



April 24, 2018

RECEIVED MAY 16 2018

Town of Minto  
5941 Hwy. #89  
Harriston ON  
NOG 1Z0

**RE: Invitation to join the "Preferred Autonomous Vehicles Test Corridor"**

Mayor & Members of Council:

I am writing to you today to invite you to be a part of OGRA's Municipal Alliance for Connected and Autonomous Vehicles in Ontario (MACAVO) initiative for controlled testing of Autonomous Vehicles (AVs). Under this initiative, we are calling for the creation of a seamless and well-coordinated "Preferred AV Test Corridor", stretching from Windsor to Ottawa. Through this initiative, our aim is to help attract (and retain) AV-related industry and talent in Ontario, which in turn can become a catalyst in helping provide unparalleled socio-economic benefits for all municipalities involved. A more detailed report of the initiative is attached.

OGRA is requesting the following call-to-action by municipalities in Ontario:

1. Identify One (1) municipal point of contact who will be responsible to spearhead all AV-related activities for your municipality, and:
2. Identify the Preferred routes within your municipality

We respectfully request that your council pass the following resolution:

*That the \_\_\_\_\_ of \_\_\_\_\_ participate in OGRA's Autonomous Vehicle initiative and that this matter be referred to staff to develop a list of preferred routes with the municipality.*

On behalf of OGRA thank you for your consideration of this request. Should you have any follow-up questions, please feel free contact myself or Fahad Shuja at [Fahad@ogra.org](mailto:Fahad@ogra.org).

Kind regards,

J. W. Tiernay  
Executive Director  
Ontario Good Roads Association  
E: [Joe@ogra.org](mailto:Joe@ogra.org)

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# MACAVO

Municipal Alliance for Connected and Autonomous Vehicles in Ontario

## INITIATIVE DETAILS: *Preferred Autonomous Vehicles' Test Corridor*



An Ontario Good Roads Association Initiative

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# ***Executive Summary***

Ontario Good Roads Association, through its Municipal Alliance for Connected and Autonomous Vehicles in Ontario (MACAVO<sup>1</sup>), has embarked on an initiative for controlled testing of Autonomous Vehicles (AVs). Under this initiative, OGRA is calling for the creation of a seamless and well-coordinated "Preferred AV Test Corridor", stretching from Windsor to Ottawa. Through this initiative, our aim is to help attract (and retain) AV-related industry and talent in Ontario, which in turn can become a catalyst in helping provide unparalleled socio-economic benefits for all municipalities involved.

OGRA is working closely with a number of key Ontario municipalities, who have already collectively identified over two-thousand centreline kilometres of Preferred roads for the testing of AVs. By extending the invite to all jurisdictions, OGRA is hereby requesting the municipalities to, each:

- i. Identify One (1) municipal point of contact who will be responsible to spearhead all AV-related activities for your municipality, and
- ii. Identify the Preferred roads within your municipality and send the KML file to Fahad Shuja (Fahad@ogra.org)

## ***1. Autonomous Vehicles (AVs) – a Critical Consideration***

The topic of AVs has certainly gained exponential momentum in recent years. Just a few years ago, AVs were generally thought of as a "Jetsons Era" concept – i.e. not happening anytime soon. Fast-forward to today and every major auto-manufacturer is investing heavily in this technology. Not only that, we are also witnessing innovative technology start-ups as well as partnerships arising between the tech and automotive sectors. From OGRA's perspective, our mandate is to support our municipal members when we notice important shifts on the horizon. This particular shift due to AVs is perhaps as big as, if not bigger than, the transition from horses to "horseless-carriages" (i.e. cars) in early 20<sup>th</sup> century. And since these vehicles are going to be very much part and parcel of our municipal roadways, it is critical for all Ontario municipalities to start exploring AVs with a very serious lens. It is no longer an issue of "if" AVs will arrive, but only a matter of "how soon".

