

THE CORPORATION OF THE
CITY OF WHITE ROCK
CORPORATE REPORT



DATE: July 24, 2023
TO: Mayor and Council
FROM: Jim Gordon, P.Eng., Director, Engineering & Municipal Operations
SUBJECT: BC Hydro Transformer Replacement at 1444 Oxford Street

RECOMMENDATIONS

THAT Council receive the report dated July 24, 2023, from the Director of Engineering & Municipal Operations, titled “BC Hydro Transformer Replacement at 1444 Oxford Street” for consideration; and

1. Authorize a budget reallocation from the Water Capital Contingency in the amount of \$358,000 to a new capital project titled “BC Hydro Transformer Replacement” to facilitate Option #4 as detailed in this corporate report;
 2. Authorize the Director, Engineering & Municipal Operations to enter into a funding agreement with BC Hydro to facilitate Option #4 as described in this corporate report;
 3. Direct staff to award the project to perform electrical design work prior to construction in the amount of \$38,300 (excluding GST) to MCW Consultants Ltd with preauthorized contingency approval in the amount of \$9,575 (25% of electrical design fees) to support the project.
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EXECUTIVE SUMMARY

The purpose of this report is to provide Council with an update on BC Hydro replacement plans for a transformer located at 1444 Oxford Street. This transformer currently services three of the City’s water wells that supply a total of 43% of the City’s supply and currently operates on 480 volt variable frequency drive pumps.

INTRODUCTION

BC Hydro currently operates a 480 volt transformer that supplies power to three of the City’s water wells located at 1444 Oxford Street. BC Hydro’s transformer is nearing the end of its service life and does not meet current requirements for safe operation. The likelihood of the existing transformer failing increases when it reaches its current age.

BC Hydro approached staff to determine the best method to replace the transformer and minimize the impact on the City and its community. As the industry standard has moved away from 480 volts, BC Hydro will be replacing the BC Hydro owned transformer with a 600 volt version that provides additional worker and equipment safety.

BC Hydro along with City staff have worked through four options for future servicing, including:

Option #	Description	BC Hydro Cost	Customer Cost	Comments
Option #1	Install 600 volt transformer, together with a single outdoor step down to service all three of the City's water wells together.	\$99,500	\$69,000	BC Hydro's standard option. \$69,000 is the max BC Hydro will contribute towards the customer cost of any option.
Option #2	Install 600 volt transformer, together with an indoor step down located in the City's garage to service all three of the City's water wells together.	\$99,500	\$52,700	Materially the same as Option #1
Option #3	Install City owned unit substation with main switch, primary meter compartment, transformer, and low voltage breaker.	\$39,800	\$483,600	Requires the City to accept ownership and to take over future maintenance of the new unit substation
Option #4	Install 600 volt transformer, together with an indoor step down unit for each water well (three steps down units in total) to service each water well independently. In addition, add a new quiet standby generator.	\$107,400	\$248,400	Provides the most flexibility for the City for future upgrades to the water wells that are currently serviced by the transformer

Staff recommend that Council endorse Option #4 for the following reasons:

- By using separate transformers for each water well, the load can be evenly distributed among the transformers. This prevents overloading and ensures that each transformer operates within its rated capacity.
- Having multiple transformers offers greater continuity in service delivery and reduction in service disruption. If one transformer were to fail, the remaining two would continue to provide power to the two operating wells, minimizing downtime. This improves overall reliability and reduces the risk of losing power to all three wells at the same time.
- With separate transformers, maintenance, repairs and upgrades can be performed on individual units without affecting the operation of the other wells. This reduces any impact on the water supply while these activities are underway.
- If additional wells are added in the future, individual transformers offers scalability as it is easier to integrate them into the system by installing additional transformers. This modular approach allows for easier expansion without the need for extensive modifications to the existing setup.

- A new quiet standby generator located outside of the garage will reduce the heat that radiates inside the building when the existing generator is in operation. This limits the risk caused by overheating. In addition, with the significant development occurring around the area, a quieter generator would benefit existing and future White Rock residents.

