January 31, 2012

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
P.O. Box 2319
2300 Yonge Street, 27th Floor
Toronto, ON
M4P 1E4

Dear Ms. Walli,

**RE: Kingston Hydro Corporation**
**EB-2011-0178 Updated 3rd Generation IRM Application**
**Responses to School Energy Coalition (SEC) Interrogatories**

Please find attached Kingston Hydro Corporation responses to SEC interrogatories (dated January 17, 2012) for this rate proceeding which have been filed electronically through the Board's RESS filing system and emailed to intervenors.

Respectfully submitted,

J.A. Keech, President & CEO
Kingston Hydro Corporation

Copy: School Energy Coalition, Jay Shepherd (by email)
Interested Parties (by email)

P.O. Box 790 Kingston, Ontario Canada K7L 4X7 **p.** 613.546.1181 www.kingstonhydro.com

**ONTARIO ENERGY BOARD**

**IN THE MATTER OF**
the *Ontario Energy Board Act, 1998*, S.O. 1998, c. 15 (Schedule B), as amended;

**AND IN THE MATTER OF** an Application by
Kingston Hydro Corporation for an order or orders
approving or fixing just and reasonable
distribution rates to be effective May 1, 2012.

# INTERROGATORIES
# FROM
# THE SCHOOL ENERGY COALITION (SEC)

***SEC Interrogatory #1***

***[Ex. 5] Please confirm that all calculations and figures in this exhibit use CGAAP. Please provide the exhibit on a MIFRS basis if available. (If the exhibit is already in MIFRS, please provide in CGAAP.) Please confirm that all figures in the Application use CGAAP.***

All calculations and figures in this exhibit use CGAAP. MIFRS is not available; however Kingston Hydro expects the calculations to be very similar if not identical as Kingston does not and has never had an aggressive CGAAP capitalization policy. For example only direct costs specific to capital assets are capitalized under CGAAP.

All figures in the Application use CGAAP.

***SEC Interrogatory #2***

***[General] Please provide a table showing the Board-approved capital budget for 2011, broken down by project, and also for each project the actual capital expenditures on that project in 2011. For each project that was not completed in 2011 as planned, please advise when the spending is expected to occur, the current amount expected to be spent, and the reasons for any change in scheduling or amounts.***

Kingston has included the 2011 Board approved capital budget broken down by project. As well as preliminary actuals broken down by project.

Referring to EB-2010-0136 Evidence Update Interrogatories from Energy Probe Research Foundation, Table 1 – List of Prioritized 2011 Projects, Kingston Hydro chose to defer projects TV7, TV41, Westdale (TV54), Substation No. 9 Protection Upgrades and the Motorized 44kV Disconnect.

Current amounts to be spent for these projects are presented in EB-2011-0178 Exhibit 8, pages 1 to 3 (minus any WIP costs incurred in 2011 onwards).

The reason for deferral (i.e. change in scheduling) from 2011 to future years was to facilitate completion of high priority station work, i.e. Substation No. 11 circuit breaker replacement, Substation No. 8 transformer replacement as well as Substation No. 3 circuit breaker retrofit.

Substation No. 9 Protection Upgrades were substituted by Substation No.11 Protection Upgrades as this was deemed higher priority during scope and estimate refinement of the 2012 plan in late 2011.

**Preliminary Actuals**

**Year : 2011**

| USA Account # | Description | CCA Class | Substation No.11 Circuit Breakers | Substation No.12 Relays | Substation No.8 Transformer | Substation No. 9 Protection Upgrades | Substation No.5 Relays | Transformer Vault 7 (TV7) | Transformer Vault 41 (TV41) | Transformer Vault 18 (TV18) | Westdale | Motorized 44kV Disconnect | Alfred Street - Princess to Brock | Annual Substation Battery Replacement | Annual Overhead & Underground Services | Annual Underground Cable Rebuilds | Annual Overhead Line Rebuilds | Annual RFP for Structural Engineering Services | SCADA | Meters | Tools & Equipment | MS#3 Circuit Breakers | Enterprise Asset Management System - from CWIP | Miscellaneous Intangible Plant | Substation No.15 (2012 Preliminary Work) | Substation Structures | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1610 | Misc. Intangible Plant | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | (6,155) | - | - | (6,155) |
| 1805 | Land | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| 1806 | Land Rights | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| 1808 | Buildings and Fixtures | 3 | 83,626 | - | - | | - | | | - | | | - | | - | | - | - | - | - | 6,301 | 1,890 | | - | - | 29,760 | 121,578 |
| 1810 | Leasehold Improvements | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| 1815 | Transformer Station Equipment - Normally Primary above 50 kV | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| 1820 | Distribution Station Equipment - Normally Primary below 50 kV | 47 | 1,467,617 | 112,484 | 279,878 | | 21,845 | | | - | | | 8,652 | | - | | 207,089 | - | - | - | 8,499 | 1,036,787 | | - | 28,374 | - | 3,171,223 |
| 1830 | Poles, Towers and Fixtures | 47 | 5,059 | 42 | | | | | | | | | 1,741 | | 19,696 | | 187,207 | | | | | | | | 32 | - | 213,778 |
| 1835 | Overhead Conductors and Devices | 47 | 14,871 | 127 | | | | | | | | | 5,224 | | - | | 561,621 | | | | | | | | 95 | - | 581,938 |
| 1840 | Underground Conduit | 47 | 15,648 | - | 1,376 | | | | | 51,112 | | | 374,639 | | 651 | | 143,997 | 543 | | | 10,450 | 322 | | | | | 598,738 |
| 1845 | Underground Conductors and Devices | 47 | 33,793 | 2,554 | - | | | | | - | | | 176,427 | | 3,987 | | 18,083 | - | | | - | - | | | | | 234,844 |
| 1850 | Line Transformers | 47 | - | - | - | | - | | | - | | | 87,886 | | 21,591 | | 215,060 | - | - | - | - | - | | - | - | - | 324,538 |
| 1855 | Services | 47 | - | - | - | | - | | | - | | | 35,798 | | 43,165 | | 3,649 | - | - | - | - | - | | - | - | - | 82,612 |
| 1860 | Meters | 47 | - | - | - | | - | | | - | | | - | | - | | - | - | - | 54,511 | - | - | | - | - | - | 54,511 |
| 1905 | Land | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| 1906 | Land Rights | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| 1908 | Buildings and Fixtures | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| 1910 | Leasehold Improvements | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | 6,421 | - | | - | - | - | 6,421 |
| 1915 | Office Furniture and Equipment | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | 5,985 | - | | - | - | - | 5,985 |
| 1920 | Computer Equipment - Hardware | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | 2,112 | - | | - | - | - | 2,112 |
| 1925 | Computer Software | 12 | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | 8,172 | - | | - | - | - | 8,172 |
| 1930 | Transportation Equipment | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | 413,102 | - | | - | - | - | 413,102 |
| 1935 | Stores Equipment | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | 4,900 | - | | - | - | - | 4,900 |
| 1940 | Tools, Shop and Garage Equipment | 8 | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | 22,462 | - | | - | - | - | 22,462 |
| 1945 | Measurement and Testing Equipment | | - | - | - | | - | | | - | | | - | | - | | - | - | - | 124 | 10,207 | - | | - | - | - | 10,330 |
| 1950 | Power Operated Equipment | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| 1955 | Communication Equipment | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | 9,523 | - | | - | - | - | 9,523 |
| 1960 | Miscellaneous Equipment | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| 1965 | Water Heater Rental Units | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| 1970 | Load Management Controls - Customer Premises | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| 1975 | Load Management Controls - Utility Premises | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| 1980 | System Supervisory Equipment | 45 | 34,322 | 34,194 | - | | 6,687 | | | - | | | - | | - | | - | - | 64,477 | - | - | 21,962 | | - | 1,084 | - | 162,726 |
| 1985 | Sentinel Lighting Rental Units | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| 1990 | Other Tangible Property | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| 1995 | Contributions and Grants - Credit | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| 2005 | Property Under Capital Leases | | - | - | - | | - | | | - | | | - | | - | | - | - | - | - | - | - | | - | - | - | - |
| **Total** | | | 1,654,937 | 149,401 | 281,254 | - | 28,532 | - | - | 51,112 | - | - | 690,367 | - | 89,090 | | 1,336,707 | 543 | 64,477 | 54,634 | 508,134 | 1,060,961 | - | (6,155) | 29,584 | 29,760 | 6,023,337 |