## ***2. Ontario Good Road Association's (OGRA's) Support to-Date***

OGRA has been monitoring the AV sector for the past several years. We have also been active in keeping our municipal members up-to-date with global/local activities in the AV sector. In no particular order:

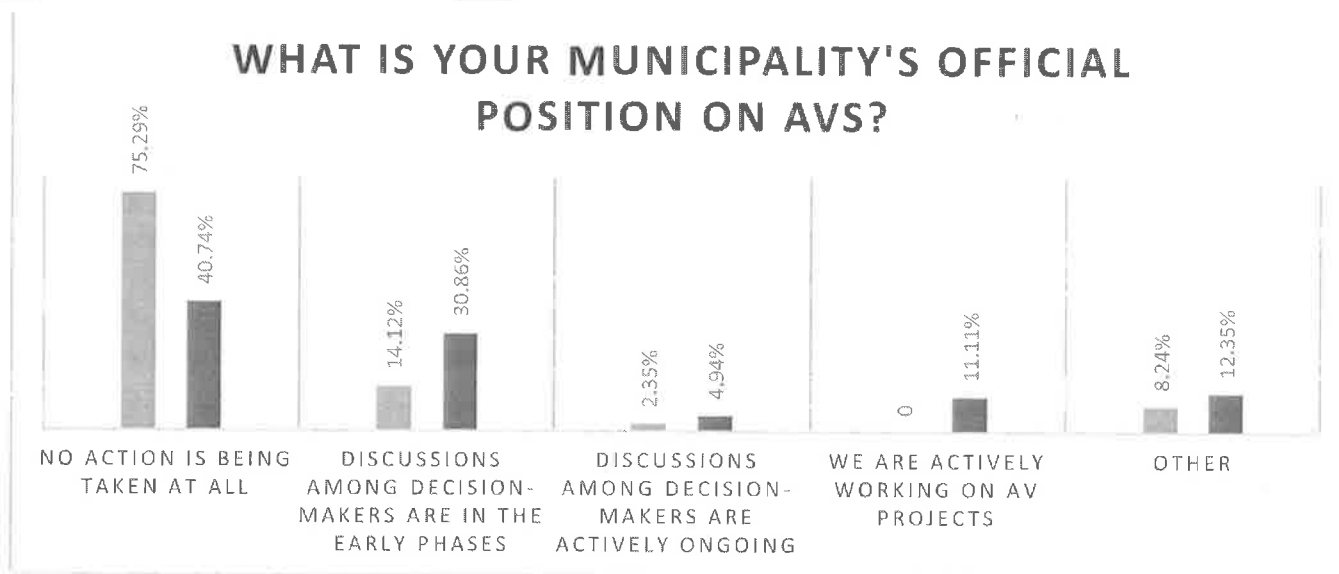
- We published a whitepaper, called "The Roadmap for Autonomous Vehicles in Ontario, Canada"<sup>2</sup>,
- We have carried out various (no cost) webinars, bringing forward important AV-related topic/ideas,
- We have conducted two major surveys since 2016 to understand municipal progress on AVs,

- We have provided municipal-focused recommendations to the Ontario Ministry of Transportation (MTO) as part of their ongoing dialogue regarding updates to the Pilot AV Regulation 306/15<sup>3</sup>,
- We have established a dedicated group called “Municipal Alliance for Connected and Autonomous Vehicles in Ontario” (MACAVO), comprising of many of Ontario's forward-looking municipalities that are interested in furthering the testing and deployment of AVs on their local roads.

OGRA is very encouraged by the level of support received on this AV topic from municipalities to-date. We conducted our first cross-municipal survey in late 2016, and then repeated many of the same questions again in another similar survey in early 2018. Approximately 100 municipalities participated in each of these surveys. Within a span of about 14 months, we've seen significant shifts in favour of AVs. Here are some results for your consideration:

