

ADDING RENEWABLES TO ELECTRICITY GRIDS

Community Interest in Renewables

A number of communities have expressed interest in pursuing renewable and alternative energy projects to help reduce diesel fuel consumption. NTPC shares this desire to incorporate proven alternative technologies into our electricity systems and is actively pursuing a number of projects that will result in reduced or more efficient diesel consumption, reduced greenhouse gas emissions and lower electricity prices for customers.

The Net Metering Program is just one of the ways that NTPC is encouraging greater use of renewable and alternative energy to generate electricity in the Northwest Territories.



Current Situation

Diesel generation currently provides base load electricity in most communities in the Thermal Zone and all of the backup power in the Hydro Zone. All generation connected to an electricity grid introduces the potential for generator cycling and grid instability. Cycling generators operate less efficiently which leads to an increase in operational and maintenance lifecycle costs. This has the long-term impact of increasing electricity

rates for customers, which is not acceptable.

Renewable generation sources like solar and wind are challenging for electricity grids to absorb because they are intermittent – this means that they do not generate electricity all the time. High levels of solar and wind in power grids create large, rapid load swings for the baseload generation (hydro and thermal) and increases the potential for outages.

Small, isolated grids are particularly vulnerable to the negative impacts from a high penetration of renewables. These grids already experience instability because any shift in demand can have a big impact on the thermal generators. Grid controls would be further complicated by the addition of solar and wind generation because they increase unpredictability.

Cap on Intermittent Renewables

In order to maintain grid reliability, NTPC and other utilities have determined that a cap of 20% must be placed on intermittent renewable generation. The cap is not intended to discourage the use of this technology but rather reflects the reality that our current electricity systems are not designed to reliably absorb a large volume of alternative generation.

As new technologies such as variable speed generators and improved battery storage systems are introduced to electricity systems, the 20% cap may be increased or removed altogether. At the present time, however, the cap must remain in place to protect customers from higher electricity rates and an increased number of outages.

Available Capacity for Renewables by Community

Every community has a different average electricity load. This means that every community grid has a different capacity to absorb electricity that is generated by intermittent renewables.

The table below lists each NTPC community and the available capacity limit of the electricity grid for renewable generation, as of January 31, 2018. It includes all installed solar capacity including installations that are part of the Net Metering Program as well as NTPC installations.

	Community Average Load	Intermittent Renewable Energy Capacity Allowed (kW)	Current Solar Capacity Installed (kW)	Planned Projects (kW)*	Current Available Capacity (kW)**
Aklavik	363	73	18	58	0
Behchoko	814	163	33	0	130
Colville Lake	77	15	137	0	0
Déline	314	63	0	0	63
Dettah			7.2	0	
Fort Good Hope	313	63	5	0	58
Fort Liard	259	52	60	0	0
Fort McPherson	397	79	5	0	74
Fort Resolution	293	59	0	0	59
Fort Simpson	867	173	148	5	20
Fort Smith	3,000	600	5	0	595
Gamèti	121	24	10	0	14
Inuvik	3,349	670	95	36	539
Jean Marie River	38	8	8	0	0
Lutselk'e	170	34	35	0	0
Nahanni Butte	45	9	5	0	4
Norman Wells	1108	222	0	12.86	209
Paulatuk	166	33	7	0	26
Sachs Harbour	109	22	20	0	2
Tsiigehtchic	89	18	0	0	18
Tuktoyaktuk	481	96	0	15	81
Tulita	277	55	10	45	0
Ulukhaktok	235	47	0	0	47
Wha Ti	201	40	15	0	25
Wrigley	84	17	10	0	7
Total	13,170	2,635	633	172	1830

For further information:

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