**Appendix 2-A (Amended February 4, 2011)**
**Capital Projects Table**

**Year : 2011 (Test)**

| USA Account # | Description | CCA Class | Substation No.11 Circuit Breakers | Substation No.12 Relays | Substation No.8 Transformer | Substation No. 9 Protection Upgrades | Substation No.5 Relays | Transformer Vault 7 (TV7) | Transformer Vault 41 (TV41) | Transformer Vault 18 (TV18) | Westdale | Motorized 44kV Disconnect | Alfred Street - Princess to Brock | Annual Substation Battery Replacement | Annual Overhead & Underground Services | Annual Underground Cable Rebuilds | Annual Overhead Line Rebuilds | Annual RFP for Structural Engineering Services | SCADA | Meters | Tools & Equipment | MS#3 Circuit Breakers | Enterprise Asset Management System - from CWIP | **Total** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1610 | Misc. Intangible Plant | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1805 | Land | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1806 | Land Rights | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1808 | Buildings and Fixtures | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 20,000 | - | - | - | 20,000 |
| 1810 | Leasehold Improvements | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1815 | Transformer Station Equipment - Normally Primary above 50 kV | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1820 | Distribution Station Equipment - Normally Primary below 50 kV | 47 | 584,000 | 70,000 | 453,000 | 40,000 | 39,000 | - | - | - | - | - | - | 60,000 | - | - | - | - | - | - | - | 968,000 | - | 2,214,000 |
| 1830 | Poles, Towers and Fixtures | 47 | - | - | - | - | - | - | - | - | - | 7,000 | - | - | - | - | 265,000.00 | - | - | - | - | - | - | 272,000 |
| 1835 | Overhead Conductors and Devices | 47 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 815,000.00 | - | - | - | - | - | - | 815,000 |
| 1840 | Underground Conduit | 47 | - | - | - | - | - | 16,000 | 13,000 | 50,000 | 44,000 | - | 380,000 | - | - | 30,000 | - | 20,000 | - | - | - | - | - | 553,000 |
| 1845 | Underground Conductors and Devices | 47 | - | - | - | - | - | 63,000 | 217,000 | - | 91,000 | 48,000 | 169,000 | - | - | 170,000 | - | - | - | - | - | - | - | 758,000 |
| 1850 | Line Transformers | 47 | - | - | - | - | - | 33,000 | - | - | 36,000 | - | - | - | - | - | 130,000.00 | - | - | - | - | - | - | 199,000 |
| 1855 | Services | 47 | - | - | - | - | - | - | - | - | - | - | - | - | 60,000 | - | 90,000.00 | - | - | - | - | - | - | 150,000 |
| 1860 | Meters | 47 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 100,000 | - | - | - | 100,000 |
| 1905 | Land | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1906 | Land Rights | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1908 | Buildings and Fixtures | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1910 | Leasehold Improvements | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1915 | Office Furniture and Equipment | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1920 | Computer Equipment - Hardware | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1925 | Computer Software | 12 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 62,500 | 62,500 |
| 1930 | Transportation Equipment | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1935 | Stores Equipment | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1940 | Tools, Shop and Garage Equipment | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 133,000 | - | - | 133,000 |
| 1945 | Measurement and Testing Equipment | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1950 | Power Operated Equipment | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1955 | Communication Equipment | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1960 | Miscellaneous Equipment | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1965 | Water Heater Rental Units | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1970 | Load Management Controls - Customer Premises | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1975 | Load Management Controls - Utility Premises | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1980 | System Supervisory Equipment | 45 | - | 30,000 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 127,000 | - | - | - | - | 157,000 |
| 1985 | Sentinel Lighting Rental Units | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1990 | Other Tangible Property | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 1995 | Contributions and Grants - Credit | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 2005 | Property Under Capital Leases | | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Total** | | | 584,000 | 100,000 | 453,000 | 40,000 | 39,000 | 112,000 | 230,000 | 50,000 | 171,000 | 55,000 | 549,000 | 60,000 | 60,000 | 200,000 | 1,300,000 | 20,000 | 127,000 | 100,000 | 153,000 | 968,000 | 62,500 | 5,433,500 |

***SEC Interrogatory #3***

***[Ex. 6] For each of the four projects:***

***a. Please confirm that the driver "Asset Failure" does not mean that the particular asset has already failed, but rather that there is a concern that it will fail if it is not repaired or replaced.***

Kingston Hydro confirms that the driver "Asset Failure" means that either the whole or parts of the asset have failed in the past and were temporarily remediated to prevent full failure. Kingston Hydro believes a more prudent course of action in the long term is to replace severely deteriorated assets rather than apply temporary fixes leading to cost inefficiency in the long term.

***b. Please provide the business case, if any, prepared internally to justify the project, and/or to justify any adjustments to the timing of the project.***

Exhibit 6 of EB-2011-0178 explains the reasoning, rationale and justification for each of the four projects. As identified in the 2011 COS Application (EB-2010-0136), Kingston Hydro uses a top down approach to capital planning that considers criteria such as age and condition, customer impact, system reliability, load growth, planned municipal projects and criticality of risks in determining capital projects in any given year.