#### LEGEND:

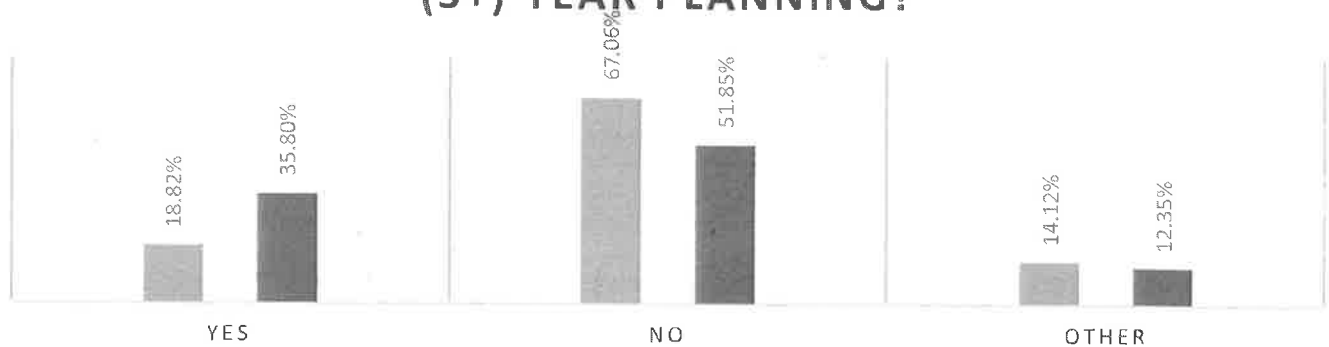
■ Late 2016 survey results    ■ Early 2018 survey results



*PLEASE NOTE FROM ABOVE CHART: In 2016, over 75% of municipalities indicated having taken no action. This number has significantly changed now – only about 40% of municipalities have not taken any action. Additionally, internal discussions have gone up from 14% to over 30%. Also note that Active Projects have gone from 0% in 2016 to over 11% in early 2018.*

<sup>3</sup> Link: <https://www.ontario.ca/laws/regulation/150306>

## ARE YOU CONSIDERING CONNECTED AND/OR AUTONOMOUS VEHICLES IN YOUR LONG-TERM (3+) YEAR PLANNING?



PLEASE NOTE FROM ABOVE CHART: In 2016, around 18% of municipalities were addressing AVs/CVs in their long-term planning. That number has now nearly doubled to over 35%.

### 3. A Major New Initiative

The AV sector is at a critical boiling point now. There is a tremendous amount of activity across the globe in order to develop and enhance the associated technologies, very rapidly. Ontario is particularly very well-positioned to not only take part in this early part of AV revolution, but perhaps to even be among the leaders. Besides having a strong auto-manufacturing sector in our own backyard, we also have multiple tech sector hubs that are already doing some fascinating work in the field of AVs. In addition to that, two years ago, Ontario became the first jurisdiction in Canada to have created an AV Pilot Regulation 306/15. Needless to say, we now have all the important ingredients in place to take Ontario to the next level of AV race.

As OGRA's next major initiative, we have started working to help create a seamless, well-coordinated "Preferred AV Test Corridor", spanning from Windsor and all the way to Ottawa. This initiative is being driven through OGRA's new MACAVO group, which is primarily comprised of leaders from various municipalities. If the vision for this Preferred Corridor can be materialized (through your support), it will be the first municipal coordination of its kind in the entire world. That title itself can be an important feather in Ontario's hat, which can act as a powerful catalyst for uplifting Ontario's and Canada's profile on the global AV stage.

At materialization, this Preferred Corridor has the potential to provide "at least" 800 kilometres of dedicated testing opportunities to AVs authorized to operate in Ontario through MTO<sup>4</sup>. Besides being the first in the world, there are a number of other opportunities that come along with this initiative:

- Ability to attract and retain talent within Ontario and Canada,
- Ability to establish local policies that allow for seamless flow of AV traffic (as opposed to each jurisdiction having different standards),
- Ability to collectively test critical infrastructure technologies along the Preferred Corridor,
- Ability to pool funds together and carry out large exercises that couldn't be done single-handedly,
- Ability to work closely and directly with AV stakeholder groups (e.g. auto-manufacturers, tech sector, education sector, and more) and solving problems together,

- Ability for municipalities to work together in order to learn/grow together in the new AV world,
- Ability to collectively educate the citizens – an extremely important element for AV deployment,
- Ability to become a model of collaboration for the other Provinces of Canada, and
- Lots more!

