

7

TRAFFIC SIGNAL WARRANTS AND FUNDING OF SIGNALS

The Transportation and Works Committee recommends that:

- 1. The deputation by Councillor Jack Rupke, Township of King, be received; and**
- 2. The recommendation contained in the following report, November 24, 2008, from the Commissioner of Transportation Services, be adopted together with the following additional recommendation:**
 - 2. Installation of the traffic control signal at the intersection of Davis Drive West and Keele Street be funded as a special exemption, with the Region being responsible for 60% of the cost and the Township of King being responsible for 40% of the cost.**

1. RECOMMENDATION

It is recommended that:

1. The current policy for the installation of traffic control signals entitled “Traffic Signal Warrants”, which includes the associated funding of the signals, be retained.

2. PURPOSE

This report provides information requested by the Transportation and Works Committee on the appropriateness of the Region’s current traffic signal warrant policy and presents options for consideration with respect to the funding of unwarranted traffic control signals as discussed with staff of the local municipalities.

3. BACKGROUND

At its meeting of April 24, 2008, Regional Council approved the installation of a traffic control signal at the entrance to Cardinal Golf Course on Highway 9 (Davis Drive West) subject to the cost for the installation being at the owner’s expense. Council also approved a traffic control signal installation at the intersection of Keele Street and Highway 9 (Davis Drive West) subject to costs being received from the Township of King.

In addition, staff was requested to review the existing traffic control signal warrant as it applies to both urban and rural areas. At the meeting of the Transportation and Works

Committee of April 9, 2008, there was also discussion around the ability of rural municipalities to pay for traffic control signals; accordingly, Regional staff was requested to review funding options for traffic control signals.

Furthermore, on June 11, 2008, a presentation was made to the Transportation and Works Committee. This presentation provided an overview of the current signal warrant process and potential factors for considering cost-sharing, between the local municipalities and the Region, for funding traffic control signals. The Transportation and Works Committee received the presentation and requested staff to discuss the signal warrant process and funding options with the local municipalities. The following summarizes the discussions with representatives from the local municipalities.

4. ANALYSIS AND OPTIONS

A. DISCUSSIONS WITH LOCAL MUNICIPALITY STAFF

Regional staff invited staff of the local municipalities to meet to discuss the Region's current traffic control signal warrant policy and potential funding formula for the installation of unwarranted traffic control signals. This meeting was held on July 31, 2008, and a representative from most local municipalities attended. Any municipality unable to send representation was contacted by Regional staff via telephone to discuss the policy and formula and to obtain their feedback.

Following the meeting with representatives from the local municipalities, each municipality was requested to provide written feedback on the Region's current traffic control signal warrant policy and potential funding formula for the installation of unwarranted traffic control signals.

The views of the municipalities for the two issues are summarized at the end of the following sections.

B. TECHNICAL WARRANTS FOR TRAFFIC CONTROL SIGNALS

Summary of the current Traffic Signal Warrant Policy

The current Traffic Signal Warrant Policy (*see Attachment 1*) has been in effect since October, 2002 and was last updated in July, 2003. It provides a credible, technically-sound and consistent method of determining if locations for traffic signals on Regional roads are warranted. The policy can be summarized as follows:

If an intersection of a Regional road and a local Municipal road meets the traffic signal warrants, one warrant at 100% or two warrants at 80%, signals will be programmed and installed at the cost of the Region

How the current policy was derived

The current policy for the installation of traffic control signals is based on a series of guidelines established by the Ministry of Transportation and adopted by Regional Council in October of 2002. Regional staff reviewed the Region's current traffic signal warrant policy against other policies within the Province of Ontario, Canada and North America. The Provincial warrants were originally adopted from the Manual of Uniform Traffic Control Devices originally established in the 1920's. Additionally, the Transportation Association of Canada has developed a series of warrants which are also in line with the Region's policy.

Warrants provide a consistent methodology for assessing the trade off between mobility and accessibility. Because of the potential for conflict among motorists as well as pedestrians and cyclists on the road, traffic signal warrants also provide an objective means of assessing the safety trade offs between road users.

The current warrant process requires an eight-hour count that covers the morning, mid-day and evening peak traffic periods. These counts must be representative of traffic and pedestrian volumes that are likely to be experienced on an average day, and reflect the operating conditions the traffic control signal is intended to address. The current policy uses the same criteria as used by other road authorities.

Application of current traffic control signal warrant policy to Highway 9 (Davis Drive West)

As stated in previous reports to the Transportation and Works Committee, using the existing traffic signal warrant process as adopted by Regional Council in 2002, the technical warrant for signals is not met at any location on Highway 9 (Davis Drive West) between Highway 400 and Dufferin Street.

