



Mobile Transformers

Information Meeting on Transmission Planning

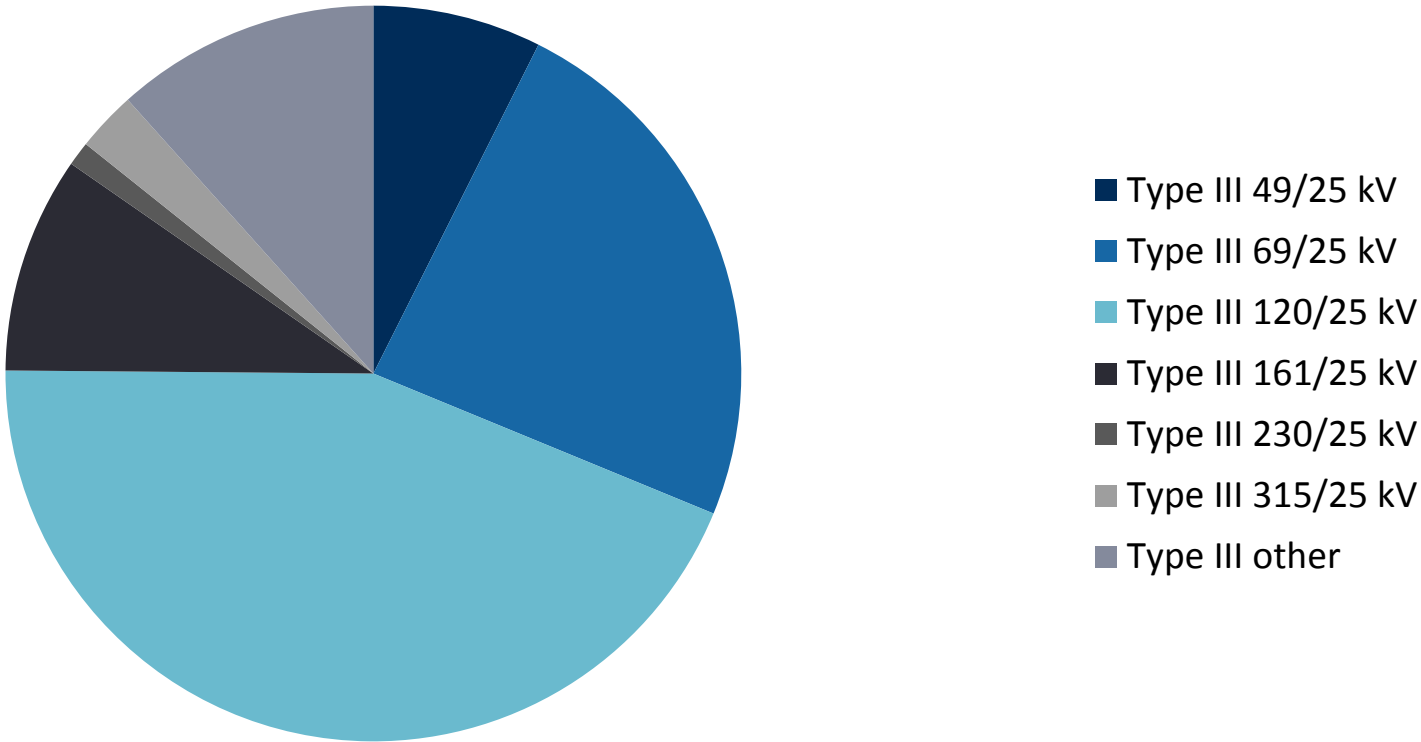
Hydro-Québec TransÉnergie | May 11, 2018



Why?

- The load forecast may diminish, remain stable or even become negative for some substations in the medium or long term.
- Investments to avoid exceeding transformation capacity are costly for the Transmission Provider as well as the Distributor
- The Distributor and the Transmission Provider would like us to explore ways of reducing our investments in satellite substations in rural areas.