All-in-all, establishing a clear, Preferred AV Test Corridor is an excellent way for Ontario to become an integral part of AV testing and deployment in the world.

## 4. Action Required to be a Part of the “Preferred AV Test Corridor” + Key Milestones

At this stage, OGRA is simply requesting all interested municipalities to highlight<sup>5</sup> as many Preferred local/private roads as possible. A number of municipalities have already conducted this exercise, and OGRA is pleased to share that we have already received over two-thousand (2,000+) kilometres of municipal Preferred roads for consideration towards the Windsor-Ottawa Corridor.

Following are the initial set of milestones for this initiative:

1. [Ongoing] Each participating municipality to identify One (1) employee<sup>6</sup> for their municipal AV file. This individual should be in a position to take information from MACAVO/OGRA and share it efficiently with all internal stakeholders within the municipality.
2. [Ongoing] Each participating municipality to identify ALL roads (or sections thereof) where they are comfortable in allowing testing of SAE Level 4 and Level 5 AVs (table on page 8) – i.e. no driver required. Once identified, the Preferred roads to be shared with OGRA as a “KML” file<sup>7</sup>, by sending the file to Fahad@ogra.org.
3. [Ongoing] OGRA to put together an aggregate<sup>8</sup> of all municipal Preferred road selections onto a digital map.
4. OGRA to propose a Preferred, seamless Corridor to participating municipalities, likely through a face-to-face meeting before the end of summer 2018.
5. OGRA to initiate active discussions with all AV stakeholders to bring various testing and collaboration opportunities to the participating municipalities.

OGRA has also put together a detailed set of Frequently Asked Questions (FAQs), in APPENDIX A.

<sup>5</sup> OGRA recommends that this Preferred roads' highlighting be done in strategic collaboration with stakeholder municipal employees.

<sup>6</sup> Today, this selected individual can be anyone from the Mayor to Transportation/Planning Director. The key element is to install in individual who can take actions on behalf of the municipality on AV initiatives.

<sup>7</sup> Can be easily created using industry-standard GIS program(s) like ESRI and ArcGIS, which most municipalities already use for their day-to-day activities. If KML file cannot be produced, simply send the scanned, hand-marked map to OGRA and we will convert it to a digital file.

<sup>8</sup> The map will not be shared publicly at this stage. It will be used as a key tool to collaborate with municipalities to generate a seamless route.





SAE level	Name	Narrative Definition	Execution of Steering and Acceleration/Deceleration	Monitoring of Driving Environment	Fallback Performance of Dynamic Driving Task	System Capability (Driving Modes)
<b>Human driver monitors the driving environment</b>						
<b>0</b>	<b>No Automation</b>	the full-time performance by the human driver of all aspects of the dynamic driving task, even when enhanced by warning or intervention systems	Human driver	Human driver	Human driver	N/A
<b>1</b>	<b>Driver Assistance</b>	the driving mode-specific execution by a driver assistance system of either steering or acceleration/deceleration using information about the driving environment and with the expectation that the human driver perform all remaining aspects of the dynamic driving task	Human driver and System	Human driver	Human driver	Some driving modes
<b>2</b>	<b>Partial Automation</b>	the driving mode-specific execution by one or more driver assistance systems of both steering and acceleration/deceleration using information about the driving environment and with the expectation that the human driver perform all remaining aspects of the dynamic driving task	System	Human driver	Human driver	Some driving modes
<b>Automated driving system ("system") monitors the driving environment</b>						
<b>3</b>	<b>Conditional Automation</b>	the driving mode-specific performance by an automated driving system of all aspects of the dynamic driving task with the expectation that the human driver will respond appropriately to a request to intervene	System	System	Human driver	Some driving modes
<b>4</b>	<b>High Automation</b>	the driving mode-specific performance by an automated driving system of all aspects of the dynamic driving task, even if a human driver does not respond appropriately to a request to intervene	System	System	System	Some driving modes
<b>5</b>	<b>Full Automation</b>	the full-time performance by an automated driving system of all aspects of the dynamic driving task under all roadway and environmental conditions that can be managed by a human driver	System	System	System	All driving modes

