

REPORT

PLANNING SERVICES

Meeting: GENERAL PURPOSE AND ADMINISTRATION COMMITTEE

Date: May 30, 2011 **Resolution #:** **By-law #:** N/A

Report #: PSD-052-11 **File #:** PLN 33.3.10

Subject: DURHAM-YORK ENERGY FROM WASTE PROJECT
CLARINGTON COMMENTS ON CERTIFICATE OF APPROVAL
APPLICATION (AIR)

RECOMMENDATIONS:

It is respectfully recommended that the General Purpose and Administration Committee recommend to Council the following:

“WHEREAS the Regional Municipalities of Durham and York submitted application on March 3, 2011 to the Ministry of Environment under Section 9 of the Environmental Protection Act, O. Reg 419/05, for a Basic Comprehensive Certificate of Approval; and

WHEREAS to demonstrate compliance with air emission, the application submission was supported by an Emission Summary and Dispersion Modelling (ESDM) Report; and

WHEREAS the Municipality of Clarington retained SENES Consultants Ltd. to review the Certificate of Approval Application – Air and the ESDM to ensure that the conditions set out in the Environmental Assessment Approval and the Host Community Agreement are appropriately addressed in the Certificate of Approval; and

WHEREAS SENES' review of the Certificate of Approval application and the ESDM identified a number of issues that should be addressed by the Ministry of Environment in their review and approval of the application;

NOW THEREFORE BE IT RESOLVED:

1. THAT the Report by SENES Consultants Ltd. (Attachment 2, under separate cover) be adopted as the Municipality of Clarington's comments on the Application for a Certificate of Approval – Air for the Durham-York Energy from Waste Project;

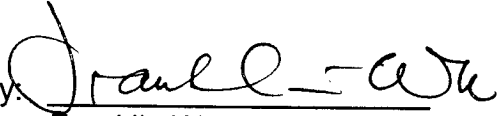
2. THAT the Municipality of Clarington requests the Ministry of Environment to include the following as conditions in the Certificate of Approval – Air to be issued for the Durham-York Energy From Waste Project in order to make them legally binding:
 - a) That annual stack testing be conducted as per MOE A-7 Guidelines;
 - b) That testing be carried out such that the waste stream represents the typical waste composition being fed into the facility;
 - c) That the performance condition of 9 mg/Rm^3 be applicable to total $\text{PM}_{2.5}$ (filterable and condensable) as set out in the conditions of EA approval; and
 - d) That re-modeling be required should the source testing show emission rates higher than those used in the ESDM;
 3. THAT the Council of the Municipality of Clarington hereby requests the Ministry of Environment provide the Municipality with the draft Certificate of Approval – Air for review and comment prior to issuance of the final approval;
 4. THAT at the time of the renewal of the initial Certificate of Approval, 5 years after commissioning (approximately 2018), that there be no “grandfathering” of emission limits and other relevant conditions so that the relevant standards at that time can be incorporated;
 5. THAT a copy of Report PSD-052-11 and Council's decision be forwarded to the Region of Durham, the Region of York, and the Ministry of Environment; and
 6. THAT all interested parties listed in Report PSD-052-11 and any delegations be advised of Council's decision.
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Submitted by:



David J. Crome, MCIP, RPP
Director of Planning Services

Reviewed by:



Franklin Wu,
Chief Administrative Officer

FL/sn/df
26 May 2011

1.0 BACKGROUND

1.1 At the March 28th, 2011 Council meeting, resolution #C-167-11 was passed:

“THAT the Director of Planning Services be authorized to re-engage SENES Consultants Ltd. to prepare comments on the application to the Minister of Environment for Certificates of Approval for the Energy-From-Waste facility at a cost of \$18,345.56 with a report and presentation to the General Purpose and Administration Committee....”

and a further resolution #GPA-307-11 was passed on April 4, 2011:

“THAT the Director of Planning Services be directed to advise SENES Consultants to expand the scope of the Peer Review to the Certificate of Approval for the Energy-From-Waste proposal to address PM_{2.5} to a maximum cost of \$3000.”