Voltage levels in rural substations



Forced transformer outages in rural areas

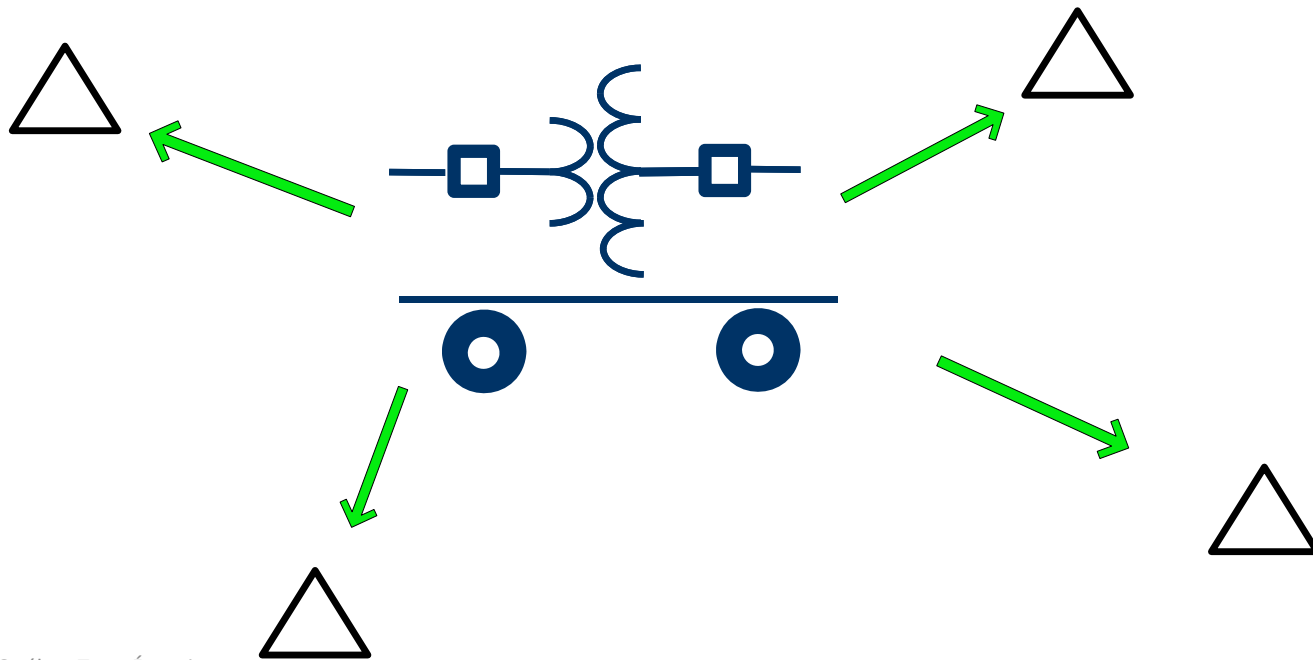


Breakdown of forced outages by duration (%)



Concept

A mobile transformer can serve as backup for power transformer failure in any one of a number of facilities.



Mobile transformer requirements

- Must be transportable 365 days a year, unconditionally
- Radial connection to back up one or more feeders
- Multi-ratio: 120/69/25 kV
- Rated capacity at 30°C \approx 26 MVA
- Impedance \approx 10%;
- 25-kV breaker and 120-kV breaker (covers 69 kV as well) on the trailer
- 25-kV cable reel on the trailer to connect to backup busbar
- Useful life \approx 20 years

Potential over 15 years

Type	Number of substations where limits exceeded	Average MVA per substation
I	5	35
II	8	20
III	21	3

Conclusions on use of mobile transformers

- Technically feasible
- Attractive economic potential
- Suitable response to project trigger (invest at the right time)
- Good preparation for possible decline in demand
- Slight increase in number of customer interruptions
- Demonstration project to be conducted