## 5. Preference of Testing on Municipal Roads vs. Highways

The AV technology, to-date, is being tested primarily in secluded areas, which has been extremely helpful. That said, it is now time to allow these vehicles to interact on local roadways in a very coordinated manner. Primary reason for this is the fact that in order for this technology to prosper, and to bring about exponential socio-economic benefits to our citizens and businesses, a level of trust has to be developed through interactions. The AVs must learn to co-exist in our increasingly multi-modal society, alongside pedestrians, cyclists, transit, and much more. There is no better way to teach this integration to AVs besides giving them an opportunity to be tested in real-world situations. And by having dedicated Preferred Corridor(s), it will be exponentially more cost-effective for municipalities to focus their attention and be involved.

OGRA also envisions having the Preferred Corridor run through Ontario's Provincial Highways, but only as a secondary option when no municipal roadway is available for the given location. While Highway testing is very important, many of the human-AV interactions happen on local streets, and therefore it is important to give preference to municipal roads first.

## 6. Cost to Join the Preferred Corridor

OGRA intends for this Preferred Corridor exercise to be open to all municipalities and therefore there is no financial contribution required by the supporting municipalities. All OGRA requires for now is your initial highlighting of locally Preferred roads (and/or road sections).



## ***7. Thoughts on Expanding the Preferred Corridor***

OGRA's ultimate vision is to continue expanding this exercise to connect all corners of the Province. Therefore, even if a municipality does not fall within the Windsor-Ottawa stretch, OGRA's invitation to join still is very much open! Essentially, if your municipality is located in Ontario, we are hereby inviting you to engage with us in this exercise.

## ***8. Your Support Matters***

It is in OGRA's DNA to keep eyes on emerging technologies and support Ontario's municipalities as best as we can through initiatives, policies, and education. We feel this is a very historic moment for Ontario and Canada, and would like to encourage you to come and support OGRA in this promising initiative. In order to get started, all you need is to identify your locally Preferred roads.

Should you have any questions, please contact Fahad Shuja at OGRA, at [Fahad@ogra.org](mailto:Fahad@ogra.org).

# APPENDIX A

## Frequently Asked Questions (FAQs)

### **Q. What is “Level 4” and “Level 5”?**

A. These are the highest possible levels of automation. The wording has been adopted from the Society of Automotive Engineers (SAE). At Level 4 and 5, the vehicle is not only driving by itself (like “Kitt” from Knight Rider), but it does not even require a steering wheel.

### **Q. What is the difference between “AVs” and “CVs”?**

A. “AVs”, by definition, are designed by auto manufacturers to act like perfect human drivers, and they dutifully follow the rules of the road. They have sensors and software installed within the vehicle to allow for complete navigation from point A to B. “CVs” (or Connected Vehicles) are those that have some sort of communication channels with infrastructure, road users, other vehicles, pedestrians, etc. By definition, AVs do not need to also be CVs, and vice versa. At this stage, it is important to get the testing properly done for AVs, as they pose the most risk to those around them. Ultimately, the best results can be achieved when AVs are also talking to each other and are “Connected”. If you need further clarification, please contact OGRA.

### **Q. Do AVs require mandatory updates to the infrastructure?**

A. No. AV manufacturers are actively working to allow the AVs to operate without specific infrastructure upgrades. As long as the road network is in compliance with Ontario's Minimum Maintenance Standards (MMS), O. Reg 239/02, AVs should be able to navigate on Ontario's existing municipal roadways.

### **Q. How much of the road network (by %) should be selected as Preferred for L4/5 testing?**

A. Anything above 10% of entire road network should be a very good start.

### **Q. When marking up Preferred roads for Level 4/5 Corridor within our municipality, should we avoid roads around hospitals and schools?**

A. We had previously suggested to exclude roads around schools, hospitals, and any other critical areas; however, since then we've been approached by some municipalities who feel that these same areas are where many accidents happen due to human error, and therefore can benefit greatly from AVs. Based on that feedback, we would like pull back our initial suggestion of excluding those areas, and would like to leave the decision entirely with your level of comfort.

