

DRAFT CONSTRUCTION PLAN REPORT
TORONTO HYDRO ENERGY SERVICES INC.
ASHBRIDGES BAY BIOGAS COGENERATION PLANT

Toronto Hydro Energy Services Inc. (TH Energy) is planning to construct and operate a Biogas Cogeneration Plant located at 7 Leslie Street, Toronto, Ontario, which is adjacent to the Ashbridges Bay Treatment Plant (ABTP). The Biogas Cogeneration Plant (Cogeneration Plant) is subject to the requirements of the new Green Energy Act and Renewable Energy Approvals process (O.Reg. 359/09). TH Energy has entered into a long term “Agreement to Lease” with the City of Toronto for the site location, which is currently used as a works yard. Part of the property located at 7 Leslie Street will be used to build the Cogeneration Plant, while the remainder of the land will continue to be used as a works yard by the City of Toronto.

Project Description

The proposed TH Energy Cogeneration Plant is classified under O.Reg. 359/09 as a Biogas Facility, and will utilize biogas produced in existing digesters at the ABTP to generate electricity and thermal energy in the form of hot water. The biogas is produced by anaerobic digestion of the biodegradable material in municipal sewage waste at the ABTP facility, and is comprised primarily of methane and carbon dioxide. Currently, the biogas is used as fuel to heat water in existing boilers at the ABTP. Using seven (7) reciprocating engine generators, the Cogeneration Plant will generate 9.912 MW of electricity under the Ontario Power Authority’s Feed-in-Tariff Program. Electrical connection is through the ABTP electrical distribution system, therefore, the electricity produced by the Facility will be consumed by the ABTP. Heat resulting from the biogas combustion process in the engine generator sets is recovered from engine cooling, lube oil cooling and from the exhaust flue gases by heat exchangers, which produce the hot water for use at the ABTP. Biogas pipes leading to and hot water pipes leading from the TH Energy Facility will be installed across a shared property line.

The Cogeneration Plant will be constructed as a concrete block wall building measuring approximately 40 m by 23 m by 10 m tall and will be surrounded by landscaping and parking areas. The parcel of land leased from the City of Toronto is approximately 61 m by 44 m, irregular. Each of the seven (7) engine generator sets will require their own piling type foundation that will extend below grade. Construction is scheduled to begin in summer of 2010 and will last between 15 and 18 months during a typical 10 hour/day 5 days/week construction schedule. Some activities may be completed on Saturdays to meet scheduling requirements, which will not be a usual occurrence.

Construction Activities and Anticipated Timelines

A list of primary construction activities and the anticipated timelines are presented in the following paragraphs:

Site Mobilization (August 2010)

Site Mobilization is expected to last a few weeks and involves installing a fence around the property, installation of construction trailers, and running temporary services. The construction laydown area will be on the ABTP Site, immediately east of the Cogeneration Plant site.

Excavation (September 2010)

Excavation will involve removing a depth of approximately 1 m of soil over a surface area of approximately 40 m by 23 m (the dimensions of the building). This approximately 1,000 m³ volume of soil will be stored in a corner of the property to be reutilized if possible for backfilling. A Soil Management Plan will be followed as described below.

Drive Piles and Pour Foundations (October 2011 – March 2011)

Once the excavation is completed, the piles will be driven into the ground and the building slab and foundations will be poured. The piles will support the engine generator sets as well as the building structure.

Erect Building (March – July 2011)

Once the piling is completed, the erection of the structural steel will commence and the building exterior walls and siding will be completed.

Equipment Installation (July – October 2011)

With the building in place, the equipment will be installed inside the building followed by mechanical and electrical connections. The transformer will be installed outside on the north eastern site of the lot.

Yard Work (September – November 2011)

The yard work will commence as soon as all the equipment is in place and the exterior of the building has been largely completed.

Startup and Commissioning (November 2011 – March 2012)

Once the installation is completed, the startup and commissioning will take place followed by the operation of the facility, which is planned for March 2012.

Potential Negative Environmental Effects from Construction Activities and Mitigation Measures

Construction of the proposed Cogeneration Plant will be completed using conventional construction methods and will follow standard construction best management practices. The Design Build Contractor for the Cogeneration Plant will be responsible for the detailed methods of construction. Outlined below are potential negative environmental effects from construction activities along with proposed mitigation measures. The final decision regarding mitigation measures to be employed will be the responsibility of the Design Build Contractor.

