

SCHEDULE E

Form of Completion Report for Studies

Please do not hesitate to contact your project officer to receive an electronic copy of the template of the Completion Report for Studies.

Upon completion of the Feasibility Study, a copy of the Final Study must be submitted along with this Completion Report for Studies.

FCM will post your report on the [Green Municipal Fund™ \(GMF\) website](#).¹ This is because one of FCM's mandates is to help municipal governments share their knowledge and expertise regarding municipal environmental projects, plans and studies. Before you submit a report to FCM, make sure you hold the copyright for the report (you own all the rights to the content and can decide who is allowed to reproduce and distribute the report) and that it does not contain any confidential information.

If the report contains confidential information, you need to submit two versions: one containing confidential information, to be read by FCM staff, and one that does not contain confidential information, which can be posted on the GMF website. Please contact FCM if you have any questions about copyright and confidentiality.

How to complete the Completion Report for Studies

The purpose of the Completion Report for Studies is simple: to share the story of your community's experience in undertaking a Feasibility Study with others seeking to address similar issues in their own communities.

Please write the report in plain language that can be understood by people who are not specialists on the subject. A Completion Report for Studies is typically in the range of 5–10 pages, but may be longer or shorter, depending on the complexity of the Feasibility Study.

GMF grant recipients must enclose **final** copies of the Completion Report for Studies and the Final Study, both in electronic format, with their final Request for Contribution. The reports, including all attachments and appendices, must be submitted in PDF format with searchable text functionality. Reports that are not clearly identifiable as final reports, such as those displaying headers, footers, titles or watermarks containing terms like "draft" or "for internal use only," will not be accepted by GMF. Additionally, reports must be dated. If you have questions about completing this report, please consult GMF staff.

¹ <http://www.fcm.ca/home/programs/green-municipal-fund.htm>

Completion Report for Studies

GMF number	15998
Name of lead applicant (municipality or other partner)	The Regional Municipality of Waterloo
Name, title, full address, phone, fax and e-mail address of lead technical contact for this study	Egerton Heath Supervisor, Traffic Systems Management The Regional Municipality of Waterloo 150 Frederick Street, 7 th Floor, Kitchener, ON, N2G 4J3 Tel: (519)575-4549 Cellular: (519)501-4444 Fax: (519)575-4553
Date of the report	December 21, 2018

1. Introduction

- a) Who was involved in doing the Feasibility Study, and what are their affiliations? Please include name, title and contact information. Those involved could include municipal staff, engineers and other consultants, a representative from a non-governmental organization, and others.

<i>Name</i>	<i>Affiliation</i>	<i>Contact Information</i>
<i>Mike Corby Andrew Wong</i>	<i>IBI Group Consultant</i>	
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2. The Feasibility Study

- a) Describe the process that you undertook to make this feasibility study a reality, from concept, to council approval, to RFP, to final deliverable.

The Region of Waterloo has retained IBI Group to review the potential GHG emissions benefits of deploying a real time data collection and reporting technology.

- b) What were the objectives of the Feasibility Study (what was it seeking to determine)?

The preparation of the original feasibility study to evaluate the potential greenhouse gas reductions through the implementation of Miovision technology at signalized intersections (letter from FCM attached). The submission of a feasibility study was a pre-requirement before progressing to the second stage of application process, the peer committee review for the larger project (loan & grant).

- c) What approach (or methodology) was used in the Feasibility Study to meet these objectives? The purpose of this study is to improve traffic flow and traffic operations along the

Westmount Road corridor for daily operation, by conducting alternative traffic analyses to develop and recommend a new set of traffic signal timings for the study corridor.

Three (3) modelling tools are used to compare the GHG emissions along the study corridor, between the scenarios, with and without optimized signal timing plans. The three (3) modelling tools used to perform this analysis, include:

- Synchro traffic analysis and optimization tool;*
- VISSIM traffic micro-simulation tool; and*
- MOVES GHG emission modelling tool.*

The analysis work completed using these three models is divided into two (2) tasks. A detailed breakdown of the two tasks are presented in the following sections, including:

- Section 3.1 – Task 1: Traffic Modelling; and*
- Section 3.2 – Task 2: GHG Emissions Analysis.*

- d) Please describe any public consultations conducted as part of the Feasibility Study and their impact on the Study.

