

# Project Profile

## CITY OF LONDON

### Infrastructure Renewal - Electrical

Located centrally in London, Ontario along the historically designated Thames River, the Greenway Pollution Control Centre is the flagship of London's Environmental Services Division. The centre currently services numerous residents and businesses from the surrounding area. Originally built in 1930, Greenway has undergone numerous upgrades to meet the demands of a growing community. As the city has grown around the plant, the total available service lands have been developed and the ultimate sewage flows have been obtained. With an already large design capacity, the Greenway PCC facility is not expected to grow. It is, however, anticipated that Greenway will assume its function for the next 50 years with no plans to decommission the facility after that time.



MVA Engineering was retained by the City of London to review the electrical needs for the Greenway PCC and produce a multiphase master plan and budget. With the necessary funding in place, MVA Engineering was again retained to provide the engineering, tender documents, and project management for the implementation of the master plan for electrical system infrastructure upgrade and revitalization.

Many of the Greenway Pollution Control Centre's ultimate design goals were completed during the late 1950s and early 1960s. Since then, the plant has undergone 21 relatively minor upgrades to maintain operations and implement new technologies. However, as a mature plant, these upgrades did not include the need to change or upgrade the electrical infrastructure. Typical for mature facilities, investment must be given to the electrical infrastructure or regardless of how well the plant processes are running, the infrastructure will eventually fail.



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MVA Engineering's master plan identified the current issues with an existing 40 year-old electrical power system in a critical pollution control application and environment. The plan provided further the necessary pre-design guidelines for the replacement of the electrical distribution system with a parallel system and moving the individual loads onto the new system. The project initiated with the engineering as one project, but the equipment procurement and construction was phased. Phase one was major equipment procurement. The second phase was to construct a new parallel electrical system totally independent of the existing system. The third phase was to provide systematic connection from the existing equipment to the new system piece by piece without major operational disruption. The final phase is to provide 2.7MW of new standby power generation and decommissioning of the original substation..

This approach was most effective over the long-term as it has enabled:

1. Provision of a new replacement system
2. Acquisition of new technologies
3. Uniformity of equipment
4. Minimization of spare parts
5. Reconfiguration of loads to current needs
6. Extended equipment life
7. Increased system robustness & reliability
8. System optimization



MVA Engineering provided the conceptual and preliminary design guidelines as well as the required detailed design and project management to provide:

- a) New London Hydro electrical service entrance equipment and a renewed power supply agreement
- b) Parallel electrical overhead lines on separate poles from the existing Utility network
- c) Two new London Hydro-owned 27,600 V switchgear and primary transformers in a new main substation
- d) New 4,160 V Primary Distribution overhead cable tray system
- e) Two new Electrical Distribution centres/rooms
- f) New 4,160 V Switchgear and Motor Control
- g) New Secondary Transformers, 600 V Switchgear and Motor Control centres
- h) New Distribution Transformers and 208 V Main Distribution Panels
- i) Diesel Standby 4.16kV 2.7MW Generator in a new building
- j) Connection of the existing 4,160 V, 600 V and major 208 V loads to the new system
- k) Protection, Power Metering and Distribution System Automation
- l) Provision for an increased automation and control of the sewerage treatment process equipment

The above work was staged over four (4) years and four (4) phases with the installation of the 4.16kV 2.7MW standby power generator schedule for completion in the fall 2006 on schedule and on budget. The approximate construction and engineering budget for the above has been \$13.0 million.



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