### **Q. “Can we update/add/delete the Preferred road selections after the first submission?”**

A. Absolutely. This first run is a preliminary exercise to get the ‘brain juices’ flowing! None of the routes are to be carved in stone yet at this early stage.

### **Q. In selecting the Preferred roads, should we limit ourselves to paved roads only?**

A. No. At this stage, nothing is off the table. Please mark out any possible road(s) that you prefer for L4/5 testing in your jurisdiction

**Q. Would it be beneficial for the municipalities to provide locations of supporting infrastructure, such as EV charging stations, rest areas?**

A. You are one step ahead of us, and that's great! Yes. Going forward, once the Preferred Corridor is in place, the next exercise will likely be to start requesting MACAVO to identify key infrastructure within their local jurisdictions.

**Q. Is the Preferred Corridor going to be only for passenger vehicles, or can it be used for others traffic as well (such as freight trucks, transit lines, etc.)?**

A. We are not limiting this exercise to any particular type of vehicle. However, if you will ONLY ALLOW a certain kind of vehicle then we will need to know that at some point in the near future.

**Q. Are there plans to connect the Preferred Corridor to Northern and Southern Ontario as well?**

A. Absolutely. While our initial Preferred Corridor highlight is Windsor-to-Ottawa route, the door is wide open to all municipalities to get involved. We would like to connect as many jurisdictions as possible.

**Q. How are municipalities handling liability and insurance in the event an accident occurs on a municipal roadway?**

A. As part of Ontario's AV Pilot Regulation 306/15<sup>9</sup>, MTO requires that any test vehicles carry a \$5M insurance. Testers can't test without it.

**Q. Are there concerns with AVs being tested on roadways with cycling infrastructure?**

A. A big part of this Preferred Corridor will be to allow AVs to interact with multi-modal traffic + civilians. We will of course have to be extra careful in situations where AVs are expected to operate very close to this kind of traffic. This is very much a learning exercise for everyone. The computer must be trained with all possible scenarios. The more it "knows", the more it will be able to better navigate and save lives.

**Q. What will happen if there is an accident involving these vehicles during the testing? Will the Municipality be required to get involved and how will the insurance work?**

A. Today, there is a void in rules regarding this, and one big reason why OGRA has taken on the task to create the Preferred Corridor. We need to start these discussions. Being at the table will help pave the way for amicable solutions.

**Q. When are other (non-municipal) stakeholders going to be engaged as part of this exercise?**

A. OGRA is already in communications with a number of stakeholders from private sector, auto manufacturing, technology solutions, educational institutes, and more. Active engagement with these (and any other) stakeholders can begin as soon as at least one Windsor-Ottawa municipal Preferred Corridor has been established.

**Q. Our municipality is new to this exercise. What should we be doing next to participate?**

A. Most participating municipalities have now identified ONE (1) representative who will be the point-person on the AV file for their respective jurisdiction. We would like to recommend that you start by identifying the right individual who will represent your municipality's interests in the AV discussions. Furthermore, most participating municipalities have started to hold internal meetings with local staff

<sup>9</sup> Link: <https://www.ontario.ca/laws/regulation/150306>

and/or stakeholder municipal departments to start identifying ALL possible roads (and/or sections thereof) where they are comfortable in testing Level 4/5 AVs. We don't recommend creating a town-hall type setting; instead, it is important to engage handful of municipal employees in key departments who will ultimately have to deal with AVs in one way or another. At this stage, it is about Quality individuals over Quantity.

Finally, some municipalities have nearly completed identifying their first draft of L4/5 roads, and are looking to share their selections with OGRA. Those municipalities are encouraged to send in their KML files to [Fahad@ogra.org](mailto:Fahad@ogra.org).

**Q. When is the next MACAVO meeting scheduled?**

A. Our last meeting took place in Brampton, on March 26th, 2018. Next meeting date is not yet set. Being fully cognizant of the costs associated with travel to/from meetings, our aim is to carry out meetings only when critical decisions are to be made as a group. Our aim is to utilize remote communications (such as webinars, screen-sharing etc.) as much as possible, in order to help minimize costs of our municipal members. We are estimating that another meeting will be required somewhere near the mid or end of summer 2018.