The construction process with the greatest potential for negative environmental effects is construction of the foundations for the building and engine generator sets. This work will require the use of various pieces of heavy equipment, which will be on Site at different periods of the construction process. Potential heavy equipment to be used includes bulldozers, front-end loaders, small trucks, backhoes, bobcats, dump trucks, compactors, ready-mix concrete trucks and cranes. Other construction activities, such as those related to the placement of facility components (e.g., generator sets) and activities inside the building (once built) are expected to have lower potential for environmental effects.

The site location has been identified as containing methane pockets underground, along with some pockets of metals impacted soils and groundwater. A health & safety plan for methane gas has been developed, which requires among other measures that confined space entry protocols be followed for all excavation work. Soil management, excavation dewatering and storm water management plans will also be developed by the Design Build Contractor to ensure the safe handling of any potentially contaminated soils and water. The implementation of these pollution prevention plans will obviate or minimize the environmental effects of accidental releases to the natural environment.

Methane – As part of the site design a methane collection system will be installed below the site building and adjacent parking lot. The small quantities of collected methane will be either (1) vented directly to atmosphere as it accumulates, or (2) combined with the digester biogas for combustion in the engine generators. During construction activities, a Methane Gas Health and Safety Plan will be followed by construction workers to ensure their protection during all phases of the construction.

Excavated Soils – Subsurface soils will be excavated during construction of the piling type foundations for each engine generator set. Soil samples from boreholes at the site indicate the presence of some metals impacted soils. During foundation construction activities, a Soil Management Plan will be followed to ensure there will be no contamination of the environment as a result of soil handling activities. Excavated soil will either be placed directly into haul trucks for off-site disposal or placed on polyethelene liners in temporary stockpiles depending on level of contamination. The soil will be used for backfill if it meets Ministry of Environment

standards. Placing stockpiled soil on liners ensures there will be no residual soil remaining on the ground after soil is hauled off-site for disposal. Liners will be placed on-top of temporary stockpiles during rain events to ensure water does not leach through the stockpiled soil. Soil samples will be collected and analyzed prior to the disposal of all excess excavated soils in a landfill appropriate to the level of any soil impacts.

Excavation Dewatering – During foundation construction activities, an Excavation Dewatering Plan will be followed. Groundwater and/or storm water (in the event of rain during excavation activities) will be pumped out from the excavation and either temporarily stored on-site in a large tank or hauled away for disposal. If water is stored on-site, suspended solids will be allowed to settle and water samples will be collected to establish the proper method for disposing of the water. Water may be disposed of off site, or if analytical results indicate compliance with applicable City of Toronto municipal sewer use by-law criteria, the Design Build Contractor may dispose of water in the storm sewer located in the southwest corner of the site.

Storm Water Management – The construction site slopes towards a storm sewer located on Leslie St. at the southwest corner of the site where all storm water will flow towards. This storm sewer will be securely covered with a silt curtain to ensure suspended solids are not carried into the storm sewer. A second storm sewer located on Leslie St. will also be securely covered with a silt curtain.

Fugitive Dust – The construction of the proposed Cogeneration Plant has the potential to affect the air quality in the vicinity of the construction site. Emissions which are associated with construction activities are primarily dust and typical combustion emissions from construction equipment such as carbon monoxide, nitrogen oxides, sulphur dioxide and volatile organic compounds (VOCs). As with any construction site, these emissions will be of relatively short duration and unlikely to have any adverse effect on the surrounding areas. Best practices will be followed including: plans to minimize dust generation through application of water and/or calcium chloride on site roads; planning, site layout and the proper use of materials, tools and equipment; compacting disturbed soil; activity scheduling; storage piles management; minimization of drop heights; barriers to prevent dispersion of materials; and proper techniques for the use of materials that include VOCs.

Emergency Spill Procedures – Incidental spills of oil, gas, diesel fuel and other liquids to the environment could occur during construction. In addition, sanitary and other wastes will be generated during construction. Fuelling and lubrication of construction equipment will be carried out in a manner that minimizes the possibility of releases to the environment. Measures for containment and cleanup of contaminant releases will be followed to minimize contamination of the natural environment, e.g., placement of any fuel tanks and generators on plastic sheets bermed around the edges, and use of suitable hydrocarbon absorbent material for cleanup and

approved landfill or other disposal. Any spills with the potential to create an impact to the environment should be reported to the MOE as required by provincial spills legislation. Interim sanitary waste collection and availability of treatment facilities will be arranged for the duration of the construction period. All construction waste, washwater and wastewater will be disposed of in accordance with regulatory requirements.