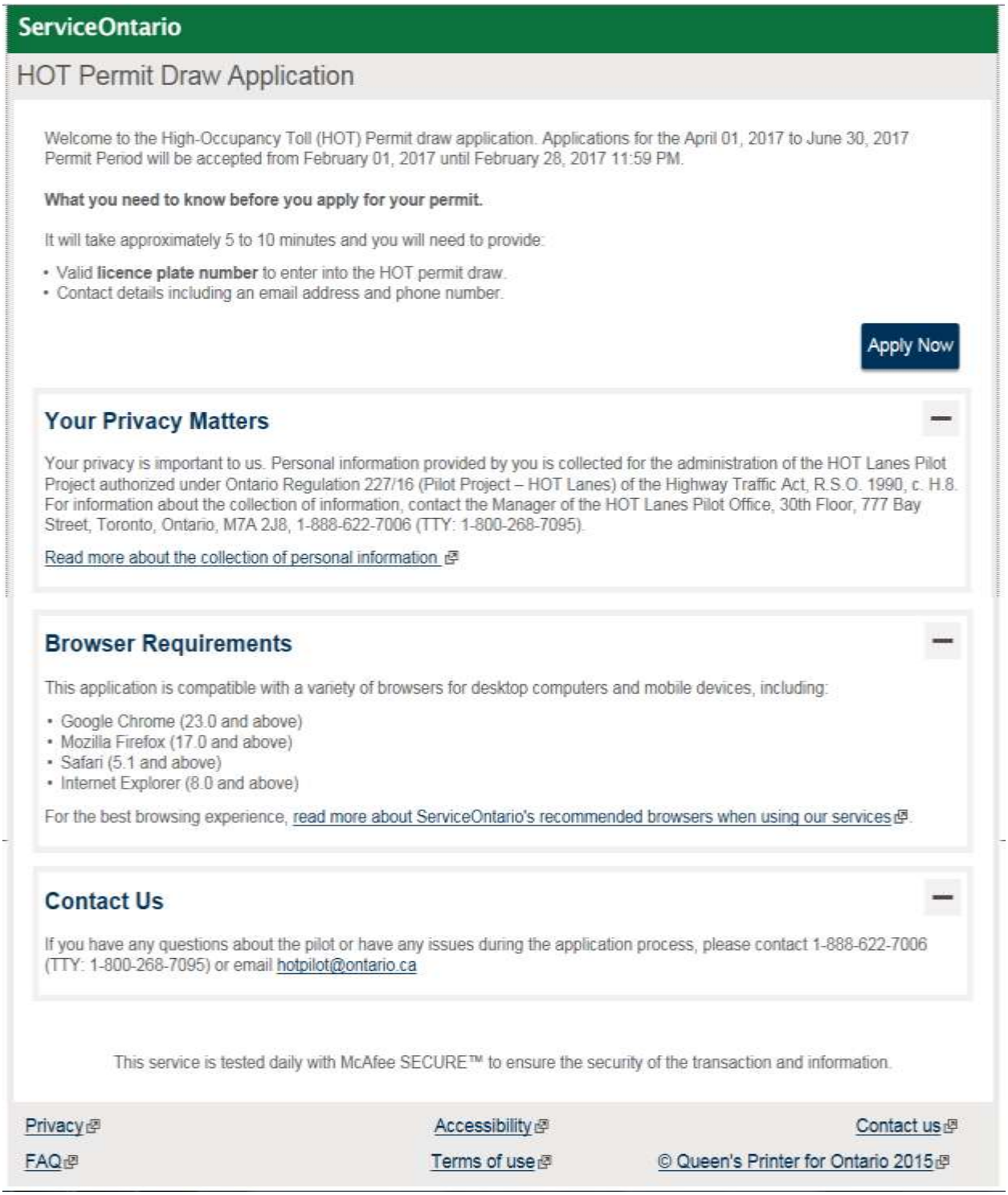
HOT Lanes Pilot Permit

HOT Lanes Pilot Permit – Mail Carrier





HOT Lanes Pilot On-line Application (Screenshot)



HOT Lanes Pilot Digital Message Signs

HOT Lanes Pilot Static Application Sign

HOT Lanes Pilot Social Media Messages

HOT Lanes Testimonials