Furthermore, appropriate levels of capital spending necessary to sustain the lifecycle planning of our distribution assets, avoidance of large swings in implementation planning, timing of projects that coordinate with financial and human resources are also considered.

***c. Please provide the annual maintenance and other savings expected as a result of the project, and any calculations or documentation supporting those estimated savings.***

With the replacement of defective oil switches with new standard switchgear, Kingston Hydro expects to incur an annual maintenance savings of approximately $750 each for TV6 and TV11 in avoided costs of manual operation of oil switches.

This estimate is based on one vehicle and labour for two Journeypersons at 3 hours each on an average of three times a year.

No annual maintenance savings are expected for the 44kV Cable Replacement or MS#15 Breaker Retrofit projects.

The King St. 44kV cable replacement project with TR-XLP will likely provide avoidance of costs associated with the use of specialized contractors (for splicing) to deal with emergency repairs. These costs cannot be projected in any meaningful way and are not included in the project budgets.

For the MS#15 Circuit Breaker Retrofit project, any labour and maintenance savings incurred will be reallocated to perform maintenance work at other stations which are currently not being done due to lack of staff availability.

***d. Please provide details of all amounts to be paid to affiliates (including the City) as part of the budget for the project.***

The full amount of the project will be paid to its affiliate Utilities Kingston. There is no mark up on the costs. Costs will be flowed through to Kingston Hydro as they are incurred by Utilities Kingston. Minor amounts for regular business type expenses such as cut permits and building permits will be paid to the City of Kingston by Utilities Kingston for the same fees that the City charges independent businesses.

***SEC Interrogatory #4***

***[Ex. 6] Please provide details of the timing and nature of any new hires planned to carry out the incremental projects, and reconcile the total labour costs in the incremental capital projects with the new hires planned.***

Kingston Hydro has incurred increased staffing costs to perform the work required to complete the entire 2012 Electric Capital Plan, which includes the incremental projects.

***SEC Interrogatory #5***

***[Ex. 6] With respect to the King St. 44kV Rebuild:***

***a. P. 2. Please advise when the "unsafe working conditions for staff" were first reported, and what actions have been taken (and when) since that time to improve or mitigate these conditions.***

This issue has been a concern for several years. Kingston Hydro employs appropriate safety measures for staff when undertaking work at these facilities; however, these measures add to the complexity and time taken to complete work. In particular, work at these structures typically triggers isolating and grounding circuits during maintenance activities. Working around circuits of differing voltages requiring varying safety/clearance standards is also not ideal within confined spaces.

Although worker safety is a serious and compounding factor in the business case for the King St. 44kV Cable Replacement project, the "triggers" are condition and criticality.

***b. P. 3. Please provide a comparison of reported oil leaks on M454 to reported oil leaks experienced in other circuits on the Applicant's system.***

M454 is one section (and the longest section) of the same circuit, the M4 line. The M4 line is the only 44kV circuit to feature PILC cable.

Approximately 7 mechanical failures (leaking splices and terminations) have occurred in the last 15 years on the M4 line.

***c. P. 3. Please advise why this project has to be completed in 2012 to support the Substation 1 Rebuild if the engineering studies for the Substation 1 Rebuild have not yet been done.***

The Substation 1 (MS#1) Rebuild engineering studies are scheduled for 2012 with phased construction beginning in 2013. During construction, power will need to be rerouted from the normal feed to MS#1 from Frontenac TS to the alternate, longer, route from Gardiner TS.

Therefore, Kingston Hydro believes it is prudent to replace the M454 44kV cable section prior to the construction year, to ensure power quality to critical customers such as the hospitals is not compromised.

***d. P. 4. Please confirm that this is part of a multi-year plan to install concrete encased TR-XLPE. Please advise the spending in each year of the multi-year plan, both actual up to 2011, and planned from 2012 onward.***

Kingston Hydro has identified the M455 PILC cable for future work. The issues associated with the M455 line have not yet been significant enough to meet the criteria established for identification within the capital program by Kingston Hydro. We expect, however, that at some point it will be included.

***Interrogatory #6***

***[Ex. 6] With respect to the TV6 Rebuild:***

***a. P. 10. Please provide the original internal document that shows the comparison between options for this vault, and supports the statement that relocation and rebuild was "the more cost effective option".***

Please see response under Question 9(d).

***b. P. 10. Please advise when the problem of the oil switches being inoperable when live first arose, and what actions have been taken (and when) since that time to improve or mitigate this deficiency. Please provide the last three incident reports in which this arcing problem has been reported.***

The problem of oil switches being inoperable when live has been managed by Kingston Hydro since the early 1980s by taking outages to de-energize the switch including its associated circuit before manual operation.

More recently, in the 1990s, oil switches have been heating due to failing electrical contacts (specifically, corrosion, resulting in increased resistance and heating) which accelerates failure of the other mechanical and electrical components oil switch. Overheating oil switches has been detected through Kingston Hydro's Infra-Red Thermography scan data resulting in repair of existing contacts. However, this work results in increased operations and maintenance cost which would be avoided by capital investment in oil switches.

Kingston Hydro asserts that its vintage oil switch operability issue should be more efficiently managed by replacing it with modern gas switch technology which improves service continuity (reliability) to customers and worker safety.

It is not relevant to report the last three incidents in which arcing has been reported since Kingston Hydro has ensured safety of its workers since the early 1980s by implementing its policy to only operate oil switches in a de-energized state.

***c. P. 11. Please provide details of the "extended outages" referred to.***

Recent events at TV6 have included vault fires. A forced outage occurred on May 3rd 2010 where the secondary breaker panel and associated cables caught fire (coded as outage code #5 - Defective Equipment) and were replaced the same day requiring an extended outage of over 8 hours. A second forced outage closely followed on May 5th 2010 with customers reporting fire and smoke. The new breaker was opened and power restored through alternate feeds until the breaker's protection settings were later relaxed as a temporary measure to allow the breaker to be placed back into service.

Two additional forced outages took place on July 29th and August 9th of 2011, respectively, where “burning smells” were reported by customers.

Therefore, outage statistics show an increasing trend of TV#6 equipment failure induced extended outages, including failure of new equipment (secondary breaker). Such failures are unusual and indicate that they may be a result of serious and chronic primary circuit level problems caused by the end-of-life primary PILC cable, the end-of-life 750kVA transformer and the primary oil switch (inoperable when live).

Short term mitigating measures such as the relaxation of protective equipment settings is not in the best interests of the customer or the utility in the long term due to increased risk of equipment damage and worker safety. The more prudent, safer, and cost-effective approach in the long-term is to replace the deteriorated end-of-life equipment and structure in TV#6 by rebuilding the vault thus permanently and simultaneously addressing the civil and electric equipment condition problems.