**Q. I want to make sure I identify the right representative from my municipality. Who should I select?**

A. Yes, it is critical that you identify the right person to represent your jurisdiction. The primary individual from your municipality should have the professional authority to go back and set wheels in motion. As an example, some of the typical job titles you can expect to interact with through OGRA's MACAVO group include, Transportation Directors/Planners, Mayors, Councillors, and more. On that note, if you feel that you have sufficient political/managerial authority to make change, but require technical assistance to answer any road-related questions that may come up, then please connect yourself with a technical support staff.



FOR IMMEDIATE RELEASE

## **Municipalities Create Alliance to Actively Promote Connected and Autonomous Vehicle Testing and Integration within our Communities**

OAKVILLE, Ontario, November 17, 2016 – Connected Vehicles (CVs) and Autonomous Vehicles (AVs) are coming much faster than originally estimated. Ontario was the first province in Canada to create a Regulation (Reg. 306/15) allowing AVs to be piloted on its roads. With this regulation in place, municipalities across Ontario must prepare for the imminent arrival of CVs and AVs. In an effort to have all jurisdictions work together, and to help facilitate this co-ordination, Ontario Good Roads Association (OGRA) has organized the Municipal Alliance for Connected and Autonomous Vehicles in Ontario (MACAVO), best pronounced “Muh-Kay-Vo”.

MACAVO is to bring forward-looking Ontario municipalities together to facilitate CV/AV research, testing and integration within their respective jurisdictions. This provides MACAVO members the opportunity to learn from each other and develop a synchronized set of logistics, policies, and communication channels to help the CV/AV industry move forward in Ontario, while integrating with municipal services.

The first official MACAVO meeting took place on August 9, 2016 and was attended by municipal transportation leaders from: City of Barrie; City of Brampton; Region of Durham; City of Elliot Lake; County of Essex; City of Hamilton; Town of Lakeshore; York Region; and others. The City of Stratford has since joined MACAVO as well. Stratford is particularly an amazing inspiration for the MACAVO team because of the great work that the city has already done in welcoming various technologies. Several other Ontario municipalities have also expressed interest in joining in the near future.

“We openly invite all Ontario municipalities who are prepared to start researching, testing and integrating these technologies in some capacity, to join MACAVO”, said Thomas MacPherson, York Region Manager of Transportation Asset Management and Chair of MACAVO. “Efforts across the province need to be co-ordinated to maximize the long-term benefits that CVs and AVs can provide our communities. At MACAVO, we are ready to work with all CV and AV stakeholders, including: the automobile industry; young entrepreneurs; the education sector; and local, provincial, and federal governments.”

Robert Burlie, P. Eng. and President of OGRA said, “... It is estimated that 50% of all vehicles on our roads will be fully autonomous in the next 15 years and assist all municipalities who are making substantial efforts to improve road safety and ease traffic congestion. This technology is improving so rapidly that there will certainly be other benefits to all our communities and municipalities in Ontario, and will allow our roadways to be completely transformed for better use by pedestrians, cyclists, public transit, vulnerable users and vehicles.”

“Not many people are aware that OGRA played a pivotal role in assisting Ontario’s municipalities in transitioning from horses to automobiles. We see a very similar shift in transportation taking place today, with the move toward connected and driverless automobiles” said Joe Tiernay, OGRA’s Executive Director. “Only this time, the positive effects are expected to be even greater than before, and we want to make sure we are standing alongside our member municipalities, supporting them as they prepare for this historic transition”

MACAVO is hereby requesting the automobile industry, as well as all other CV/AV stakeholders to come forward to begin the collaboration process. In the coming months, MACAVO will set up a work-plan to help drive the team forward with achievable, short- and long- term goals and objectives for CVs and AVs.



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**About Ontario Good Roads Association (OGRA)**

The mandate of the Ontario Good Roads Association, a not-for-profit entity, is to represent the transportation and public works interests of Ontario municipalities through advocacy, consultation, training and the delivery of identified services.

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**MACAVO Contact**

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