Results of discussions with local municipal staff regarding the Traffic Signal Warrant Policy

The general consensus among the technical representatives was that the current Region traffic signal warrant policy was appropriate, effective and should continue to be used.

After the meeting, staff received two pieces of correspondence; a letter from the Town of Newmarket and an email from the City of Vaughan. The Town is concerned that the installation of unwarranted traffic control signals, from a mobility perspective, may jeopardize the functionality of the Regional road system. The City indicated they are generally not in favour of installing unwarranted traffic control signals unless for specific or special situations.

C. FUNDING OF UNWARRANTED TRAFFIC CONTROL SIGNALS

The Region's current traffic control signal warrant policy connects the issue of paying for signals with the question of whether warrants are met. The wording in the policy is as follows:

If warrant 1 and 2 are not satisfied by 80% but are satisfied by at least 70% the signals can be programmed if the local municipality agrees to pay for the installation and on-going maintenance costs.

Under the policy, if warrants are met, the Region pays; however, if warrants are not met the traffic control signals are not approved. The current policy allows for exceptions in circumstances where the warrants are met to a level of 70%, in which case the requestor pays, or if Council directs the installation of a traffic control signal and assigns appropriate costs. The result of assigning these costs to requestors is it acts as a disincentive to the requestor to install the traffic control signals if they are not warranted.

For specific reasons, Regional Council may decide to direct the installation of traffic control signals even though the technical warrant may not be met. Such a decision may be made in consideration of other site-specific conditions.

Funding of traffic control signals on Highway 9 – Regional Council decision

Regional Council, at its meeting of April 24, 2008, approved the installation of traffic control signals at the intersection of Highway 9 (Davis Drive West) and Keele Street and at the intersection of Highway 9 (Davis Drive West) and the Cardinal Golf Club entrance, subject to the Township of King and the owner of Cardinal Golf Club paying for the costs of the traffic control signals.

Some concerns were raised over the ability of the rural municipalities to pay for such traffic signals. As a result of discussions at the Transportation and Works Committee meeting, Regional staff was requested to review funding options for unwarranted traffic control signals and discuss the potential funding with representatives from the local municipalities.

Funding responsibility of traffic control signals which do not meet technical warrants

Regional staff has reviewed some funding options for signals that do not meet the current Policy. Funding of private entrances, whether warranted or unwarranted, would remain at the expense of the property owner. Should Regional Council direct the installation of a traffic control signal which does not meet the technical warrants at the intersection of a Regional and local road, Regional Council could consider one of the following funding options for the costs of such a signal. It should be noted that the willingness of a local municipality or private property owner to pay for the installation of an unwarranted

traffic signal should, in any event, be considered in conjunction with all other factors, including technical warrants and site-specific conditions.

Option 1 – Region pays for unwarranted signals

In the past, unwarranted signals have not been installed or paid for by the Region. Regional Council may determine that traffic control signals should be installed at an intersection which does not meet the technical warrants and decide to fully fund the unwarranted signal.

Option 2 – Local municipality pays for the unwarranted signal

Provided that the Region consented to the installation, based on a consideration of the technical warrant and the site-specific conditions, Regional Council could decide that a local municipality should pay for an unwarranted traffic signal because:

1. A high majority of the traffic is Regional long distance traffic that will be negatively impacted (increased delay and reduced safety).
2. Any benefit will be to the local traffic accessing or crossing the main road.

Option 3 – Cost of the unwarranted signal is shared between the Region and the local municipality

In some situations, provided that the Region consented to the installation based on the consideration of the technical warrants and site-specific conditions, where there is a benefit to the local municipal traffic and the majority of the traffic is Regional, a cost-sharing option could be considered. Cost-sharing options could take into account many factors such as:

- Municipal tax revenues
- Local municipal population
- Size of the road system ie. number of lane kilometres
- Percent of tax allocated to roads
- Growth
- Traffic volume
- Tax revenue per lane kilometre
- Population per lane kilometre
- Local growth compared to Regional growth
- Traffic volume on side street compared to main street volume

Table 1 provides statistics that could be used as the basis to determine apportionment of costs for unwarranted traffic signals.