Although this work is a result of BC Hydro replacing aging infrastructure, causing an unexpected capital expense for the City, staff agree that the work is necessary in order to keep up with industry standards. Industry standard has moved away from 480 volts as it can overload equipment when out of phase. The City experienced this in 2021 when BC Hydro shut off the power for maintenance work and the variable frequency drive pump for Well #2 was burnt out. Switching over to a 600 volt circuit, with an indoor step down unit for each water well reduces the risk of this occurring again in the future.

Additionally, Staff request Council approval to award the project to perform electrical design work prior to construction in the amount of \$38,300 (excluding GST) to MCW Consultants Ltd. with preauthorized contingency approval in the amount of \$9,575 (25% of electrical design fees). MCW Consultants Ltd. is BC Hydro’s electrical designer for this project therefore the City would benefit from single sourcing MCW Consultants Ltd. to design the City’s portion of the work.

FINANCIAL IMPLICATIONS

Using Option #1 as the basis for what BC Hydro would construct had they not worked directly with the City to come up with other alternatives, it was determined that BC Hydro would cover their cost in each option plus up to an additional \$69,000 of customer cost.

A summary of the project budget is as follows:

Table 1 – Project Budget

	Total
Water Capital Contingency (project code 35062)	\$358,000
Total budget required	\$358,000
Electrical Design (MCW Consultants Ltd.)	\$38,300
Construction & Contract Administration	\$248,400
Subtotal	\$286,700
Contingency (approx. 25% of project cost)	\$71,300
Total project cost	\$358,000
BC Hydro Contribution	(\$69,000)
Total cost to the City	\$289,000

Staff request Council approval to authorize a budget reallocation from the Water Capital Contingency as identified in the above table to a new capital project titled “BC Hydro Transformer Replacement” to facilitate Option #4 as detailed in this corporate report.

LEGAL IMPLICATIONS

Staff request Council's authorization to permit the Director, Engineering & Municipal Operations to enter into a funding agreement with BC Hydro to facilitate Option #4 as described in this corporate report.

CLIMATE CHANGE IMPLICATIONS

This transformer currently services three of the City's water wells that supply a total of 43% of the City's supply and currently operates on 480 volt variable frequency drive pumps. As climate change is realized, there will be continued reliance on these wells, highlighting the need for redundancy, scalability and reliability. The proposed project described in this corporate report supports those objectives.

ALIGNMENT WITH STRATEGIC PRIORITIES

This project is in alignment with the Infrastructure Strategic Priority that identifies that the City plan, build and maintain infrastructure to enhance quality of life and civic service delivery while mitigating and adapting to environmental impacts. Specifically, this project ensures future infrastructure resiliency by making decisions through a long-term lens.

OPTIONS / RISKS / ALTERNATIVES

The following alternate option is available for Council's consideration:

BC Hydro has proposed an alternative which is to install a secondary 480 volt transformer on the boulevard to continue to supply the same power to the property with all three water wells running off of the same transformer. This would be at no cost to the City; however, the City would own and maintain the 480 volt transformer. With this option the City would not be able to change over to the 600 volt circuit and would continue to risk overloading the water well equipment in the future. The fuel storage and existing generator in the garage would also continue to be at greater risk for fire.

CONCLUSION

Staff recommend Council endorse Option #4 to install a 600 volt transformer, together with an indoor step down unit for each water well (three steps down units in total) to service each water well independently in order to support long-term infrastructure resiliency. As a result, a budget reallocation is required to support this project from the Water Capital Contingency account.

Additionally, staff recommend Council award the project to perform electrical design work prior to construction in the amount of \$38,300 (excluding GST) to MCW Consultants Ltd. with preauthorized contingency approval in the amount of \$9,575 (25% of electrical design fees).

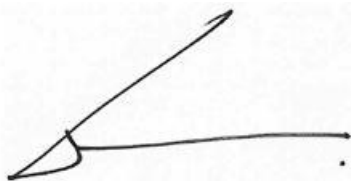
Respectfully submitted,



Jim Gordon, P.Eng.
Director, Engineering and Municipal Operations

Comments from the Chief Administrative Officer

I concur with the recommendations of this corporate report.



Guillermo Ferrero
Chief Administrative Officer