Subject: Result of the Traffic Signal and All-Way Stop Control Warrant Review in Consideration to Rural Context

File Number: ACS2025-PWD-ARAC-0001

Report to Agriculture and Rural Affairs Committee on 4 September 2025

and Council 10 September 2025

Submitted on August 25, 2025 by Krista Tanaka, Director, Traffic Services, Public Works Department

Contact Person: Heidi Cousineau, Manager, Traffic Safety and Mobility, Public Works Department
613-580-2424, ext. 33355, Heidi Cousineau@ottawa.ca

Wards: West Carleton-March (5), Ward 19 – Orléans South-Navan, Ward 20 – Osgood, Ward 21 – Rideau-Jock and Ward 22 – Riverside South-Findlay Creek

Objet : Résultat de l'examen de la justification des feux de circulation et des panneaux d'arrêt dans tous les sens en tenant compte du contexte rural

Numéro de dossier : ACS2025-PWD-ARAC-0001

Rapport présenté au Comité de l'agriculture et des affaires rurales

Rapport soumis le 4 septembre 2025

et au Conseil le 10 septembre 2025

Déposé le 25 août 2025 par Krista Tanaka, directrice, Services de la circulation

Personne-ressource : Heidi Cousineau, gestionnaire, Direction de la circulation, de la sécurité et de la mobilité, Direction générale des travaux publics

613-580-2424, poste 33355; HeidiCousineau@ottawa.ca

Quartiers : Quartier 5 – West Carleton-March, quartier 19 – Orléans-Sud-Navan, quartier 20 – Osgoode, quartier 21 – Rideau-Jock et quartier 22 – Riverside-Sud-Findlay Creek

REPORT RECOMMENDATION(S)

That the Agriculture and Rural Affairs Committee recommend City Council:

1. Receive for information enhancements made under delegated authority to the signal warrant review process as described in this report; and,

2. Approve the new warrant criteria associated with the implementation of all-way stop control (AWSC) on rural collectors as described in this report.

RECOMMANDATION(S) DU RAPPORT

Que le Comité de l'agriculture et des affaires rurales recommande au Conseil municipal :

1. de prendre connaissance des améliorations apportées à l'information en vertu des pouvoirs délégués dans le cadre du processus d'examen de la justification des feux de circulation selon les modalités exposées dans ce rapport;
2. d'approuver les nouveaux critères de justification correspondant à la mise en œuvre des panneaux d'arrêt dans tous les sens (PATS) dans les routes collectrices de la zone rurale selon les modalités exposées dans ce rapport.

EXECUTIVE SUMMARY

This staff report presents the results of a review of the City of Ottawa's traffic signal and all-way stop control warrant processes, with a focus on their applicability in rural contexts. The review evaluated whether current practices sufficiently reflect the unique characteristics of rural intersections and identified opportunities for improvement.

Key Outcomes

- **Traffic Signal Warrants**:
  The City's existing traffic signal warrant process aligns with the Ontario Traffic Manual Book 12 – *Traffic Signals*, reflects best practices observed in comparable jurisdictions and makes consideration to the rural context. While no changes to the warrant criteria are proposed, two process enhancements will be implemented under delegated authority:
    - **Speed studies** to more accurately determine flow conditions at rural intersections.
    - **Extended traffic count periods** using the highest eight hours within a 16-hour window to better capture rural commuting patterns.

  The existing traffic signal warrant process ensures resources are directed towards locations with more consistent, all-day traffic issues, whether in urban, suburban or rural areas. The enhancement will help better account for rural conditions while assessing intersections in rural areas.
- **All-Way Stop Control Warrants**:
  The current all-way stop control warrant process, which aligns with guidelines in

the Ontario Traffic Manual Book 5 – *Signs* and which was approved by Council in 2020, already addresses intersections involving arterial roads outside rural villages/built up areas. However, it lacks criteria for intersections involving only collector roads or a collector and local road.

Jurisdictions with rural environments have indicated that they closely follow the Ontario Traffic Manual Book 5 warrant guidelines for all-way stop control. However, Book 5 does not clearly differentiate between collector roadways in rural or urban areas.

The new proposed warrant criteria for rural collectors are very similar to the existing warrant criteria for rural arterials, whereby an all-way stop control would be triggered if the threshold is met for one of the three criteria relating to the intersection collision history, sightlines or traffic volume. The proposed enhancement for the rural collector consideration would implement a lower minimum traffic volume threshold as compared to threshold required for rural arterial roads.

These enhancements ensure that traffic control decisions are **context-sensitive, data-driven, and safety-focused**, while maintaining alignment with provincial guidelines and industry best practices. Implementation costs will be absorbed within existing Traffic Services operating budgets.

