Volume 2: Cost of Service Study

Q. If either of transmission lines 12L or 14L are forced out of service, can the line remaining in service carry the full load of the MUN Substation?

A. Transmission lines 12L and 14L are integral to the 66kV transmission network serving the St. John's area. Transmission line 12L connects the Kings Bridge Road ("KBR") substation to the Memorial ("MUN") substation. Transmission line 14L connects MUN substation to the Stamps Lane ("SLA") substation. These transmission lines facilitate power flow between the KBR and SLA substations. The KBR and SLA substations serve approximately 16,000 customers directly, and also facilitate power flow to six additional substations serving approximately 37,000 customers.[1]

With either 12L or 14L forced out of service, the line remaining in service can carry the full load of the MUN substation. However, this would result in a loss of power flow between KBR and SLA substations. In response to such an outage, power would automatically be redistributed throughout the remaining 66 kV transmission lines on the St. John's 66 kV network. In the event that an additional 66 kV transmission line on the St. John's 66 kV transmission network experiences an outage, customer outages are more likely to occur.

For example, with transmission line 12L or 14L out of service, an outage to transmission line 67L between Oxen Pond ("OXP") and Ridge Road ("RRD") substations during peak conditions could result in a cascading event where transmission overloads occur, resulting in trips to transmission line 32L between OXP and RRD, 58L between Virginia Waters ("VIR") and OXP substations, as well as 74L between VIR and Pepperrell ("PEP") substations. This would result in a severe undervoltage condition in the east-end of St. John's and potential loss of supply to approximately 27,000 customers supplied by VIR, PEP, KBR, RRD and Pulpit Rock ("PUL") substations.

Reliable operation of transmission lines 12L and 14L is not only beneficial to Memorial University, but is necessary to maintain the integrity of the St. John's 66 kV transmission network and provide reliable service to customers in St. John's and surrounding areas.

[1] SLA substation is directly connected to four additional substations: St. John's Main ("SJM"), Molloy's Lane ("MOL"), Kenmount Road ("KEN"), and Oxen Pond ("OXP"). KBR substation is directly connected to two additional substations: Ridge Road ("RRD") and Virginia Waters ("VIR").