Councillor Request Inquiry #126

2017

March 28, 2017 Council meeting:
Please provide information of the timing and synchronization of traffic lights at intersections with Sherwood Park.

The County has over 80 full traffic signals within the Sherwood Park urban service area. These traffic signals are operated and grouped in three traffic signal networks. We consider several key factors in dividing or grouping all traffic signals into networks such as long distance separation between signalized traffic signals, un-signalized control points (e.g., roundabouts, bridges, interchanges, jurisdictional boundaries, etc) or where traffic is not likely to be able to keep up with the signal coordination or synchronization. Traffic signals may be partitioned into a standalone system such as that at the Shell Scotford site, an arterial base such as Wye Road, or a network-wide base such as the Baseline Road network.

All traffic signals within an individual traffic network are connected in terms of signal operation, each having similar signal operation characteristics such as a common cycle length as summarized for each of the three networks in Sherwood Park:

Network	No. of Full Traffic Signals	Timing Plan	Cycle Length (in seconds)
Baseline	62	AM Peak	140
		Off Peak	120
		PM Peak	130
Wye	12	AM Peak	120
		Off Peak	110
		PM Peak	140
Industrial	10	AM Peak	120
		Off Peak	85
		PM Peak	110

Defined cycle lengths are established at the minimum cycle lengths required to operate and accommodate the number of active signal phases including the protected left-turn signals, traffic volumes, and pedestrian crossing times for each timing plan.

Based on the calculated cycle lengths, the green splits are determined through the traffic volume distribution at the intersection. Adequate green time is provided to side-street users on a prorated basis so that most road users are able to clear the intersection during the first signal cycle. The remaining green time (e.g., reserved green time if available) is allocated to the signal phases of the major corridors. This timing allocation philosophy provides better coordination, progression, or synchronization for the primary corridor movement.

Based on the calculated cycle lengths and green splits, all traffic signals are coordinated within the same signal network in a two-way progressive manner. In other words, we review and design signal coordination for both directions of traffic flow providing a reasonable level of service for all drivers. For example, we provide 50/50 priority to eastbound and westbound traffic on Baseline Road during off peak hours. However, we shift the priority of signal coordination from one direction to another when the traffic volumes of one direction are higher than the other (e.g. rush hour traffic). For example, the westbound traffic on Baseline Road will have much smoother driving experience during the morning rush hours than the eastbound traffic. Nevertheless, the eastbound traffic should also have a reasonable level of signal coordination however; there may be more stops and delays as compared to the westbound traffic experiences. Frequent stops for any direction of a major corridor should be limited even with traffic volumes of that direction being light.

We are in the process of re-evaluating the operation of all traffic signals within Sherwood Park to establish whether or not additional improvements in signal operation efficiency and safety can be achieved. As such, a detailed and comprehensive report is to be presented to Council in June that will cover the outcomes of this evaluation and what benefits we were able to identify.