



Remotely monitored voltage transformers

# CATVAR

## Distribution System Voltage Regulation and Reactive Power Control

Among the approaches assessed for improving energy efficiency on its distribution system, Hydro-Québec is counting on conservation voltage regulation and reactive power control, a combined method known as "CATVAR".

### **Conservation voltage regulation**

The present voltage regulation system at satellite substations will be gradually replaced by an intelligent system using measurements on the grid in order to maintain a stable end-of-line voltage close to the lower threshold of CSA C235, namely 110 V.

Better voltage regulation results in reduced consumption. The method has been tested and proven effective in significantly reducing consumption with no drawbacks for customers. The voltage is regulated automatically at the substation based on end-of-line voltage measurements.

### **Reactive power (VAR) control**

Unlike real power, reactive power is unproductive. VAR flow on the distribution system leads to increased current demand with associated losses and voltage drops. The VAR part of the method involves adding capacitors on distribution lines in the right proportion to offset losses resulting from reactive power. This approach also makes it possible both to reduce daily peak demand and to adjust end-of-line voltage, thus improving the power factor (a parameter reflecting distribution system efficiency).



Capacitor banks

### ***Promising savings***

Six remotely monitored transformers and three remotely controlled capacitor banks are now in service on the Hydro-Québec distribution system. Based on 2007 estimates, savings should reach 2.0 TWh by 2015.

### ***For information:***

#### **Research**

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