- 1.2 SENES's proposal is Attachment 1. The scope of work to be undertaken by the Consultant was limited to the Certificate of Approval Application - Air and how the application addressed the conditions set out in the Environmental Assessment Approval conditions and the requirements of the Host Community Agreement.
- 1.3 Staff have obtained approval from the Region to have the Region's consultant provide the computer model and other pertinent information directly to SENES, including the Emission Summary and Dispersion Model (ESDM) study upon which the application for the Certificate of Approval for air is based.
- 1.4 Staff have notified the Regions and Ministry of Environment (MOE) that the Municipality will be making comments on the Certificate of Approval - Air, and requested that approval not be granted until after the comments from Clarington have been received and considered.
- 1.5 Staff and SENES met with Ms. Wendy Bracken, who is one of the representatives from EFWAC (the Energy from Waste Advisory Committee) to the Ambient Air Monitoring Working Group, to review her presentation to GPA from March 28, 2011. Specific attention was given to her comments regarding PM_{2.5}, and the way in which data is being calculated and displayed in the Certificate of Approval Application – Air as compared to the conditions of EA Approval.
- 1.6 The Clarington representative on the Ambient Air Monitoring Working Group is Janice Szwarz, Senior Planner who has been involved in the discussions with SENES and attended the first meeting of the Working Group on April 28th.

2.0 PROCESS FOR A CERTIFICATE OF APPROVAL(S)

- 2.1 The Environmental Assessment for the Durham – York Energy from Waste Project was approved by the Minister of Environment on November 19, 2010 subject to a number of stringent conditions which, for the most part, will be achieved and implemented through the Comprehensive Certificate of Approval to be issued for the project.

- 2.2 The Comprehensive Certificate of Approval Application for Air, Noise, Waste and Stormwater was submitted to the Ministry on March 3, 2011. The review by SENES Consultants is limited to the Certificate of Approval - Air portion of the application. Staff has expertise in noise/vibration and stormwater issues, but typically do not review the Certificates of Approval for noise/vibration and stormwater for projects. Rather, as with all projects that involve the submission of a noise/vibration study and a stormwater study, Staff will review the design and engineering of the EFW facility through the Site Plan application process to ensure that the proposed construction meets the requirements of these studies.
- 2.3 The Municipality has two opportunities to review and comment on the Certificate of Approval: at the application stage (e.g. this review) and later when the MOE issues the draft Certificate of Approval.
- 2.4 It is expected that MOE will issue a Draft Certificate of Approval - Air in the near future. Because this project received an approval under the EA Act, the Draft Certificate of Approval - Air will not be posted to the Environmental Bill of Rights website. Rather the proponent (the Regions) have committed to posting the information to the project website. It will be important that the Municipality review the Draft Certificate of Approval as it will be our second opportunity to comment and ensure that the requirements set out in the Host Community Agreement, the Conditions of EA Approval and the peer review of the application for the Certificate of Approval – Air (Attachment 2 under separate cover) have been addressed.
- 2.5 The Consultant and Staff believe that the resolution, as set out in Recommendation 4 to the Ministry of Environment seeks to ensure that the conditions of the EA Approval and Host Community Agreement with regard to air emissions are adequately addressed in the Certificate of Approval. It does not, in our opinion, constitute “an objection” as set out in the Host Community Agreement.

3.0 COMMENTS ON CERTIFICATE OF APPROVAL APPLICATION

- 3.1 SENES Consultants will be presenting the results of their peer review to Committee on May 30, 2011. SENES's Report, Peer Review of the Durham-York Energy Centre ESDM Report is Attachment 2 and will be distributed under separate cover.
- 3.2 Staff have provided SENES with clarification as to the Municipality's concerns and other factual information. Staff are not experts in air quality and are relying on the expertise of the peer review team to prepare the Municipality's comments on air quality issues.
- 3.3 SENES have to date not received dispositioning comments from the Regulator or Proponent. We have requested these be submitted by May 31st. Dispositioning comments will be communicated to Council in an addendum report for the June 6th, 2011 meeting.