SYNTHÈSE ADMINISTRATIVE

Ce rapport du personnel fait état des résultats de l'examen des processus de justification des feux de circulation et des panneaux d'arrêt dans tous les sens de la Ville d'Ottawa, en mettant l'accent sur leur applicabilité dans les contextes ruraux. Cet examen a permis d'évaluer les pratiques actuelles pour savoir si elles rendent suffisamment compte des caractéristiques exceptionnelles des intersections dans les zones rurales et de recenser les points à améliorer.

Principaux résultats

- **Justification des feux de circulation**
  Le processus de justification des feux de circulation existant de la Ville cadre avec le Livre 12 (Traffic Signals) du Manuel de la circulation de l'Ontario, fait état des règles de l'art constatées dans les administrations comparables et tient compte du contexte rural. Même si on ne propose pas d'apporter de modifications aux critères justificatifs, nous apporterons à ce processus, dans le cadre des pouvoirs délégués, deux améliorations :

- des **études sur la vitesse** afin de déterminer plus fidèlement les conditions de la fluidité de la circulation aux intersections dans les zones rurales;

- le **prolongement des périodes de dénombrement de l'achalandage automobile** en faisant appel aux huit heures les plus achalandées dans un créneau de 16 heures afin de mieux capter les habitudes dans le navettage dans les zones rurales.

Le processus de justification des feux de circulation existant permet de s'assurer que les ressources sont consacrées aux secteurs dans lesquels on relève des problèmes d'achalandage automobile plus constants durant toute la journée, dans les zones urbaines, de banlieue ou rurales. Les améliorations apportées permettront de mieux tenir compte des conditions de l'achalandage automobile dans les zones rurales, en évaluant les intersections dans ces zones.

- **Justification des panneaux d'arrêt dans tous les sens**
  Le processus actuel de justification des panneaux d'arrêt dans tous les sens, qui cadre avec les lignes de conduite du Livre 5 (Signs) du Manuel de la circulation de l'Ontario et qui a été approuvé en 2020 par le Conseil municipal, tient déjà compte des intersections faisant intervenir des artères hors des villages ruraux et des secteurs bâtis. Or, ce processus ne prévoit pas de critères pour les intersections faisant intervenir uniquement des routes collectrices ou une voie collectrice et une route locale.

  Les municipalités qui ont des environnements ruraux ont fait savoir qu'elles respectent rigoureusement, pour les panneaux d'arrêt dans tous les sens, les lignes de conduite sur la justification du Livre 5 du Manuel de la circulation de l'Ontario. Cependant, le Livre 5 ne fait pas de distinction claire entre les routes collectrices dans les zones rurales et urbaines**.**

  Les nouveaux critères justificatifs proposés pour les routes collectrices dans les zones rurales s'apparentent beaucoup aux critères justificatifs existants pour les artères dans les zones rurales, sur lesquelles un panneau d'arrêt dans tous les sens serait installé si le seuil est atteint pour l'un des trois critères se rapportant à la rétrospective des collisions aux intersections, aux lignes de mire ou au volume de l'achalandage automobile. L'amélioration que l'on propose d'apporter pour tenir compte des routes collectrices dans les zones rurales consisterait à adopter un seuil minimum moindre pour ce qui est du volume de l'achalandage automobile par rapport au seuil obligatoire pour les artères des zones rurales.

Ces améliorations permettent de s'assurer que les décisions à prendre dans la régulation de la circulation sont **adaptées au contexte, portées par les données et axées sur la sécurité**, tout en continuant de correspondre aux lignes de conduite du gouvernement provincial et aux règles de l'art de la profession. Les frais de mise en œuvre seront absorbés dans les budgets opérationnels existants des Services de la circulation.

BACKGROUND

A review of the traffic signal and the all-way stop control warrant processes has been completed, focusing on their applicability within Ottawa's rural context. The reviews aim to determine if current warrant practices adequately consider the unique needs of rural communities and if enhancements are needed.

The City of Ottawa's warrant processes for both traffic signals and all-way stop controls follow methodology provided by the Ontario Ministry of Transportation. The Ontario Traffic Manual guidelines promote uniformity, safety, and predictability across Ontario's transportation network. They provide practitioners with additional clarity and practical advice on complying with the *Highway Traffic Act* and associated regulations. As per the Delegation of Authority By-law No. 2025-69 (Schedule "J", Section 7), the General Manager of Public Works and the Director of Traffic Services are authorized to approve, install, and maintain traffic signals and signs. The use of delegated authority and the application of industry standards, guidelines, and best practices must be used in combination with traffic engineering experience and professional judgement.

