
ELECTRIC GENERAL RATE APPLICATION 2015

Manitoba Hydro Undertaking #5

Manitoba Hydro to provide a document that explains their service extension policies related to new customers connecting to their system, and provide some specific examples, provided the customer can't be determined from that information.

Response:

In connecting a new customer to its system, Manitoba Hydro considers a customer's location and load requirements and undertakes a corporate-preferred system design to provide facilities on a least cost basis. Manitoba Hydro makes a defined level of investment in its corporate-preferred basic system for permanent facilities to extend service to a customer.

The level of investment is referred to as a construction or investment allowance and is limited to either fixed allowance limits, or limits determined by a revenue test. When the cost to connect the customer exceeds these allowance limits, Manitoba Hydro obtains contributions in aid of construction from the customer to fund the difference between the level of the allowance and the level of cost incurred to connect the new load.

Manitoba Hydro's allowance limits for Residential and General Service customer connections and load increases are set out below.

Residential:

The allowance for residential customers is as follows:

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|--------------------------------------|----------|
| 1. Basic Standard Electric residence | \$1,600 |
| 2. Basic All Electric residence | \$4,000* |
| 3. Seasonal Electric residence | \$ 800 |

*Customers in gas-available areas that are situated in proximity to natural gas mains are only eligible for the Basic Standard allowance of \$1,600 regardless of fuel choice and are not eligible for the All-Electric allowance.

General Service (customers served at voltages less than 30 kV):

The investment allowance for customers in the General Service classes less than 30 kV is calculated as three times the annual incremental revenue that is forecast to be obtained from the load being served.

General Service (served at 30 kV and above or GS load increases of 5 MW or more):

Manitoba Hydro provides no investment allowance for customers with load increases of 5 MW or more, or for customers that are served at 30 kV or higher. These customers are responsible for the full cost of the dedicated service extension facilities required to serve the load and for the cost of capacity additions to the common integrated electrical system, if so required.

Customer Connection Examples:

The following are generic examples of customer attachments and the determination of the level of investment allowance and customer contribution.

Residential Customer Connection:

This example assumes that a residential customer is being connected to Manitoba Hydro's existing overhead distribution system. This example assumes that existing overhead distribution is available at or near the property line and that Manitoba Hydro will install a 25kVA transformer and a 200 amp Service Line Drop to the service mast on the customer's house.

The unit costs identified include the cost of materials and labor required to install the service connection items.

	Basic All Electric	Basic Standard Electric	Seasonal Electric
25 kVA Transformer	\$3,000	\$3,000	\$3,000
200 amp Service Drop	\$580	\$580	\$580
Total	\$3,580	\$3,580	\$3,580
Investment allowance	(\$4,000)	(\$1,600)	(\$800)
Customer Contribution	\$0	\$1,980	\$2,780

General Service (<30 kV) Customer Connection:

This example describes the connection of a General Service Medium customer, such as an elementary school, to Manitoba Hydro's existing overhead distribution system, which is Manitoba Hydro's preferred service configuration. The customer is also provided with the option to utilize underground service to the building, but must bear the incremental cost of the underground service compared to the basic overhead system cost.

Manitoba Hydro's investment and related amount of customer contribution is determined as shown below.

Cost of the Basic Overhead System

Primary Tap-off Span (3 phase)	\$5,300
3 X 75 kVA Transformer Bank	\$15,300
400 amp Service Drop (3 phase)	\$2,100
Total Cost	<u>\$22,700</u>

The investment allowance is determined to be equivalent to three times the forecast incremental revenue from the load: (\$171,500)

Customer contribution (Total cost less investment allowance)	<u>\$0</u>
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Cost of the Customer Requested Underground System

Primary Lateral Dip (3 phase)	\$7,600
Primary Cable & Trench (3 phase)	\$2,700
300 kVA Pad Mounted Transformer	\$23,300
Secondary Cable, Trench, Termination	\$2,000
Total	<u>\$35,600</u>

The investment allowance is determined to be the lesser of the amount of Manitoba Hydro's overhead system investment, or three times the forecast incremental revenue: (\$22,700)

Customer contribution (Cost in excess of basic overhead system investment)	<u>\$12,900</u>
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Assumptions and definitions:

1. General Service Medium Customer
2. Electric Service - Three phase, 347/600 volt, 400 amp service
3. Monthly Energy (kW.h) = 75000, Demand (kV.A) = 210
4. Primary lateral dip – primary underground conductor that transitions from an overhead primary distribution system to an underground primary distribution system.

General Service (30 kV and above) Customer Connection:

This example considers the connection of a new industrial customer accepting service at 66kV and billed in accordance with the General Service Large 30 – 100 kV rate schedule. Customers served under this rate receive service directly from the sub-transmission system at primary voltage and are responsible for constructing, owning and operating their own electrical transformation facilities.

It is assumed that the customer plans to operate 20 MW of load situated at a location 20 kilometers from the point of connection to Manitoba Hydro's integrated system. It is also assumed that the connection of the incremental new load would exceed the capacity available on a portion of Manitoba Hydro's integrated 66kV sub-transmission system.

In this example, Manitoba Hydro would be required to increase the capacity on a portion of the integrated sub-transmission system by replacing existing conductor with new conductor of greater capacity. The cost of upgrades that may be required on the shared or integrated portion of the system may be subject to pro-rating. The customer is responsible for the share of cost of the sub-transmission line upgrade reflected by the customer's share of capacity on the integrated system.

The total capacity on the integrated sub-transmission system after upgrading is 45 MW and the amount of capacity required for the new customer load is 20 MW. The pro-rata share of the cost of the capacity increase on the integrated utility system is determined as shown below:

Load	MW	Customer Share
Total system capacity after upgrade	45	
New load	20	44%

The customer connection in this example requires the construction of 20 kilometers of dedicated 66 kV sub-transmission facilities from the integrated sub-transmission network to the point of delivery at the customer's location. The customer is responsible for 100% of the cost of dedicated extension facilities. As noted previously, the customer is also responsible for all costs associated with the construction, operation and maintenance of the power transformation facilities necessary to provide utilization voltage to the loads on the customer's site. This example does not consider any costs associated with customer-owned

transformation or distribution facilities that are required to be constructed on the customer's site.

As shown in the table below, the total cost of dedicated facilities and upgrades to the integrated system is \$3.6 million. The customer is responsible for 100% of dedicated facility costs and 44% pro-rated share of the system upgrade costs, which is a total of \$3.322 million.

	Cost to Construct Required Facilities	Customer Cost Apportionment	Customer Cost Responsibility
Customer dedicated 66 kV line	\$3,100,000	100%	\$3,100,000
Capacity increase required on common integrated system (Re-conductor existing shared 66 kV line)	\$500,000	44%	\$222,222
Total	\$3,600,000		\$3,322,222