***SEC Interrogatory #7***

***[Ex. 6, p. 14] With respect to the MS#15 Circuit Breakers Retrofit, please confirm that this is part of a multi-year program of circuit breaker replacements. Please advise the spending in each year of the multi-year program, both actual up to 2011, and planned from 2012 onward.***

As identified in our COS (EB-2010-0136) application, Kingston Hydro uses a top-down based planning approach to identifying projects within its capital program each year. Kingston Hydro considers criteria such as equipment age and condition, customer impact, system reliability, load growth, planned municipal projects, criticality and risks.

Furthermore, Kingston Hydro attempts to meet appropriate levels of capital spending necessary to sustain the life cycle planning of our distribution assets, avoid large swings in implementation planning, optimize timing of projects and coordination and coordinate financial and human resources.

Under this framework, a multi-year program of sustained circuit breaker replacement is “nice to have” but does not meet the reality of available budget to distribution needs. While circuit breaker projects often form part of Kingston Hydro capital activity, there is no “multi-year program” as it is unsustainable given other priorities of the system.

***SEC Interrogatory #8***

***[Ex. 6, p. 18] With respect to the TV11 Rebuild, please provide details of each of the "extended outages" referred to that have occurred in the last twelve months.***

Kingston Hydro posits that any unplanned (forced) outages as well as planned outages in the downtown core which require de-energization of the oil switch and associated primary cables are undesirable events. An outage which is not momentary (i.e. on the order of seconds or minutes caused by the automatic operation of protective devices or by switching operations) and where customers cannot be served through an alternate supply can be considered an extended outage.

Two extended outages have occurred at TV#11 in the last twelve months requiring operation of the vault oil switch (that is inoperable when live).

To date, Kingston Hydro has only had the resources to apply short term mitigating measures such as the de-energization of oil switches (requiring outages) which is not in the best interests of the customer or the utility in the long term due to compromised service quality experienced by the customer, the costs incurred by the customer during an outage (due to lost business) as well as maintenance costs incurred the utility.

Kingston Hydro believes the more prudent, safer, and cost-effective approach in the long-term is to replace the deteriorated end-of-life equipment and structure in TV#6 by rebuilding the vault thus permanently and simultaneously addressing the civil and electric equipment condition problems.

***SEC Interrogatory #9***

***[Ex. 6, App. A] With respect to the Roney Report:***

***a. P. 3 and 18. Please provide a copy of the Terms of Reference referred to. Please advise whether the term "cursory review" on page 18 is intended to reference the entire report.***

The term "cursory review" refers to the site visits that Roney Engineering Ltd. performed to generate the assessment report.

Please refer to the attached RFP UK-10-23 used to retain structural engineering services.

***b. P. 3. Please provide a copy of the "report that followed" the October/November 2008 review.***

This report has been included in Kingston Hydro's 2011 COS Rate Application. Please refer to: EB-2010-0136, Exhibit2, Tab 7, Schedule 1, Attachment 1.

***c. P. 4. Please provide detailed reasons why the CHBDC standard was stipulated, and the cost implications of that standard on the ICM projects.***

Kingston Hydro believes it prudent to stipulate a modified CHBDC requirement for buried structures that may be exposed to static concentrated wheel loads such as parked vans, trucks or lift-trucks – a common occurrence in an urban centre such as Kingston where several vaults are located under the sidewalk and parking space is at a premium.

The requirement to use CHBDC loadings is specified in the Terms of Reference document (UK RFP 10-23, section 6.0, page 6). Roney Engineering confirms that it is "not uncommon in the industry for reference to be made to the CHBDC for buried structures along roadways and for other structures likely to be exposed to heavy transport truck traffic".

Moreover, Roney Engineering states that:

*The National Building Code 2010, Appendix A, clause A-4.1.5.9, "Loads Due to Concentrations," states the following: "Special study is required to determine concentrated loads for the design of floors and areas used by vehicles exceeding 9,000 kg gross weight, and for driveways and sidewalks over areaways and basements. Where appropriate the designer should refer to CAN/CSA-S6, "Canadian Highway Bridge Design Code."*

*In the case of these utility structures, reference was made to CSA S6 and the structures designed accordingly.*

*One additional factor to consider is the common use of articulated boom lift trucks (i.e. Genie lifts) for maintenance operations on building facades and signage on buildings.*

*These lift trucks exert significant concentrated wheel loadings. The design of the sidewalk vaults for CHBD wheel loadings is, therefore, prudent and reasonable.*

Cost implications from raising the requirement from 54kN (OBC concentrated load requirement) to 61.25kN (70% of CHBDC 87.5kN concentrated load requirement) are not meaningful when taken in context that existing roof slabs are failing and there is no practical way of determining the past standards to which these vault roofs were built.

***d. P. 5. Please confirm that this report does not propose immediate or urgent action with respect to TV6. Please explain the urgency of the proposed TV6 Rebuild in light of this report.***

Kingston Hydro confirms that this report provides additional justification to completely rehabilitate TV#6 (by replacing the structure) and presents an opportunity for achieving cost savings in construction, labour and service disruption by replacing end-of-life (and defective) electrical equipment at the same time.

The urgency is due to unanticipated circumstances, specifically, municipal work involving the total reconstruction (sewer, water, sidewalk, curb, roads etc) of part of Princess Street that includes the location of TV6. Given the extent of municipal work being undertaken, Kingston Hydro can avoid significant restoration costs by coordinating its activities. Furthermore, Kingston Hydro avoids adverse customer/public reaction by avoiding the removal of new curb, asphalt, sidewalk etc to undertake work at this vault after the municipal work is complete.

***e. P. 7. Please explain why, despite a recommendation in 2009 to add shoring in TV11, it was not completed.***

Shoring was completed in 2009 in at one of the three recommended locations within TV11 identified in the 2009 Roney Engineering report. The other two locations were not accessible due to existing cabling and electrical equipment which were at risk of damage if shoring was installed at those locations.

Kingston Hydro, however, addressed the concern that the ends of the steel beams were significantly deteriorated, requiring attention, and therefore proactively replaced three out of six steel beams supporting the removable slabs (where the steel beam end deterioration was significant).

When TV#11 is rebuilt (existing TV#11 to be converted to a manhole), permanent repairs will be performed where the deteriorated slabs will be replaced as well as the remaining steel beams.

f. ***P. 8. When is the roof structure for TV18 scheduled to be replaced?***
The roof structure for TV18 was replaced in November 2011.

**Request For Proposal**
**for**
**Engineering Services**

# Structural Assessment and Design for Electric Utility Vaults and Manholes

# RFP UK 10-23

requested by:

Utilities Kingston
85 Lappan's Lane
P.O. Box 790
Kingston, Ontario
K7L 4X7

issued on:

**October 8, 2010**

## *Mission*

We are a community based corporation dedicated to the responsible management of safe, reliable integrated services.

## *Values*

We are a team that is recognized for being;
Honest
Motivated
Respectful
and
Reliable

## *Vision*

To be recognized as a company committed to innovation, prosperity and service excellence, valued by our customers and reinvesting in our community's future.