Traffic Signals

The last report on the traffic signal warrant approach was in 1998, as noted in Region of Ottawa-Carleton Information Report on Warrants for Pedestrian Signals and Traffic Control Signals. The report confirmed the justification method, based on Ontario Ministry of Transportation guidelines, was adequate. The City's warrants for traffic control signals follow methodology provided in the Ontario Traffic Manual Book 12 – Traffic Signals (OTM Book 12), using an eight-hour traffic volume threshold. At the time, the Ontario Ministry of Transportation was considering adding a four-hour threshold to OTM Book 12. The staff report indicated that this lower threshold would be excluded from the City's warrant process due to its potential to significantly increase the number of warranted signals and resulting capital budget pressures.

The City's existing traffic signal warrant process considers the characteristics of the intersection's major and minor roadways and their traffic volumes to determine a driver's ability to complete the desired movement at the intersection. Pedestrian and cyclist

volumes, along with the intersection's collision history, are also considered.

As part of the warrant process review for the rural context, staff examined the following:

- application of the traffic flow characteristics (restricted flow vs. free flow);
- the use of OTM Book 12 Justification Categories, including a targeted review of:
    - the standard count hours used in the warrant process;
    - and the use of the four-hour justification; and,
- Signal warrant practices of surrounding municipalities with rural environments.

All-Way Stop Control

The intersection all-way stop control warrants were last approved by Council in October 2020. The current warrant approach allows greater flexibility citywide for implementing all-way stop control and considers pedestrian exposure and the proximity of pedestrian generators where relevant.

The existing warrant for a rural arterial scenario requires meeting thresholds for one of three criteria: sightlines, collisions, or volume. The 2020 review lowered the collision threshold in rural areas from four or more preventable collisions per year over a three-year period to three or more preventable collisions over that same timespan, aligning with the urban collision warrant criteria. The warrant process aligns with guidelines in the Ontario Traffic Manual Book 5 – Regulatory Signs (OTM Book 5), with adjustments as approved by Council.

The review of the all-way stop control warrant process in rural areas serves to address Councillor Darouze's direction to staff approved by Council on January 29, 2025 which instructed staff to *"… review the all-way stop control warrant process for rural intersections to ensure it takes into consideration the rural context and bring back recommendations to the ARAC before the end of Q3, 2025*."

This report will summarize the findings of the traffic signal and the all-way stop control warrant process reviews in consideration of the rural context. Enhancements, feasible either through delegated authority or Council approval, will be presented, along with their rationale.

DISCUSSION

Traffic Signal Warrant Process Review

Traffic Services in the Public Works Department completed a review of the traffic signal warrant process focusing on their applicability within Ottawa's rural context. To determine whether the unique traffic conditions in rural communities are considered

adequately and whether enhancements to the warrant process are required, staff reviewed:

- the selection of basic input data used in the traffic signal warrant process, with a focus on:
    - selection of traffic flow conditions to reflect different operating characteristics (restricted flow vs. free flow); and
    - the standard traffic count hours used in the warrant process.
- the city's traffic signal justification process and its alignment with guidance provided in OTM Book 12; and,
- a review of the minimum four-hour vehicle volume justification.

Staff also conducted a survey of surrounding municipalities with rural environments and villages to observe current practices including the approach to determining an intersection's flow condition.

Traffic Signal Warrant Assessment Process

A traffic signal warrant assessment involves a systematic process to determine the need for installing traffic control signals. The process includes the collection and analysis of various traffic engineering related data as well as the application of staff expertise, knowledge, and engineering judgement. The justification criteria for traffic signal warrants are provided in the Ontario Traffic Manual Book 12 - Traffic Signals (OTM Book 12) as guidance to Transportation Professionals across Ontario to ensure consistent design, operation, and application of traffic signal warrants.

Each intersection is individually assessed whether it is located within an urban, suburban or rural area. While the methodology is not explicitly defined by geographical area or environment (urban or rural), there are many elements within the process which consider the unique context of the rural environment.

Input Data

The signal warrant review involves assessing basic input data including intersection configuration, traffic and pedestrian volumes, roadway speeds and collision data. Urban and rural roadways are most often uniquely differentiated by their operating characteristics (flow conditions and speeds) and peak period traffic volume variability.

The theory behind the primary warrant criteria is based on the availability of minimum acceptable gaps which would allow road users approaching an intersection from the minor road (side street) to safely join or cross traffic on the major roadway. The minimum justification criteria vary depending on both the intersection configuration

which considers the number of approaches and lanes, and the intersection flow condition. While intersection configuration can vary in both urban and rural locations, flow condition is more consistently related to the roadway environment.

