

**ENGINEERING SERVICES**

Town of Newmarket

395 Mulock Drive

P.O. Box 328, STN Main

Newmarket, ON L3Y 4X7

www.newmarket.ca

engineering@newmarket.ca

T: 905 895.5193

F: 905 953 5138

**September 22, 2016**

**DEVELOPMENT & INFRASTRUCTURE SERVICES  
INFORMATION REPORT  
ENGINEERING SERVICES 2016-41**

TO: Mayor and Council

CC: Bob Shelton, P.Eng., CAO  
Peter Noehammer, P.Eng., Commissioner, Development & Infrastructure Services  
SLT / OLT

SUBJECT: Solar Powered Pole Mounted, Radar Speed Displays – Pilot Project

ORIGIN: Director, Engineering Services

---

**PREAMBLE**

In accordance with the Procedure By-law, any member of Council may request that this information report be placed on an upcoming Committee of the Whole agenda for discussion.

**BACKGROUND**

At its regular meeting of June 27, 2016, Town Council adopted the following recommendations:

***“THAT staff report back to Council at the next Committee of the Whole meeting regarding purchase of five (5) pole mounted speed boards;***

***AND THAT staff consult with each individual Ward Councillor to determine the appropriate location for placement within each ward.”***

The Town of Newmarket currently has a total of seven radar speed monitoring devices. Three are speed trailers on wheels that are deployed by Transportation Services staff to roads having sufficiently large boulevards to accommodate them for a period of one day at a time. The trailers need to be towed into location in the morning and retrieved every evening to be placed in overnight storage and re-charged for the next deployment. These are time-consuming and require significant resources to deploy on a regular basis. The other four radar speed monitoring devices are pole-mounted speed boards.

Two of the four pole-mounts are battery powered. This means that they can remain installed in one location for a maximum of one to two weeks before they need to be taken down and re-charged in the office before re-deployment.

The other two are newly acquired, modern solar powered pole mounts that were purchased in 2016 to help align with Council's strategic priority related to traffic safety and the Town's Traffic Mitigation Strategy. The solar pole-mounts are installed along with their own solar charging panel. This allows them to remain in place for periods of several months if needed. Solar pole mounts are "high tech" devices that connect to the Town's communications network through a cell phone connection. This allows data to be received automatically from the speed board and it also permits remote access by Staff in order to change settings if required.

## **COMMENTS**

### **Efficacy of Speed Boards in Newmarket**

At the time of writing of this report, the solar pole mounted boards had only been deployed twice. As a result, there is insufficient data to be able to effectively analyze the results or to draw specific conclusions on the value of the pilot project. Staff continues to monitor their performance very closely. Despite the early stage of this pilot, staff has been able to deduce some useful observations about traffic and speed management within the Town.

The software provided with the Solar Pole Mounts calculates various statistics based on the recorded data. Data is communicated regularly to staff showing the number of cars that actually slow down when the driver sees the signs. To date, staff has noted 40 to 66 percent of all drivers passing the solar speed boards actually reduce their speed. More data needs to be collected for further verification of this percentage, as calculations from a long history of data collected through the older radar trailers indicate that this number is more likely in the 20 to 40 percent range.

Another interesting observation based on the data sent from the solar pole mounts to date is that average and operating speeds appear to be reduced over a period of 3 weeks before they start increasing again, presumably as a result of "sign fatigue" and driver apathy to the boards. The current deployment locations will remain unchanged for about 8 weeks to determine if this trend continues.

### **Mounting and Installation Challenges**

Staff has concluded that wooden hydro poles are not always suitable for the solar pole mounts. This is especially true when the pole shows signs of weathering. When this is the case, the bands used to secure the solar panel and display board become loose and the panel or the display board can slip to the ground. This can either damage the panel or board, or it can make the devices accessible to tampering or theft and vandalism.

The proximity to street trees is a second challenge for installation. Shade from the trees prevents the battery from charging. Additionally, branches from large street trees can block the display from drivers' vision and also desensitize the sensors needed to detect the moving vehicle. In addition, signs must be installed high enough on the pole in order to deter theft/vandalism.

Another factor is that solar panels cannot be mounted on poles that are too close to the road. If a pole is too close to the road, the solar panel can encroach onto the roadway area and can interfere with emergency vehicles, buses, garbage trucks and other large vehicles. Also, it is best if the solar panel is installed on the south side of the pole for optimum solar reception.

In some cases, extra staff and equipment may be necessary to install the solar pole mounts due to the height requirements needed to avoid the various obstacles and to prevent theft or vandalism. Installation by experienced staff typically takes about half an hour, plus travel time to and from the site. If inexperienced staff is used, it can take up to an hour plus travel time both ways.

#### Criteria for Deployment

Locations for the solar pole mounts are determined based on the following criteria:

- Poles made from wood must be in new condition, with no deterioration or weathering;
- Poles must be on the same side of the road as the direction of travel being measured;
- Solar pole mounts do not function well in a cul-de-sac or a short crescent;
- Poles must be on a collector road, with an average daily volume above 1000 vehicles per day, per direction;
- Poles must be free from surrounding trees, structures, signs, hydro conduits, etc.

#### The Current Plan

Traffic Services Staff will continue studying the performance of the two solar pole mounts that the Town currently has in order to determine the best placement locations and overall effectiveness. If warranted by the results obtained, Transportation Services plans to purchase an additional one or two solar pole mounts and continue with the speed monitoring program in 2017. If the solar pole mounts prove to be effective and successful, radar trailers will be phased out in favour of a full complement of solar pole mounts. It is staff's aim to have one solar pole mount per Ward.

Switching over to a full program of solar pole mounts will greatly enhance the Town's ability to monitor speeding and react to it appropriately. It would also cause a shift in practice from the current reliance on short duration placement and monitoring at several locations (as we do with the speed trailers and the battery-operated speed boards today), to longer speed monitoring durations at fewer locations. This new method of obtaining data from speed monitoring will provide a better understanding of traffic patterns and speeding behaviour so that staff will be able to choose other speed mitigation methods more aptly.

Currently, the radar trailers and the pole-mounted speed boards are deployed on a rotating basis in areas of measured or reported high speeds and/or high volumes. Town residents and Ward Councillors may request that certain locations be added to the rotation list.

## **PUBLIC CONSULTATION**

No public consultation was required.

## **BUSINESS PLAN AND STRATEGIC PLAN LINKAGES**

- Ensuring Safe Streets

## **HUMAN RESOURCE CONSIDERATIONS**

Contained in the Operating Budget section below.

## **IMPACT ON BUDGET**

### Operating Budget (Current and Future)

The purchase of five additional solar powered radar boards will increase staff time associated with this program from 3 staff for 1.5-2 hours each, per month, to 3 staff for 8 hours each, per month. This calculation is based on a one-month rotation schedule. There is also a licensing cost for the software that equates to approximately \$1,700 annually, per board, for a total of about \$8,500 per year for five additional boards.


### Capital Budget


Each solar powered radar board costs about \$4,600. Based on this cost, the total capital budget impact would be approximately \$23,000.00 for five additional boards. This total amount would be spread out over two or three budget years.

## **CONTACT:**

For more information on this report, please contact Mark Kryzanowski at 905-895-5193 extension 2508; MKryzanowski@newmarket.ca.

Prepared by:

  
M. Kryzanowski, M.C.I.P., R.P.P.  
Manager, Transportation Services

  
R. Prudhomme, M.Sc., P.Eng.  
Director, Engineering Services

  
P. Noehammer, P.Eng., Commissioner  
Development & Infrastructure Services