Staff Contact: Faye Langmaid

Attachments:

Attachment 1: SENES Consultant Ltd. Proposal

Attachment 2: SENES Consultant Ltd.: Peer Review of the Durham-York Energy Centre
ESDM Report (under separate cover)

List of interested parties to be notified of Council's decision:

Mirka Januszkiewicz - EFW Project Team
Gavin Battarino, Ministry of the Environment
Wendy Bracken
Tracey Ali
Kerry Meydam
Doug Anderson
Linda Gasser



SENE Consultants Limited

121 Granton Drive
Unit 12
Richmond Hill, Ontario
Canada L4B3N4

Tel: (905) 764-9380
Fax: (905) 764-9386
E-mail: senes@senes.ca
Web Site: <http://www.senes.ca>

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21 March 2011

Ms. Faye Langmaid
Manager of Special Projects
Planning Services Department
Municipality of Clarington
40 Temperance Street
Bowmanville, Ontario, L1C 3A6

Dear Faye:

SENE is pleased to present you with this proposal to undertake an audit and peer review of Air Dispersion Modelling Work completed for the York Durham EFW facility, on behalf of the Municipality of Clarington. SENES proposes to liaise with Golder Associates, who completed the work, in order to obtain the ESDM report and gain access to the supporting electronic files for the Certificate of Approval application. If necessary, senior SENES staff will visit Golder's offices in Mississauga, Ontario for one day in order to understand the approach that was taken and to get a copy of the CALMET/CALPUFF modelling system input files and other information about the site including, but not limited to, emission inventory and proposed air pollution controls, building locations and sizes, terrain elevations used, landuse to be used, proposed CALPUFF modelling grid, location of all proposed local sensitive receptors, the sources of the meteorological data set to be used and any adjustments that have been made to it; emission source locations, types and characteristics; and the version of the CALMET/CALPUFF Modeling system to be used as well as rationale on input switches selected and the reasoning behind them.

This information will be brought back to SENES' office in Richmond Hill where it will be extensively reviewed by a senior level team. SENES will provide an external hard disk drive to transport the data files. All electronic copies will be destroyed or returned to Golder Associates at the completion of the project and acceptance of the report. Golder will be contacted after the first day for clarification purposes only. SENES will then prepare its findings and suggestions in the form of a letter report to the Municipality with detailed Appendices where necessary. SENES will pay particular attention to any proposed approach and/or commitments that, in its opinion, deviates with what was agreed upon in the HCA and the EA Approval. In these cases a suggested alternative

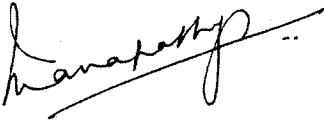
approach will be given with a supporting rationale. In addition, SENES will prepare a presentation that summarizes the results of the review for presentation to Council at a later date.

SENES expects to complete the review and write a draft copy of the report within three weeks of the award of contact assuming that staff from Golder Associates will be available within 5 business days of award.

SENES looks forward to working with the Municipality of Clarington once again.

Yours very truly,

SENES Consultants Limited

A handwritten signature in black ink, appearing to read "Murali Ganapathy", written over a horizontal line.

Murali Ganapathy, M.A. Sc, P.Eng.
Principal

*Peer Review of Air Quality Modelling and ESDM of an Energy From Waste Facility located in
the Municipality of Clarington, ON*

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APPENDIX A - CURRICULA VITAE

1.0 DESCRIPTION OF THE MANDATE

This scope of work has been developed by SENES with the assumption that the Municipality wishes to have a relatively complete review and assessment done on the ESDM report. As part of the project SENES will review and verify the validity and source of all data to be used as input to the air dispersion modelling assessment that was completed by Golder Associates for the future EFW facility to be built in York-Durham. Specifically, this includes review of the following elements:

- **Emissions Data**
 - This will include a review of the significant emission sources for the facility
 - Sources of data, assumptions and calculation methodologies will be reviewed for each of the processes included in the assessment
 - Spot checks will be performed on 10% of the emission sources to verify the accuracy of the calculations
- **CALMET Modelling**
 - This will include a cursory review of the base meteorological input information (i.e. use of surface and upper air stations and/or data from a mesoscale model), the mesoscale model used (if applicable), the grid spacing of the source data (36 km vs 12 km, etc), as well as the source and resolution of terrain and land use data
- **CALPUFF Modelling**
 - This will include review of:
 - the model set-up, including the representativeness of the terrain and land use data in the vicinity of the site;
 - the accuracy and representativeness of the emission source characteristics used in the model (physical dimensions, location flow, etc);
 - the accuracy and representativeness of the building characteristics, including the building envelopes, absolute and relative locations, terrain elevations, etc; and
 - the receptor grid spacing (with respect to conformance with MOE requirements), as well as the location(s) of any sensitive receptors included in the modelling.
- **CALPOST Results**
 - The CALPOST input files will be reviewed to verify the following:

- The averaging periods specified for each of the relevant contaminants to be extracted match the regulatory requirements with respect to existing air quality standards and guidelines in Ontario;
 - At all receptors
 - At selected sensitive receptors.

SENES anticipates that at least one visit to Golder's offices will be required to discuss the overall objectives of the air dispersion modelling assessment, as well as to review the extent of the available data to be included in SENES' review. This will include:

- Acquisition of the supporting materials and data to be used in the air dispersion model, including provision of the following files to SENES:
 - Mapping (base maps, site layout drawings);
 - Excel spreadsheets documenting emissions calculations;
 - Supporting/supplementary data (i.e. source test data, etc)
 - CALMET, CALPUFF, and CALPOST input files;
 - Supporting/supplementary input data files (i.e. surface meteorological files, upper air data, mesoscale meteorological data (if applicable), terrain data, land use data); and
- generation of a summary report on SENES' findings.

2.0 DESCRIPTION OF THE METHODOLOGY

The approach to be used is as follows:

1. Contact Golder Associates project staff (Anthony Ciccone) to discuss potential mechanisms for data transfer between SENES and Golder, and staff availability for a meeting at their offices;
2. Attend at the premises of Golder Associates to review the nature and extent of the data:

SENES has assumed that this visit will be completed by Chris Marson and Zivorad Radonjic, who will discuss the overall approach that was taken in the emissions calculations, model set ups, etc., and the nature and quantity of the available data for review. Both Chris and Zivorad will attend the meeting in the morning, and Zivorad will remain at Golder during the afternoon to identify which specific data files are required, and copy them to a storage device for return to SENES' office.

3. Collect in electronic form all data pertaining to inputs, model version, outputs and assumptions made, and in particular:

Peer Review of Air Quality Modelling and ESDM of an Energy From Waste Facility located in the Municipality of Clarington, ON

- a. maps, photos and diagrams outlining the location and extent of each operation (mining, processing and tailings (if applicable)), as well as site plans outlining locations of all buildings and emission points (direct and indirect) and locations of roadways (paved and unpaved);
- b. process information (through-put, material flows, contaminants, etc.);
- c. emissions information for each source (emission rates and physical source parameters such as source height (and base elevations), flow rate/exit velocity, temperature, stack diameter (or physical extents of storage piles, etc));
- d. model input files (CALMET, CALPUFF and CALPOST) and supporting information/data; and
- e. documentation justifying model switches used (or not) and outputs to be generated; assumptions made and any exclusions;

SENES will supply a portable hard disk drive which will be used to copy the electronic files and return them to SENES' offices for the detailed review. The information will be destroyed or returned to Golder at the completion of the project and acceptance of the report.

4. Review the detailed files and source data as outlined in Section 1.0 above with respect to the emissions, CALMET, CALPUFF and CALPOST modelling, including:
 - a. Model inputs, switches used, outputs to be produced (locations of sensitive receptors, tables and figures, statistics to be generated); and
5. Compile a report documenting the audit.
6. Prepare a presentation for municipal Council that summarizes the results and findings of the review, and provide this in person at a future Council meeting.