Flow conditions have an impact on minimum justification criteria for a traffic signal. Guidelines in OTM Book 12 state the following:

> *"The justification for traffic signals has been developed for two types of flow conditions: restricted flow and free flow. The two types are necessary to reflect different operating characteristics. Engineering judgment should be used in determining which condition best describes the study location under existing operating conditions or for a predetermined future analysis scenario:*
>
> - ***Restricted Flow Conditions** represent roads with operating or posted speeds of less than 70 km/h and are normally encountered in urban areas where side friction on the roadway (due to parking, numerous entrances, etc.) reduces the operating speed.*
> - ***Free Flow Conditions** represent roads with operating or posted speeds equal to or greater than 70 km/h and are normally encountered in rural areas or on controlled access roads in urban areas. As driving characteristics in small urban communities can be different from those in larger urban areas, free flow conditions are also used for isolated communities with a population of less than 10,000 and located outside the community influence of a large urban center, even if the operating speed is less than 70 km/h."*[1]

Applying the OTM flow condition guidance to an Ottawa context, "urban areas" refer to built up areas which are located within the urban boundary or within rural villages. Free flow conditions typically occur in rural areas outside rural villages and may also exist in certain urban/suburban environments.

The determination of flow conditions in the warrant process is important as OTM – Book 12's minimum traffic volume threshold to justify a signal is lower on roads with free-flowing traffic. The threshold is lower since at higher speeds, a larger gap (distance) is required to safely join or cross the major roadway.

As part of the existing traffic signal warrant process, each intersection is assessed to determine whether it operates under free flow or restricted flow conditions based on OTM Book 12 definitions. Flow conditions are established based on the intersection's unique operating characteristics, and not on its location. This practice ensures the

[1] Ontario Traffic Manual Book 12 – Signals (Flow Conditions, p. 77)

appropriate traffic volume thresholds are applied when assessing an intersection. Current practice typically considers the posted speed limit or if available, the operating speed for assessing the appropriate flow conditions for warrant analysis purposes.

OTM Book 12 Justifications

For a traffic signal installation to be technically justified, at least one of the seven OTM Book 12 justifications must be fulfilled. The installation of a signal at an intersection that does not fulfil one of the justifications, would likely result in an increase in overall intersection delay and/or a negative impact on intersection safety.

OTM Book 12 Justification Categories are provided in Table 1 below.

Table 1 - OTM Book 12 Justification Categories

OTM Book 12 Justification	Description
1 - Traffic Volumes Requirements	The Minimum Vehicle Volume justification is intended for applications where the principal reason for installing a traffic signal is the cumulative delay produced by a large volume of intersecting traffic at an unsignalized intersection.
2 - Delay to Cross Traffic	The Delay to Cross Traffic justification is intended for applications where the traffic volume on the main road is so heavy that traffic on the minor road suffers excessive delay or hazard in entering or crossing the main road.
3 - Volume / Delay Combination	The Volume / Delay Combination justification may be applicable where neither Justification 1 nor Justification 2 is 100 per cent satisfied, but both justifications are at least 80 per cent satisfied.
4 - Minimum Four-Hour vehicle Volume	The Minimum Four-Hour Vehicle Volume justification is intended for applications where the intersection experiences excessive delays for four or more peak hours of the day but does not have the prolonged demands throughout the day to meet an eight-hour warrant.
5 - Collision Experience	Traffic signals may be considered as one means of improving intersection safety where an unsignalized intersection has an unusually high collision history (five correctable collisions per year over a three-year period or via a more detailed safety evaluation method if nearly justified).

OTM Book 12 Justification	Description
6 - Pedestrian Volume and Delay	The Pedestrian Volume and Delay justification provides minimum pedestrian volume conditions for certain applications. The justification is intended for applications where the traffic volume on a main road is so heavy that pedestrians experience excessive delay or hazard in crossing the main road, or where high pedestrian crossing volumes produce the likelihood of such delays. This justification is applicable to both an unsignalized intersection or a mid-block location.
7 – Projected Volumes	In certain conditions, it is desirable to determine the future need for traffic signals at an existing or planned intersection.

City of Ottawa Warrant Process and Variations from OTM Book 12

There are two City programs that implement new traffic signals (or roundabouts) at existing intersections:

- New Traffic Control Devices Program: Managed by Traffic Services in the Public Works Department, this program provides for the installation of traffic control devices when intersections meet the warrants; and
- Intersection Control Measures Program: Managed by Transportation Planning in the Planning, Development and Building Department, this program provides growth related intersection control measures to address increased transportation demands from new development.

The City's traffic signal warrant process for both programs generally conform to the most current guidance provided in OTM Book 12. The justification criteria used in the current traffic control signal warrant process is described in Table 2 – City of Ottawa Traffic Signal Warrant Process.

