

# ENERGY FLEXIBLE BUILDINGS

Séminaire public 12 octobre 2018



Energy in Buildings and  
Communities Programme

## ANNEX 67

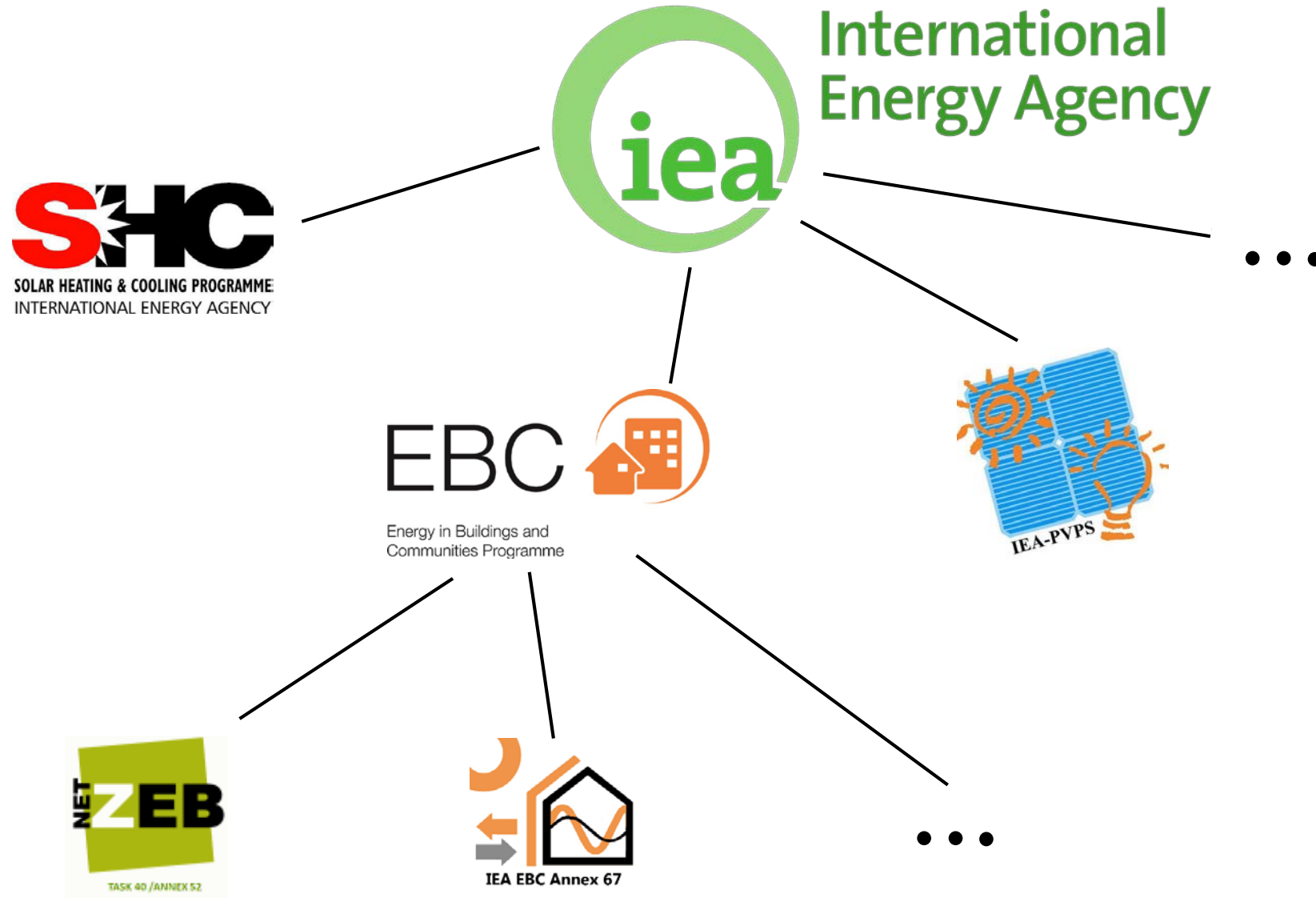