## 1.0 Project Summary

Utilities Kingston respects the value of professional services and seeks to ensure that assignments are awarded to proponents who share and enhance our corporate values. Through a Qualifications Based Selection process, Utilities Kingston retains highly qualified firms whose work plan and financial proposal provide the highest value for rate payers.

Utilities Kingston, on behalf of Kingston Hydro Corporation, has developed this Request for Proposal based on the need for engineering services to assess the structural integrity of electrical vaults and manholes. These structures are located throughout central Kingston and vary in age, design and condition. The description of the assignment and the review criteria are provided to guide proponents in preparing submissions.

This Request for Proposal is being issued to provide a detailed proposal to complete the following works:

- Structural assessments, temporary shoring requirements and, if required, engineered structural reconstruction designs for the following Transformer Vaults (TV):
    - TV4, TV7, TV11, TV18, TV37 and TV62.
- Structural assessments for the following Electrical Manholes (EM):
    - EM207, EM211, EM213, EM214, EM215, EM261 and EM262.
- Engineered structural reconstruction design for the following Transformer Vault:
    - TV6.
- Structural assessments may lead to the request for engineered structural reconstruction designs.
- Additional structures to be assessed for current condition and potential reconstruction may also be identified during this assignment.

## 2.0 Objectives

The outcome of this assignment will be completed assessment reports and engineering designs issued for construction based on the priority levels assigned.

The intent is for Utilities Kingston to issue the completed engineering design drawings to contractors, obtain quotations for equipment and construction/installation services, and award the work accordingly. Utilities Kingston will assume the role of general contractor and constructor for the reconstruction work. The successful engineering team will be expected to assist with issuing addenda, design clarifications and conducting field inspections.

The structural inspection, report and engineering design should be completed in a timely fashion with consideration of public safety, general conformance to “good utility practice”, cost and engineering recommendations for improvements. While the primary focus is structural, a multi-disciplinary solution that considers civil, mechanical and electrical aspects of the design is desired.

These works will be scoped to be accomplished within the available budget.

## 3.0 Needs Assessment

The needs to assess and reconstruct transformer vaults and electrical manholes are identified through routine inspections performed by operations staff.

## 4.0 Technical Analysis

All relevant information and reports will be provided electronically or in paper format to the successful engineering team. Previous engineered design drawings can be made available for viewing at Utilities Kingston’s office. Meetings with key Utilities staff to assist in the background review and field works will be arranged as necessary upon award of the assignment.

## 5.0 Detailed Work Program

The following table represents the various works associated with this project. The time frame for completion of the program has been established by Utilities Kingston as spanning Nov. and Dec. of 2010, 2011 and 2012. The schedule will require dedicated commitment by the engineering team at all stages within the project.

**Electric Utility Vault and Manhole Structural Assessment and Design**
WORK PLAN AND TIMELINE

| *Date* | | *Work Item/Milestone Completed* |
|---|---|---|
| **November/December 2010** | - | Vault Inspections |
| **January/February 2011** | - | Report with Recommendations |
| **January/February 2011** | - | Temporary Shoring Design (if required) |
| **January/February 2011** | - | Preliminary Engineering Design and Cost Estimate |
| **March 15, 2011** | - | Complete Detailed Engineering Design for at least one vault. |
| **November 2010 to December 2012** | - | Engineering Support of Construction activities managed by Utilities Kingston |
| | - | Complete Detailed Engineering Design for remaining vaults |

The engineering team will need to develop a schedule which reflects the timing for completion of the different components and subsequent works. Specifically, some works may be able to proceed earlier than others given the difference in the project components.

The term of the project will be from the time of contract award to December 31st 2012. Additional structures may be identified for condition assessment and potential reconstruction during this assignment. A budget for these additional structures will be negotiated and established prior to commencement of this additional work.

## 6.0 Work to be Done in This Assignment

The objective of this assignment is to complete the following:

- Structural review of underground vaults and manholes.
- Recommendation of temporary shoring where required.
- Complete engineered vault design where required.
- Structural engineering support to Utilities Kingston during construction.

The engineering team's work shall include the following Divisions of Service, which are generally based on the Professional Engineers of Ontario guides.

**Division 1–Consulting, Advisory, Investigative and Predesign Services**

These services may include but are not limited to:

- investigations and studies;
- inspections, explorations, surveys, testing or other services for collecting, analyzing, evaluating and interpreting data and information, leading to specialized conclusions and recommendations;
- study of client's needs, analysis of conditions or methods of operation, development of alternative concepts, economic analyses, environmental studies, site location studies, and similar matters under-taken to establish sizes, capacities, locations, methods of operation and other principal features determining a proposed project's feasibility;
- value engineering at various project stages;
- development of preliminary design reports, including outline specifications, preliminary cost estimates, etc.;
- schematic design and design development for building projects;
- operation and maintenance plans; and
- emergency response/contingency plans.

**Division 3 - Detailed Design Services**

- Prepare engineering designs, drawings, specification and contract documents. These services include:
- Preparing drawings, resolving detail problems, selecting equipment and developing specifications;
- Coordination of specialized services including soils investigations;
- Preparing detailed calculations, design drawings, specifications and contract documents;
- Meetings with operations staff to define needs;
- Attend and keep minutes of progress review meeting with the Client and prepare estimates of the cost of the work;
- Obtain the required approvals and permits. This is to include preliminary and detailed Approval from the Ministry of the Environment;
- Preparing for and attending public open house; and,
- Assisting and advising the client during the tender period, the issuing of addenda if required and evaluation and recommendation for award of the construction contract.

**Division 4 – Contract Administration and General Review during Construction.**

These services are comprised of administering the construction contract and providing engineering review during that period. These services include:

- Advising the contractor or client on the interpretation of the contract documents, and issuing supplementary details and instructions as required;
- Reviewing shop drawings for general compliance with design requirements and contract documents;
- Reviewing contractor's progress claims, including the validity of additions and deletions, and issuing progress certificates and change orders for the client's acceptance;
- Visiting the site to assess construction progress and the work's conformance with the contract documents;
- Reporting to the client on the work's progress;

- Arranging for, attending and preparing minutes for regular site meetings with the contractor and client;
- Carrying out final review at the conclusion of the construction contract, and issuing the substantial completion certificate; and,
- Periodically reviewing the record drawings kept by the contractor, and advising the client on their adequacy.