Table 2 - City of Ottawa Traffic Signal Warrant Process

OTM Book 12 Justification	Included	Notes
1 – Traffic Volume Requirements **AND** **2 - Delay to Cross Traffic**	Yes	• Traffic volume data is collected over a City standardized 8-hour period: 7:00 am to 10:00 am, 11:30 am to 1:30 pm and 3:00 pm to 6:00 pm. • Slight variation from OTM Book 12 which indicates that *'The hours selected should represent the eight highest hours of the 24-hour traffic volume'."*
OTM Book 12 Justification	**Included**	**Notes**
3 – Volume/Delay Combination	Yes	• Per OTM Book 12 standard methodology
4 – Minimum Four-hour Vehicle Volume	No	• Excluded (with rationale provided to Council in the 1998 Information Report - Warrants for Pedestrian Signals and Traffic Control Signals)
5 – Collision Experience	Yes	• Per OTM Book 12 standard methodology
6 – Pedestrian Volume/Delay	Yes	• Per OTM Book 12 if both minimum pedestrian volume and delay criteria are met. • Ottawa uses the highest 6 hours of pedestrian traffic to fulfill the justification requirement (OTM uses the highest 8 hours) as a result of Council direction in the 1998 Information Report - Warrants for Pedestrian Signals and Traffic Control Signals

7 – Projected Volumes	Yes	Applies to development areas (if identified in the City's Development Charges Background Study) through Planning, Building and Development Services' Intersection Control Measures Program coordinated by Transportation Planning. Also used by developers through the Traffic Impact Assessment process for traffic control needs required because of specific developments.

Considerations Specific to Development Areas

There is an Intersection Control Measures list that is contained within the 2024 Development Charge Background Study that was endorsed by Council in the Spring of 2024. There are five groupings of intersections that represent the various regions of Ottawa: East, West, Central, Rural and South. These intersections have their basis in the corresponding Community Design Plans (Secondary Design Plans) that have been endorsed by Council. The traffic signal warrants for these intersections must be met to go forward in the Capital budgeting process. They are evaluated for safety, delay, background traffic volumes and projected traffic volumes. Should a Developer wish to advance a traffic control signal in advance of meeting the traffic warrants, they are able to make an application to the City to front end these works. A Front Ending Report can be tabled to Committee and Council, seeking approval to enter into a front ending agreement between the City and the Developer.

Signal Warrant Practices - Municipalities with Rural Environments or Villages

Signal warrant practices of surrounding municipalities with rural environments and villages were reviewed to gauge whether the City's practices adequately consider the unique needs of Ottawa's rural communities. To gather information on existing practices, a jurisdictional survey was conducted through the Road Safety Committee of Ontario (ROSCO), with follow-up conversations where required.

Jurisdictional Survey

Five jurisdictions provided responses to the survey including: the Town of Carleton Place, the Town of Smith Falls, the City of Waterloo, Lanark County and the City of Mississauga. The results of the survey are summarized below:

- One jurisdiction includes rural villages that are located a short distance from their urban/suburban areas. Another is primarily made up of rural county roads between municipalities. The other three responding jurisdictions include only urban low speed roads.
- One jurisdiction has no warrant process, while the rest generally follow the OTM Book 12 methodology to justify traffic control signals.
- One jurisdiction considers free flow traffic for any location that does not fall within a city or settlement boundary. Another uses free flow conditions on rare occasions for assessments in true rural, high flow/speed environments. The rest of the responding jurisdictions were fully urbanized communities and used only the restricted flow criteria for their evaluations.
- Two jurisdictions use both the 4-hour and 8-hour periods in their justification of signals. Two jurisdictions only used 8-hour periods, and one jurisdiction did not provide details on the time period used for their assessments (as assessments are completed externally by a consultant).
- Three jurisdictions collect volume data over specific time periods for their warrant assessments rather than over a full 24-hour period.
- Only one jurisdiction considers other factors that may justify implementation of traffic signals such as surrounding land uses, transit facilities, active transportation facilities etc. in conjunction with OTM guidance.

Out of the five respondents, Waterloo appears to be the most similar to Ottawa in terms of population and general mix of rural and urban communities. Based on Waterloo's responses, a restricted flow method is used within rural communities, regardless of the posted speed limit. Only locations that fall outside the boundary of a rural community, are considered free flow.

Of the five locations, three are near Ottawa and were contacted via phone for follow up discussions, including: Town of Carleton Place, the Town of Smith Falls, and Lanark County. Two of these jurisdictions are fully urban with no rural roadways. If the need arises to investigate installing additional signalized intersections, an external consultant specializing in traffic management is hired to review the warrant, following OTM Book 12 guidelines. The third jurisdiction has a warrant process which also follows OTM Book 12. Most of their studies assume restricted flow conditions but have in rare occasions evaluated intersections using free flow conditions/criteria.