Table 1
Municipal Statistics

Municipality	Local Tax Levy (\$ M)	Local Lane-Km	Population (2006)	2006-31 Share of Growth (%)
Vaughan	100.0	1,300	244,800	33
Aurora	22.9	333	49,200	4
Newmarket	35.2	520	78,300	3
Richmond Hill	67.4	1,026	174,000	10
Markham	105.0	1,620	273,900	30
Georgina	23.7	640	45,700	4
Whitchurch-Stouffville	10.1	337	26,200	5
East Gwillimbury	10.2	366	22,500	9
King	13.1	596	20,400	2

Source of data: 2008 tax information from local municipality's website

Some examples of cost sharing options

There are many ratios or percentages that can be derived from Table 1 to determine a percent cost-sharing between a local municipality and the Region. For example, using the taxes per lane kilometre will show a definite split between the generally rural and generally urban municipalities as shown in Table 2.

Table 2
Ratio of Taxes Per Lane Kilometre

Municipality	Local Taxes (\$ M)	Local Lane-Km	Ratio
Vaughan	100.0	1,300	76.9
Aurora	22.9	333	68.8
Newmarket	35.2	520	67.7
Richmond Hill	67.4	1,026	65.7
Markham	105.0	1,620	64.8
Georgina	23.7	640	37.0
Whitchurch-Stouffville	10.1	337	29.9
East Gwillimbury	10.2	366	27.9
King	13.1	596	21.9

Source of data: 2008 tax information from local municipality's website

This split could be interpreted as showing that the rural municipalities with a ratio from 21.9 to 37 have less of an ability to pay when compared to urban municipalities with a ratio from 64.8 to 76.9. Since this is a cost-sharing initiative for an unwarranted signal, the maximum Regional share might be set at 50%.

Consideration could also be given to providing various percentages to urban and rural municipalities based on this information. For example, Regional cost percentages could range from 25% to 50% for intersections in the rural municipalities of Georgina, Whitchurch-Stouffville, East Gwillimbury and King and 0% to 25% for intersections in the urban municipalities of Vaughan, Aurora, Newmarket, Richmond Hill and Markham.

This is one of a number of potential cost-sharing scenarios which could be considered when dealing with unwarranted traffic control signals.

Results of discussions with local municipal staff regarding the funding of unwarranted traffic control signals

At the meeting with local municipality representatives, the group agreed on a split where urban and rural municipalities would be determined based on predominant land use as outlined in the Region's official plan. The urban municipalities were determined to be Aurora, Markham, Newmarket, Richmond Hill, Vaughan, and the rural municipalities were determined to be East Gwillimbury, Georgina, King, and Whitchurch-Stouffville.

A cost-sharing formula was discussed where any urban municipality would pay 60% of the cost to install an unwarranted traffic control signal and any rural municipality would pay 40%. Therefore, if Regional Council adopted such a basis for cost sharing and decided to install an unwarranted traffic signal in an urban municipality, the Region would pay 40% of the installation cost and the local municipality would pay the remaining 60%.

As noted above, correspondence was received from the Town of Newmarket and the City of Vaughan. Newmarket staff expressed their concerns with the potential impact to the Region's budget that would be required to install unwarranted traffic control signals as opposed to installing only warranted signals. City staff deemed as the request for unwarranted traffic control signals on the Regional road network would need to originate from the local municipality, there would be no impact in the City of Vaughan.

At this time, no other local municipality has submitted concerns regarding either issue.

5. FINANCIAL IMPLICATIONS

If any of the funding options are considered by Regional Council, there will be an impact on the Region's capital and operating budget. Depending on the cost-sharing formula and the percent allocated to the Region, the capital cost will change. The operating cost for each signal remains consistent and would be the responsibility of the Region. The average capital cost of a signal is \$160,000 and the average operating and maintenance cost is \$5,200 per year.

6. LOCAL MUNICIPAL IMPACT

The current traffic control signal warrant process endorsed by Regional Council allows a standardized process that assesses the justification for installing traffic control signals on Regional roads on a Region-wide basis. This process allows an equitable process that is applied throughout the Region in all local municipalities. The option to allow an unwarranted signal to be installed at the request of a local municipality is considered in this report with options for cost allocation.

7. CONCLUSION

The existing traffic signal warrant process as adopted by Regional Council in 2002 is in line with other National and North American Standards. The warrants are effective in identifying potential locations in both urban and rural areas for the installation of traffic signals. Staff are confident that the existing warrants, based on the research of other jurisdictions, are both technically sound and community responsive.

Various criteria can be used by Regional Council to determine the percent allocation of funds for cost-sharing of unwarranted traffic signals. Regional staff has included some potential criteria and cost-sharing options as an example for Regional Council's consideration.

As of the time of writing this report, neither the owner of Cardinal Golf Course nor the Township of King has contacted our staff about installing traffic control signals on Highway 9 (Davis Drive West).

For more information on this report, contact Paul Jankowski, General Manager, Roads at extension 5901 in the Transportation Services Department.

The Senior Management Group has reviewed this report.