**Additional Services Not Listed**

- Pre-Start Health and Safety reviews at key points and prior to start-up of any equipment or facilities; and
- Geotechnical Investigations

**Design Considerations**

- Every effort shall be made to standardize engineered designs where feasible. For example, two broad design categories include:
    - Under the sidewalk - the design shall include limits such as duct openings in walls, roof span dimensions, ventilation and access hatch void dimensions in the roof, etc.
    - Under the roadway - the design shall include limits such as duct openings in walls, roof span dimensions, ventilation and access hatch void dimensions in the roof, etc.
- Any design will take into account the CL-625 Truck Loading requirements of the Canadian Highway Bridge Design Code, CSA Standard CSA-S6-06.
- The weight of any roof slab shall not exceed 8 tons.
- All sidewalk surface concrete will be a light broom finish.
- All materials required for sealing joints shall be specified with the design, i.e.; backing rod, silicone, epoxy, mastic, gaskets, etc.
- Security is essential when designing access to vaults, the design shall include provisions for securing access using devices such as penta-bolts, locks, etc.
- Cast in place structures may be required and considerations such as property access, cable entry, power outages, vault equipment, etc will need to be taken into account for constructability.

- Transformer ventilation – natural convection is preferred.
- Waterproofing.
- Sump connection to combined sanitary sewer system.
- Consideration of potential oil leaks from equipment (e.g. transformers, switchgear, cables, etc.)
- Operating and working space in and around vaults.
- Equipment layout and cable racking.

## 7.0 Miscellaneous Details

This Request For Proposal is not limited in the pages of text, diagrams, schedules and task allocations. Description of relevant projects completed by individuals or the firm and key staff resume sheets can be appended. The proposal shall include a preliminary schedule showing the start date, duration and completion date of each of the major tasks. The proponent shall include a detailed list, as provided in Attachment A to this RFP or similar, which identifies the individual, their area of professional responsibility within this project and their respective license number.

Utilities Kingston has an expectation that the successful engineering team selected for this project will establish a good working relationship with key project staff, including operators, engineers and managers. Timely completion of the project will require regular and sustained communication from the engineering team throughout the design, construction and testing phases. Within this Proposal, the methodology to address these matters shall be addressed.

Also to be identified is the level of involvement expected of Utilities Kingston or City of Kingston Staff and expectations of information requirements.

Within the Financial Proposal, the proponent shall provide upset limits (key project milestones and payment schedules) for completion of the recommended work. Moreover, the proponent should present its Financial Proposal per the breakdown of the Financial Scoring system in Section 9 of this document.

The successful proponent is required to obtain the following training prior to site visits:

- Electrical Awareness training.
- Confined Space Awareness training.
- Fall Arrest training.
- Your own personal harness.
- Review of the Utilities Kingston Plan for Confined Space and Restricted Space.
- Proof of WSIB insurance.
- Signed Certificate of Insurance.

## 8.0 Background Information and Queries during Preparation

The following background information is provided in Attachment B to assist in submission preparation:

1. Vault Inspection Reports - JT Watson & Associates (2002).
2. Updated Vault Inspection Report - Roney Engineering Ltd. (2009).
3. Table of identified vaults and manholes for inspection and/or design based on internal inspections performed by Utilities Kingston staff (2009-2010).

Hard copies of previous designs/drawings can be made available for viewing at Utilities Kingston's office upon request.

Site visits can be arranged upon request through the Utilities Kingston Project Manager. Upon request, Utilities Kingston's field staff can set up and operate a "video camera-on-pole" to facilitate visual inspection of the underground vault or manhole by the proponent from above the surface. Field staff will not provide responses to questions but will direct all queries to the Project Manager for clarification. Should an issue be deemed significant to all proponents, the Project Manager will address the clarification to a single point of contact on the proponent's engineering team.

Operations staff will not provide responses to questions but will direct all inquiries to the individual listed below for clarification. Should an issue be deemed significant to all proponents, the Project Manager will advise the single point of contact identified by the engineering team.

Any significant questions or requests for further information shall be made by **Friday, October 29th, 2010** to give time to provide written replies.

Meghana Mukerji, P.Eng., Project Manager
Utility Engineer at 613-546-1181 extension 2474
email: mmukerji@utilitieskingston.com

## 9.0 Proposal Evaluation Process

A selection committee will be formed to review this Proposal. This committee will consist of three or more staff members of Utilities Kingston who will independently review and rank each proposal. A meeting(s) will be held to review evaluations and make a recommendation on the award for this assignment. No interviews are anticipated for this evaluation. The method for evaluating and scoring the Proposals is generally based on the Consulting Engineers of Ontario Consultant Selection Process as follows:

| | Technical Score | Points |
|---|---|---|
| 1 | **Project Individual Qualifications**<br>Project Manager<br>Lead for Design Disciplines / Construction<br>Technical resources | 20 |
| 2 | **Project Team Qualifications**<br>Projects completed of similar scope and value by key team members<br>Corporate History (years in business / employee retention / awards)<br>Alignment with Utilities Kingston Mission/Vision/Values | 10 |
| 3 | **Project Implementation**<br>Tasks are clear, concise and well defined<br>Clear expectations of Utilities Kingston<br>Meaningful involvement of Utilities Kingston | 10 |
| 4 | **Schedule and Commitment**<br>General schedule appears reasonable<br>Timelines and major milestones attainable | 20 |

| | | |
|---|---|---|
| | Commitment to complete through resource allocation | |
| | **Technical Score Sub-Total** | **60** |
| | **Financial Score** | **Points** |
| **5** | **Deliverables**<br>Engineering Assessment & Reports<br>Temporary Shoring Design & Details<br>Design and Preparation of Construction Documents | 30 |
| **6** | **Additional Services Allowances**<br>Tender Services<br>Review of Shop Drawings<br>Project Management/Coordination with third party geotechnical compaction and concrete testing and inspection work<br>Field Review<br>Construction Services<br>Pre-Start Health and Safety<br>Commissioning and Warranty Review | 10 |
| | **Financial Score Sub-Total** | **40** |

Points will be awarded for each of the above criteria on a stepped approach. Committee members will evaluate and score each of the above categories based upon information provided within the technical submission. Where more than 3 proposals are received in response to this RFP, evaluators will rank proposals. Only a single proposal will be ranked 1, considered to best meet the individual criteria. Other proposals will be ranked 2, 3, 4, etc. and if considered equal two or more proposals may receive the same rank. Points will be determined by multiplying available points within a category by the appropriate percentage as follows:

| Rank | Percentage |
|---|---|
| 1 | 100% |
| 2 | 75% |
| 3 | 50% |

| | |
|---|---|
| 4 | 25% |
| 5 or lower | 0% |

Note, in the event that 3 or fewer proposals are received, each evaluator may score proposals from 0 to the maximum amount of points available.

Evaluators will be asked to consider past performance within the ranking only to distinguish a rank of first when the proposals are considered equal in a category. Previous work history with the City or Utilities Kingston as it relates to the current work program will otherwise not be considered a factor in the review.

The individual points from each of the evaluators will be averaged to determine an overall score. The total available maximum score will be 60 for technical components and performance.