Survey responses and information provided through follow-up discussions with other municipalities with rural environments or villages align with the City of Ottawa's warrant practices and interpretation of OTM Book 12 guidance. The City of Ottawa's process to determine flow conditions of an intersection therefore aligns with other jurisdictions'.

Outcome Traffic Signal Warrant Process Review

Four-Hour Vehicle Volume (OTM Book 12 Justification 4)

One of the components this review assessed specifically is the Four-Hour Vehicle Volume justification in OTM Book 12. It is less restrictive than the eight-hour justification currently used by the City. Using the four-hour justification would have implications to the New Traffic Control Devices Program coordinated by Traffic Services. To evaluate impacts to the program, 162 locations reviewed between 2020 and 2024 that did not meet the city's current eight-hour warrant practice for signals were re-assessed using the four-hour justification. Of the total locations re-assessed, 17 would meet warrants for traffic signals; 13 within urban/suburban areas and four in the rural area. These new warranted locations would result in an estimated increased budget pressure of $60 million for the New Traffic Control Devices Program.

If the Minimum Four-Hour Vehicle Volume justification were to be used, it is important to note that there would also be implications to the fully Development Charges funded Intersection Control Measures Program. This program uses the same warrant process to justify the implementation of new traffic control devices. The extent of the impact to this program is unknown as the four-hour evaluation is currently not a requirement of the Traffic Impact Assessment process. It is anticipated however that using the four-

hour justification would likewise increase the number of intersections requiring funding for traffic control signals, placing additional financial pressure on developers, as the responsibility for signalizing new warranted local road intersections typically falls to the developer.

While the four-hour warrant is a valid justification for a full signal, using it diverts attention and resources from intersections with more consistent, all-day traffic issues. For this reason, the eight-hour warrant should continue as city practice. The use of this warrant ensures traffic signals are installed where they are most needed and this approach:

- Targets locations with prolonged congestion and delays
- Improves safety and traffic flow
- Makes the best use of limited resources
- Aligns with recognized traffic engineering standards

Proposed Process Enhancements

While no changes are proposed to the traffic signal warrants, staff have found areas for enhancement to further account for the unique context of the rural environment. These enhancements, implemented under the delegated authority of the General Manager, Public Works and the Director, Traffic Services, are listed below.

Process Enhancement 1 – Speed Study

To better assess flow conditions at intersections in rural areas or intersections within urban areas exhibiting rural characteristics, the warrant input data will include a speed study. The study will help verify operating speeds and provide a better understanding of the intersection's operating conditions.

Process Enhancement 2 – Traffic Count Hours in Rural Areas

The standard eight-hour traffic count used in the City of Ottawa's traffic signal warrant process currently applies broadly to the entire City and includes the following peak traffic periods: 7:00 am to 10:00 am, 11:30 am to 1:30 pm and 3:00 am to 6:00 pm.

Peak traffic periods often differ between rural and urban areas as commuting distances are typically longer for rural residents, resulting in earlier morning departure times. To better reflect the difference in commuting periods between rural and urban areas, the traffic volume count period will be extended. For rural areas or intersections within urban areas exhibiting rural characteristics staff will use the volumes of the highest eight hours during a 16-hour period as part of the assessment.

The proposed enhancements to the signal warrant process will continue to ensure that the rural context is considered when evaluating intersections for traffic signals. These enhancements also continue to fall within warrant guidelines provided by OTM Book 12.

All-Way Stop Control Warrant Process Review

The rural context of the all-way stop control warrant process was reviewed with a focus on technical applicability and geographical appropriateness. The primary goal was to determine if the rural context is represented appropriately and whether enhancements to the warrant process are required. Staff reviewed:

- the existing, Council-approved, warrant process specifically in its consideration of rural roadways; and,
- warrant practices of other Ontario jurisdictions.

City of Ottawa All-Way Stop Control Warrant Process

The All-Way Stop Control Policy, approved by Council in October 2020, already outlines criteria for requiring all-way stop traffic control at rural intersections outside of rural villages. It outlines criteria to assess the requirement of an all-way stop control where at least one of the intersecting roadways is an arterial. This warrant process is foundationally based on the warrant guidelines for rural arterials set forth in Ontario Traffic Manual Book 5 – Signs (OTM Book 5), but with different volume thresholds, as approved by Council in 2020. The existing policy however does not currently provide criteria to assess the requirement of an all-way stop control at an intersection outside of a rural village which does not involve at least one arterial road.

Currently, to warrant an all-way stop control, the policy requires that the threshold be met for one of three criteria: sightlines, collisions, or volume. Details on the criteria thresholds is listed in Table 3 below.

