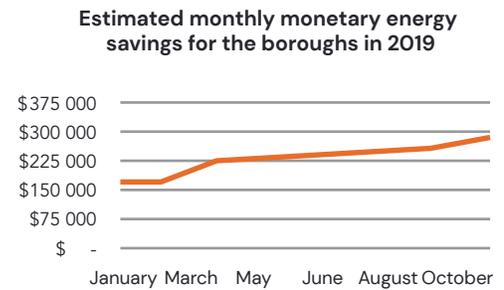


Street Lighting System Upgrade

Background

In 2014, based on the results of pilot tests conducted over the previous two years, the City undertook a massive project to replace the City's approximately 132,000 high-pressure sodium (HPS) bulbs illuminating the City's streets and sidewalks with light-emitting diodes (LED) lights. The purpose of the project was to reduce energy consumption by at least 50% and maintenance costs by 55%. In addition, the City wanted to install a smart communication system for the lights so that it could monitor their condition remotely in real time. In 2015, the central city proposed to take responsibility for the light conversion for all 19 boroughs, and contracted a private firm to manage the project, purchase equipment for the smart system and outsource the work of installing lights to three subcontractors. The City, for its part, handled the purchase of LED lights. The total authorized budget for all this work was \$110 million.



Purpose of the Audit

The purpose of this audit was to ensure that the upgrade of the City's street lighting system to light-emitting diodes enabled the City to achieve the projected savings in energy and maintenance costs.

Results

To date, the street light upgrade has enabled the City to achieve energy savings that exceeded the 50% expectations. However, these savings are based on data generated by the firm managing the project then transferred to the City, without any validation by the City. We also did not obtain evidence from the City that it has the necessary information to show that it has achieved maintenance savings of approximately 55% as a result of the street light conversion. What is more, the City was paying for repair work that the boroughs should have done, and in other cases, the boroughs themselves were doing the repair work without allowing the equipment supplier to honour the clauses dealing with equipment quality in the contract for the purchase of lights and their attendant warranties and without claiming the compensation to which it is entitled under these contracts.

Main Findings

Pre- and Post-Conversion Comparison of Energy Costs

- The City does not assess the energy savings brought about by the street light conversion. It receives from the firm responsible for managing the project a monthly count of the HPS lights removed and the LED lights installed, along with their respective intensities, but it does not do a field validation or calculation of the energy savings realized.
- The firm responsible for managing the project assesses the monetary savings that should be achieved by the boroughs, without the City doing a field check of these savings or validating the information that is forwarded to the boroughs.

Process for the Maintenance and Repair of Lights for Efficient Operation

- The boroughs do not share a standard process to manage how repairs under warranty are to be carried out.
- Clauses in the contracts with the firm responsible for managing the project and with the equipment suppliers provide that if they fail to rectify a malfunction in equipment within a specified period, the City can claim compensation. However, some boroughs do the repair work themselves, which does not allow the City to inform the firm or the supplier, and it loses all recourse in connection with this compensation.
- In other cases, the City asks the firm in charge of the project to correct problems that should have been repaired by the boroughs. The firm then bills the City for this work over and above its contract work for street light conversion.
- The City replaces parts for equipment under warranty without obtaining written confirmation from the manufacturer that this does not violate the warranty.

Project Management

- There was no approval file for this project, as set out in the administrative framework for large-scale projects subject to the *Cadre de gouvernance des projets et des programmes de gestion d'actifs municipaux*.
- The interactive map, which is used to inform the public of the progress of the light conversion project, does not take into account lights that were replaced outside this project.

In addition to these results, we have formulated various recommendations to the business units that are presented in the following pages. These business units were given the opportunity to agree to the recommendations.