Financial proposals are requested to provide Utilities Kingston with an upset financial value for the work plan the proponent believes is necessary to complete the assignment. Where additional value added works are proposed, the costs contained within the financial proposal will assist to customize the work program. If necessary, the financial proposals of more than one proponent may be evaluated to assist in determining award of the assignment.

When review of the technical submission has been completed, Utilities Kingston will then advance for further review only those proposals deemed “technically comparable”. Specifically, only those proposals that have a technical score within the financial point value (i.e. 20 points) of the score of the proponent with the highest technical score will be considered further.

A further evaluation of only those proposals deemed “technically comparable” will then be undertaken. The financial proposal scoring impact on the overall scores of the “technically comparable” proposals will be evaluated prior to opening any financial proposal. Utilities Kingston reserves the right to open a single Financial Proposal, or only those select Financial Proposals of Technically Comparable Proponents wherein

evaluation will assist in the award. The Financial Proposal will be rated on a stepped basis wherein the lowest cost proposal for both components added together would be awarded 20 points. If more than one financial proposal is opened, points will be awarded to those opened as follows: 20 points for the lowest cost proposal and then 15, 10, 5 and 0 respectively.

The financial proposal component shall include an upset limit (project milestones and payment schedule) for completion of the work program up to and including the completion of the design, tender and construction and shall fairly represent the effort being expended or, at the sole discretion of Utilities Kingston, this may result in disqualification of the proposal.

In the event of a tie after opening and evaluating financial proposals Utilities Kingston reserves the right to award the assignment to the highest scored technical proposal. Utilities Kingston reserves the right to reject a price when opened that, in its sole discretion, is deemed to be too low or too high, or wherein the value exceeds the budget available. Utilities Kingston reserves the right to reject a proposal that does not include acceptable payment terms within the Financial Proposal.

Additional services, which may be offered by the proponent team as value added extras, may be identified separately within the financial proposal and should not be included in the upset fees proposed for the necessary work program.

The proposal shall identify a lead, which will be the firm the contract would be executed by, with other firms and specialty services as sub-consultants to the lead. Any pecuniary interests which may preclude the proponent or sub-consultants from exercising their duties within this assignment shall be disclosed, including any holdings of Federal, Provincial or Kingston Municipal politicians or employees who may benefit from this work.

A list of Standard Terms and Conditions which will form the basis of the contract is provided as Attachment C to this Request for Proposal. The proponent shall identify any concerns with these Standard Terms and Conditions within the proposal, including any

additional fees or surcharges required to meet all conditions. The proponent shall be responsible to apportion any such charges to meet these conditions between the two financial components.

## 10.0 Closing Date

Five printed copies of the technical proposal, and one copy of the financial proposal with payment milestones in a separate sealed envelope before:

**3:00:00 p.m. Local Time, Friday, November 5th, 2010**

and addressed to:

**Jeff Whitaker, C.P.M.**
**Supervisor, Purchasing and Materials Management**
**Utilities Kingston**
**85 Lappan's Lane**
**P.O. Box 790**
**Kingston, Ontario**
**K7L 4X7**

The package shall be clearly marked:

**Request For Proposal for Engineering Services**
**Electric Utility Vault and Manhole Structural Assessment and Design**
**RFP UK 10-23**

The successful engineering consultant will be requested to submit four (4) additional copies of the Technical Proposal and Financial Proposal for inclusion with the executed contract. The timing for award of the assignment is anticipated to be by November 19th, 2010.

Date: **October 8th, 2010**

Prepared by:

**Meghana Mukerji, P. Eng., Project Manager**

**Utility Engineer**

## ATTACHMENT A – Professional Responsibility

**Attachment B – Background Information**

Please refer to CD enclosed in this RFP package for Consultant Reports.

## ATTACHMENT C – Standard Terms and Conditions

***SEC Interrogatory #10***

***[Ex. 7] With respect to the 2012 Capital Expenditures Budget:***

***a. P. 3. Please provide a table showing Labour and Vehicles, and Materials and Contracts, in this project category, for each of 2008 through 2011 actual, and 2012 through 2014 planned.***

The breakdown of costs by Labour and Vehicles, Materials and Contracts for Deteriorated Overhead and Underground Infrastructure Replacement has been provided for 2008 to 2010 actual and 2011 preliminary actual and 2012 planned.

The estimates provided in 2013 and 2014 capital plans included in Exhibit 8, pages 2 and 3, are high level estimates only. When Kingston Hydro refines the 2013 plan and corresponding estimates in late 2012 (and the 2014 plan and corresponding estimates in late 2013) then Labour and Vehicles as well as Materials and Contracts amounts can be provided.

| Cost Breakdown | 2008 Actuals | 2009 Actuals | 2010 Actuals | Preliminary 2011 Actuals | 2012 Planned |
|---|---|---|---|---|---|
| Labour and Vehicles | 586,097 | 488,194 | 680,536 | 520,742 | 340,000 |
| Materials and Contracts | 1,047,168 | 1,641,275 | 2,016,478 | 1,506,333 | 2,660,000 |
| **Total** | **1,633,265** | **2,129,469** | **2,697,014** | **2,027,074** | **3,000,000** |

***b. P.4. Please provide the multi-year plan for the SCADA replacement projects, including past and future spending, and revenue requirement impact (including tax implications) in each year.***

SCADA upgrades are budgeted as part of electric rebuild projects (e.g. substation breaker replacement, MS#3) with the exception of the upgrade of the legacy SCADA master station in 2012.

Although there is no formal multi-year plan for SCADA replacement projects, the following list provides a high-level forecast of future SCADA work. It should be noted that any future project plans are to be considered preliminary and are subject to variation:

- 2010 – Inner Fibre-Optic Ring (SCADA Communication System) Upgrade
- 2011 – Outer Fibre-Optic Ring (SCADA Communication System) Upgrade
- 2011 – Substation 12 Protection Relay Upgrades – SCADA portion
- 2011 – Substation 11 Switchgear and Protection Relay Upgrades – SCADA portion
- 2011 – Substation 03 Switchgear and Protection Relay Upgrades – SCADA portion
- 2012 – SCADA Master Station Replacement
- 2012 – Substation 15 Circuit Breakers Retrofit – SCADA portion

- 2012 – Substation 02 Protection Relay Upgrades – SCADA portion
- 2012 – 44kV Motor Operated Switch(es) – SCADA portion
- 2013 – Substation Protection Relay Upgrades – SCADA portion
- 2013 – 44kV Motor Operated Switch(es) – SCADA portion
- 2014 – Substation Protection Relay Upgrades – SCADA portion
- 2014 – 44kV Motor Operated Switch(es) – SCADA portion
- 2015 – Substation Protection Relay Upgrades – SCADA portion
- 2015 – 44kV Motor Operated Switch(es) – SCADA portion
- 2015 – SCADA Master Station UPS Battery Replacements

There has been no analysis done regarding revenue requirement impact as this plan is not subject to additional funding requests in 2012. It is not part of our ICM filing. These capital additions will be considered in our next Cost of Service application.