Table 3 - Criteria Threshold for an Intersection with an Arterial Roadway Outside of a Rural Village

Criteria Categories	Threshold
Collisions	An all-way stop control is justified if there is an average of three or more preventable collisions per year over a three-year period. Preventable collisions are angled or turning type collisions.
Visibility	An all-way stop control is justified where the intersection sight distance from the 'final' stop position is less than the Transportation Association of Canada's recommended distance, and where the sightlines cannot be improved by the removal of trees, hedges etc.

Criteria Categories	Threshold
Intersection Volume	An all-way stop control is justified if all three of the following volumes are 100 per cent met: • Total Intersection: Total vehicle volume for all approaches is equal to or greater than an average of **350** vehicles per hour over the heaviest 8-hour period • Minor street volume and pedestrians crossing: The total minor street volume (including pedestrians crossing the major) is equal to or greater than an average of **140** each hour over the same 8-hour period; and, • Directional split: Not less than 35 per cent of the total volume on the minor approach for a 4-leg intersection and not less than 25 per cent of the total volume on the minor approach for a 3-leg intersection

Warrant Practices of Other Jurisdictions

To assess whether the City of Ottawa's existing rural all-way stop control consideration aligns with best practices, it is helpful to examine how other jurisdictions approach similar situations. A jurisdictional review was conducted on all-way stop control warrant methodology in 2022 and is summarized below.

In 2022, Transportation Committee through inquiry TRC 01-22 directed staff to research methods to increase compliance at stop-controlled intersections. As part of this research and as referenced in the formal response, staff conducted a provincial jurisdictional review by circulating a questionnaire to all members of the Road Safety Committee of Ontario (ROSCO) seeking to understand the means with which all-way stop control was implemented. A total of 13 jurisdictions responded to the online survey, including: Essex County, City of Waterloo, Durham Region, City of Welland, City of Cambridge, Region of Niagara, City of Guelph, Town of Collingwood, City of Richmond Hill, Town of Grimsby, City of Vaughn, Town of Milton and, the City of Kitchener

The survey responses indicate that jurisdictions with rural environments closely follow the OTM Book 5 all-way stop control warrant guideline. Respondents did not indicate using a rural-specific all-way stop control warrant practice.

Outcome of the All-Way Stop Control Warrant Process Review

The review of the all-way stop control warrant for the consideration of the rural context has indicated that:

- the City of Ottawa's warrant process, which is foundationally based on the guidelines set forth in OTM Book 5, does already take into consideration the rural context for intersections that include at least one arterial road but does not include a consideration for evaluation of a rural intersection outside of a village that includes two collector roads intersecting each other or a local road intersecting a collector road;
- the review of warrant practices indicates that jurisdictions with rural environments closely follow the OTM Book 5 all-way stop control warrant guidelines; and
- OTM Book 5 does not provide clear warrant guidelines for rural collector roadways.

Proposed Enhancement – Rural Collector Evaluation

A new rural collector evaluation consideration is being proposed for adoption within the existing All-Way Stop Control Warrant Policy. More specifically, it would apply when evaluating the need for all-way stop control at intersections in rural areas outside of villages where a local road would intersect a collector road, or, where a collector road intersects another collector road.

The new proposed warrant criteria for rural collectors are very similar to the existing warrant criteria for rural arterials, whereby an all-way stop control would be triggered if the threshold is met for one of the three criteria relating to the intersection collision history, sightlines or traffic volume. The proposed enhancement for the rural collector consideration would implement a lower minimum traffic volume threshold as compared to threshold required for arterial roads.

Table 4 below, summarizes what would be the eventual outcome of the proposed traffic volume impacts when comparing each consideration side by side. The differing volume thresholds for rural collectors are nearly 43 per cent less than those for the rural arterials. However, the volume thresholds proposed are identical to those in the urban and suburban collector all-way stop control criteria approved by Council in 2020.

Table 4 - Overall Differing Intersection Volume Thresholds

Intersection Volume Thresholds	Rural Arterial	Rural Collector
Total Intersection *(8-hr minimum vehicular volume)*	- Total of 2,800 vehicles - Minimum average of 350 vehicles per hour	- Total of 1,600 vehicles - Minimum average of 200 vehicles per hour

Intersection Volume Thresholds	Rural Arterial	Rural Collector
Minor street volume and pedestrians crossing *(8-hr minor street vehicular and pedestrian volume crossing major street)*	- Total combination of 1,120 vehicles and pedestrians - Minimum combination of an average 140 vehicles and pedestrians per hour	- Total combination of 640 vehicles and pedestrians - Minimum combination of an average 80 vehicles and pedestrians per hour

The proposed enhancement will equip staff with the necessary criteria to assess the implementation of an all-way stop control at rural intersections consisting of either a collector road to a collector road or a collector road to a local road. This enhancement ensures that the all-way stop control warrant process for rural intersections outside rural villages takes into consideration the rural context for all scenarios of intersection configurations.