3.0 DELIVERABLES

SENES will deliver a letter report to the Municipality which includes, but is not limited to:

- A summary of the general assumptions that were used in the assessment, including a discussion of their applicability and robustness, and any recommendations for improvement;
- A summary of the emission inventory for the project, identifying any issues or potential areas where the estimates may be overly conservative or under estimated, or where potential emission sources or air pollutants may have been overlooked;

- A high level summary of the meteorological (CALMET) modelling, including a discussion of the nature and quality of the input data used, and any potential issues that were identified;
- A summary of the CALPUFF dispersion modelling, including:
 - a review of input information (significant sources, locations, physical source characteristics/parameters, and building information);
 - review of output locations (gridded and sensitive receptor locations);
- A summary of the CALPOST modelling (i.e. a review of proposed data outputs (graphs, tables and analyses));
- An overall assessment of any data gaps, questionable assumptions or errors which may significantly affect the model results or result in insufficient conservatism; and
- Overall expert opinion on the quality of the assessment as a whole.

4.0 PERSONNEL ASSIGNED TO THE PROJECT

The personnel assigned to the project are Mr. Zivorad Radonjic and Ms. Abby Salb. Short paragraphs outlining their credentials are given below with their full curricula vitae in Appendix B.

Abigail C. Salb, M.Sc., P. Eng, Air Quality Specialist specializes in management and completion of industrial air emissions inventories, atmospheric dispersion modelling, emission reduction strategies, air quality assessments and air quality monitoring. She has managed numerous small and large scale projects with budgets ranging from \$10 K to several million dollars. Her experience in industrial air emissions and air dispersion modelling includes completion of studies for various industrial facilities such as integrated iron and steel mills, cement production plants and metal smelting and refining operations. She has also completed and/or reviewed many ambient air quality assessment projects including ambient air monitoring and preliminary design of air pollution controls. Ms. Salb has also troubleshooted failing air pollution control systems for industrial clients, and made recommendations for solutions and improvements.

Zivorad Radonjic, B.Sc., Senior Air Modeller specializes in the development and applications of air quality dispersion models, as well as, boundary layer meteorology and micrometeorology observations.

Recently Mr. Radonjic has been involved in applications of CALMET/CALPAUFF system for variety projects in Eastern Canada where this system is a regulatory model. Many projects for

Peer Review of Air Quality Modelling and ESDM of an Energy From Waste Facility located in the Municipality of Clarington, ON

this area are done with coupling a meso-scale (WRF-NMM) model with CALMET/CALPUFF system which is quite important for the boundary layer near shoreline. Mr. Radonjic applied the CALMET/CALPUFF system in Monte-Carlo for the Idaho Chemical Processing Plant (ICPP) at Idaho National Engineering Laboratory (INEL). The air concentrations were estimated using atmospheric dispersion modelling and incorporated uncertainty analyses to provide quantitative confidence intervals on the estimated air concentrations. The distributions of air concentrations developed from the uncertainty analysis were subsequently used in a pathways analysis and dose assessment.

He has reviewed work of other consultants, as well as he has completed the study in California on "Air Dispersion Modelling of Tritium Releases at Lawrence Berkeley National Laboratory for 1998 using CALPUFF Complex Terrain Methodology.

He has had extensive experience in the use of standard regulatory dispersion models recommended by regulatory agencies in Canada and the United States (CALPUFF, CALGRID, ISC3, AERMOD and many other specific application models). Mr. Radonjic has extensive experience in the retrieval of meteorological data from international database systems, including the preparation and quality assurance testing of such data for use in air quality dispersion models. Mr. Radonjic has conducted modelling studies for secondary metal refineries and uranium processing facilities, thermal power plants and open pit mines. His experience includes modelling fugitive dust and associated toxic trace metals, organics, heavy gases, radionuclide emissions from ore processing operations and process waste stockpiles and tailings. Mr. Radonjic has designed and participated in a field verification study of emissions from natural gas fired turbines and has modelled the impact of two proposed co-generation facilities. Mr. Radonjic also participated in a project of assessing the impact from power plant in the Toronto area, comparing the results from the U.S. EPA model AERMOD and ISC3.

Mr. Radonjic has been involved in many different CALMET/CALPUFF applications in Canada, the USA, Europe and Asia. Mr. Radonjic has also been involved in the critical review of CALMET/CALPUFF work completed by other consultants.

5.0 COST

The total estimated cost for this work including labour and expenses, exclusive of HST, is \$16,235. The breakdown of the estimated cost to complete this audit of the model inputs is given in Table 1 below. All cost estimates are exclusive of applicable taxes.