No direct public consultation was conducted, nonetheless in May 2011, Waterloo's Regional Council approved the GHG Inventory and Action Plan for their corporate operations. The overall goal of the Action Plan is to reduce GHG emissions of operations, while continuing to provide high quality community programs and services to a growing population. Based on a progress report (PDL-CPL-16-38)1 written by the Region in Planning, Development and Legislative Services, the Region is currently on track to meet its emission reduction target by 2019. In addition, several initiatives have been introduced to ensure that the target is achieved.

3. Feasibility Study Findings and Recommendations

- a) What were the environmental findings related to the options explored in the Feasibility Study? Please provide quantitative results and summary tables of these results (or the page numbers from the Feasibility Study report).

Please see study pages 10 –13, Section 6.1 Economic Benefits:

The estimation of the economic benefits were based on the following four (4) MOEs:

- Reduction of GHG emissions;*
- Reduction of vehicle delay;*
- Reduction of the number of vehicle stops; and*
- Reduction of fuel consumption.*

- b) What were the financial findings related to the options explored in the Feasibility Study (for example, results of a cost-benefit analysis, financial savings identified, and so on)? Please provide quantitative results and summary tables of these results (or the page numbers from the Feasibility Study report).

Please see study pages 13 –15, Section 6.2 Project Costs:

The total project costs can be determined by adding the following four (4) cost components:

- *Technology system equipment;*
- *System installation fees, supported by authorized electrical contractors;*
- *System Operation and Maintenance (O&M) costs; and*
- *Regional staff for operation and maintenance.*

- c) Based on the environmental and financial findings above, what does the Feasibility Study recommend?

The study recommend increasing the interval of signal corridor update. This will reduce GHG, fuel consumption. The cost benefit comparison identified a substantial return on investment.

A total of 26.8 metric tonnes CO₂e will be reduced, equivalent to approximately 6 cars¹ removed from the road over the three (3) year horizon;

- *The net benefit-cost ratio of 3.2 indicates there is an economic benefit of optimizing signal timings every year; and*
- *The Technology, combined with staff resources necessary to implement the optimized timings, can be one of the solutions to reduce the amount of GHG emissions.*

4. Lead Applicant's Next Steps

- a) Taking the Feasibility Study's recommendations into account, what next steps do you as the municipality plan to take? What potential benefits or internal municipal improvements would result from these next steps?

Implementation of the Miovision TrafficLink system at 274 signalized intersections. Develop new review parameters to be included in the evaluation of signal operation impaction on GHG and fuel consumption.

Introduce proactive protocols to address deficiencies to get ahead of system issues minimizing the complaints from the general public.

5. Lessons Learned

In answering the questions in this section, please consider all aspects of undertaking the Study — from the initial planning through each essential task until the Final Study was prepared.

- a) What would you recommend to other municipalities interested in doing a similar Feasibility Study? What would you do differently if you were to do this again?

I would confirm all requirements and timelines are achievable. I would develop a matrix of FCM and municipality tasks and due dates. Try to identify approval challenges early in the process.

- b) What barriers or challenges (if any) did you encounter in doing this Feasibility Study? How did you overcome them?

The main problem was the issue of FCM timeline and commitments does not align with the municipal process to present to Regional Council to get approval and budget commitments to move forward.

It was very challenging to coordinate all of the required documents, budget and approvals. The project was delayed and the due dates were not achieved due to the requirements from FCM.

6. Knowledge Sharing

- a) Is there a website where more information about the Feasibility Study can be found? If so, please provide the relevant URL.

No website but report can be provided upon request.

- b) In addition to the Feasibility Study results, has your Feasibility Study led to other activities that could be of interest to another municipality (for example, a new policy for sustainable community development, a series of model by-laws, the design of a new operating practice, a manual on public consultation or a measurement tool to assess progress in moving toward greater sustainability)? If so, please list these outcomes, and include copies of the relevant documents (or website links).

Review the process to signal timing update

The frequency between updates

Moving ahead with project to implement Miovision TrafficLink

Reporting of travel time and GHG feedback to Regional Council

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