FINANCIAL IMPLICATIONS

Implementation costs will be absorbed within existing Traffic Services operating budgets. Capital budget requirements will be brought forward in future budget submissions as required.

LEGAL IMPLICATIONS

There are no legal impediments to approving the recommendations as outlined in this report.

COMMENTS BY THE WARD COUNCILLOR(S)

Agriculture and Rural Affairs Committee members and rural councillors were briefed on the results of the traffic signal and all-way stop control warrant review, with consideration given to the rural context. All councillors expressed support for the proposed enhancements and the report's recommendations. Where applicable, individual written comments provided for inclusion in the report are listed in the table below.

Ward Councillor	Report Comment
Clark Kelly, Councillor Ward 5 West Carleton-March	"I concur with the recommendations and agree that the financial impacts should be identified, and a plan to fund the project should be paramount as things roll forward."
David Brown, Councillor Ward 21 Rideau Jock	"I am pleased with the recommendations presented in the report. I believe that any potential financial impacts identified during the review should be accompanied by a request for funds from departmental staff to ensure that locations meeting the warrants receive timely and necessary funding."

CONSULTATION

Consultation with other jurisdictions on traffic signal and all-way stop control warrant practices have taken place and are described within the body of the report. In addition to this consultation, Traffic Services within the Public Works Department engaged with Transportation Planning of the Planning, Development and Building and Services Department to ensure proposed enhancements to the New Traffic Control Devices Program's signal warrant practices are appropriate and can be adopted within the warrant practice of the Intersection Control Measures Program (funded exclusively by Development Charges).

ACCESSIBILITY IMPACTS

The City of Ottawa is committed to the elimination of barriers in the built environment, and the prevention of new barriers being created through projects related to traffic signals and all-way stop controls. The installation of traffic control devices complies with provincial regulations, including the Integrated Accessibility Standards Regulation, 191/11 (IASR) adopted under the *Accessibility for Ontarians with Disabilities Act, 2005, (AODA),* as well as the City's Accessibility Design Standards (ADS) when installing all forms of traffic control.

ASSET MANAGEMENT IMPLICATIONS

The implementation of the Corporate Asset Management program enables the City to effectively manage existing and new infrastructure to maximize benefits, reduce risk,

and provide safe and reliable levels of service to community users.

When the City commits to the acquisition of new assets, consideration must also be given to the City's commitment to fund future operations, maintenance and renewal costs. It must also account for future depreciation when reviewing long term financial sustainability. When reviewing the long-term impacts of asset acquisition, it is useful to consider the cumulative value and lifecycle costing of the acquired assets being taken on by the City.

If approved, the inventory of assets and financial forecasts related to the assets outlined in this report will be included under future iterations of the Transportation Asset Management Plan.

DELEGATION OF AUTHORITY IMPLICATIONS

Under the Delegation of Authority By-law No. 2025-69 (Schedule "J", Section 7), the Public Works Department is responsible for the warranting and installation of traffic signals and all-way stop controls, in accordance with applicable Council directives include:

- Intersection All-Way Stop Control Warrant Review (2020); and,
- Warrants for Pedestrian Signals and Traffic Control Signals (1998).

With Council's approval of this report, a new rural collector evaluation will be added to the existing All-Way Stop Control Warrant Policy. This new criteria will be applied under delegated authority to support the installation of all-way stop controls at rural intersections outside of village areas, specifically where a local road meets a collector road, or where two collector roads intersect.

RISK MANAGEMENT IMPLICATIONS

There are no risk implications associated to this report.

RURAL IMPLICATIONS

The enhancements to the signal warrant process referenced in this report, will provide even greater consideration to the rural context when assessing an intersection located within a rural area. The enhancements will be implemented under the delegated authority of the General Manager, Public Works and the Director, Traffic Services. The new rural collector all-way stop control warrant criteria will provide criteria to assess intersections outside of rural villages, with intersecting roadways classified in the Transportation Master Plan as "collector" to "collector" or "collector" to "local". The new

all-way stop control warrant criteria will be implemented upon Council-approval of this report.

TERM OF COUNCIL PRIORITIES

The report aligns with the 2023 – 2026 Term of Council's strategic priority of making Ottawa "A city that is more connected with reliable, safety and accessible mobility options".

DISPOSITION

The Public Works Department, under delegated authority, will implement the enhancements to the Traffic Signal Warrant Process as part of all future intersection reviews. Furthermore, the new proposed rural collector all-way stop control warrant criteria, as described in this report, will be adopted following Council approval. Where appropriate, previously assessed intersections in the rural areas for either a traffic signal or all-way stop control will be formally reassessed and where deemed required, the traffic control will be implemented as soon as practicable within available budgets.