***c. P. 7. Please advise how the electric upgrades in TV41 and TV7 are different in type, cost, or otherwise, from the electric upgrades in TV6 and TV11, the two included as ICM projects.***

The TV41 project consists of decommissioning a vault and replacing the vault's end-of-life electrical equipment (transformer and oil switch) with above-ground installation of new electrical equipment (transformer and modern switchgear). This project supports Kingston Hydro's mandate to relocate underground equipment to overhead, if land is available, thereby improving worker access and safety.

The TV7 project consists of replacing degraded vault roof slabs as well as end of life electrical equipment, specifically, a transformer and an oil switch which is inoperable when live. The decision to replace the slabs only is based on the 2010 Roney Engineering report in Exhibit 6, Appendix A, page 7 where the structure walls were deemed to be "generally in good condition".

TV6 is unusual in that it requires rehabilitation of the structure's walls (not just the roof) which is more costly than simply relocating the vault by installing a new precast concrete vault in a new location. Therefore, if both the replacement of the vault structure and the end of life electrical equipment is justified due to equipment condition (as in this case), then this project becomes a "major vault rebuild" and the timing of the municipal work is why it is included as an incremental project.

TV11 is unusual in that it contains both normal and back-up primary feeds to large customers in the downtown core. To complete the recommended vault roof slab upgrades would require de-energizing these large customers for up to a week. Given that the electric equipment is at end of life, Kingston Hydro believes it is more cost effective in the long term to convert the existing vault to a manhole, replace the roof slabs (thereby addressing the structural engineer's recommendations) and relocate the electrical vault (replace

electrical equipment) and cabling to a neighbouring location, thus addressing the end of life (and defective) electrical equipment issues of the transformer and oil switch as well as relieving the congestion of primary services in the existing TV11 and improving power supply redundancy (service continuity).

***d. P. 19. Please reconcile the 16 new interval metered customers with the figure of ten on the previous page.***

Given that these are forecast numbers only, 10 interval metered customers could be transferred over from existing demand meters due to load growth of specific customers.

The estimate of 16 meters includes the 10 interval metered customers transferred from existing metering plus approximately 6 new services (customers).

***e. P. 20. Please explain the relationship between the relay failure in 2009 and the relay replacement in 2012.***

The relay failure led to the relay being decommissioned. The relay protects the station bus which means that feeder protection was maintained. However, this has led to half the station being protected at the bus level, and the other half unprotected. Rather than piecemeal repair of obsolete relays, Kingston Hydro chose to defer this work to allow for full relay replacement of all relays (station and feeder relays) with modern IED relays.

***SEC Interrogatory #11***

***[Ex. 8] Please advise which projects in each of 2013 and 2014 are expected to be the subject of ICM applications.***

Kingston Hydro cannot comment on what type of applications it may present to the OEB in 2013 and 2014.

***SEC Interrogatory #12***

***[General] Please provide a table showing the labour component of all 2012 capital expenditures (including ICM projects) and comparing it to each of a) the total labour component actually incurred in 2011 for capital projects, and b) the total labour component included in the 2011 Board-approved capital expenditures. Please provide an explanation of any differences, if material.***

Vehicles and labour costs are combined in the budgeting process and therefore presented together.

## SEC INTERROGATORY #12

| Projects | Expense Type | Total Preliminary 2011 Actual Capital Additions | 2011 Approved Budget | 2012 All Forecast Capital Expenditures | Comments |
|---|---|---|---|---|---|
| Annual Overhead & Underground Services | Labour | 34,931 | | | No material difference |
| | Vehicle | 6,289 | | | |
| | **Labour & Vehicles Total** | **41,220** | **48,000** | **48,000** | |
| | Materials & Contracts | 1,944 | 12,000 | 12,000 | |
| Civil & Electric Vault Upgrades | Labour | 29,034 | | | More vault work planned in 2012. |
| | Vehicle | 4,981 | | | |
| | **Labour & Vehicles Total** | **34,016** | **92,500** | **197,000** | |
| | Materials & Contracts | 63,022 | 470,500 | 1,393,000 | |
| Deteriorated Overhead and Underground Infrastructure Replacement | Labour | 451,163 | | | Increase in project category total, but decreased labour due to significant contract work in 2012 (King St. Cable Rebuild) |
| | Vehicle | 69,579 | | | |
| | **Labour & Vehicles Total** | **520,742** | **491,000** | **340,000** | |
| | Materials & Contracts | 1,506,333 | 1,613,000 | 2,660,000 | |
| Engineering Assessment | Labour | - | | | MS#1 Engineering Assessment (primarily contracts) |
| | Vehicle | - | | | |
| | **Labour & Vehicles Total** | **-** | **4,100** | **-** | |
| | Materials & Contracts | 543 | 15,900 | 150,000 | |
| Meters | Labour | 11,818 | | | No material difference |
| | Vehicle | 184 | - | - | |
| | **Labour & Vehicles Total** | **12,002** | | | |
| | Materials & Contracts | 42,632 | 100,000 | 125,000 | |
| Miscellaneous Intangible Plant | Labour | - | | | No material difference |
| | Vehicle | - | - | - | |
| | **Labour & Vehicles Total** | **-** | | | |
| | Materials & Contracts | - 6,155 | - | - | |
| SCADA | Labour | 18,021 | | | Increased SCADA work to support increased Substation work. |
| | Vehicle | 519 | | | |
| | **Labour & Vehicles Total** | **18,540** | **40,000** | **65,000** | |
| | Materials & Contracts | 45,937 | 87,000 | 220,000 | |
| Software Applications | Labour | - | | | One time cost for system modelling sofware. |
| | Vehicle | - | - | - | |
| | **Labour & Vehicles Total** | **-** | | | |
| | Materials & Contracts | - | 62,500 | - | |
| Substation Apparatus & Structures | Labour | - | | | No material difference |
| | Vehicle | - | - | | |
| | **Labour & Vehicles Total** | **-** | | 20,000 | |
| | Materials & Contracts | 28,055 | 60,000 | 70,000 | |
| Substations | Labour | 312,591 | | | More substation work performed in 2011 than forecasted for 2012. |
| | Vehicle | 27,717 | | | |
| | **Labour & Vehicles Total** | **340,308** | **365,194** | **75,000** | |
| | Materials & Contracts | 2,885,013 | 1,818,806 | 615,000 | |
| Tools & Equipment | Labour | 1,085 | | - | Vehicle purchases in 2011. |
| | Vehicle | - | | | |
| | **Labour & Vehicles Total** | **1,085** | **73,000** | **-** | |
| | Materials & Contracts | 488,101 | 80,000 | 35,000 | |
| **Grand Total** | | **6,023,337** | **5,433,500** | **6,025,000** | |