Michaël Kummert

2018-10-12

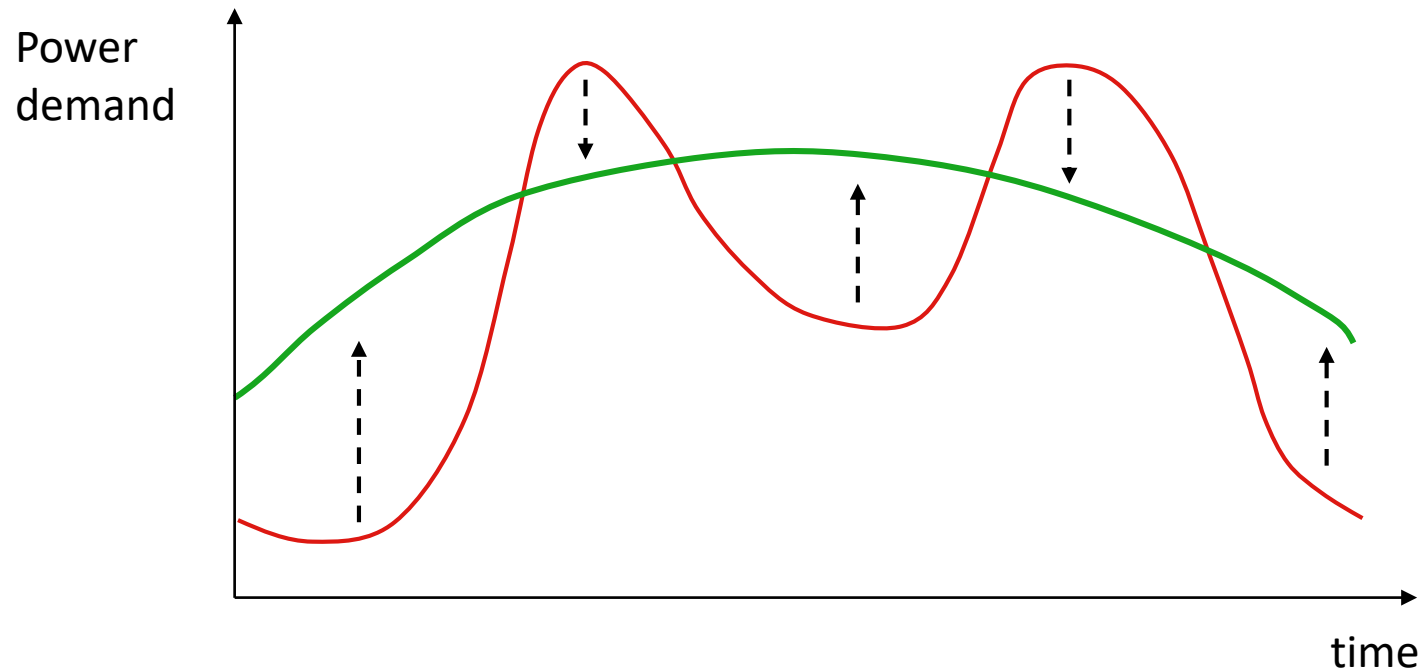
## Introduction

# What is Annex 67 ?



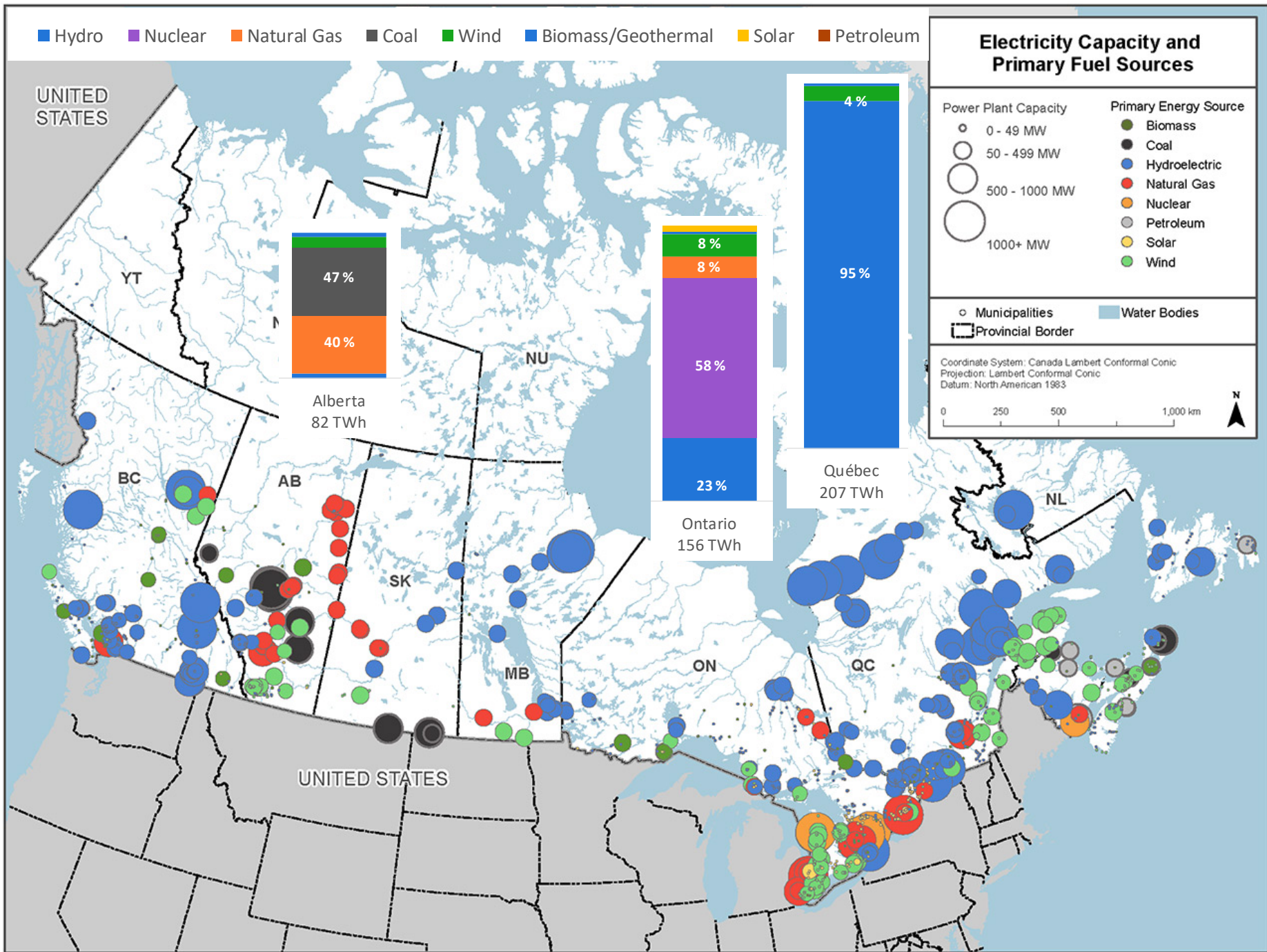
# Energy flexible building

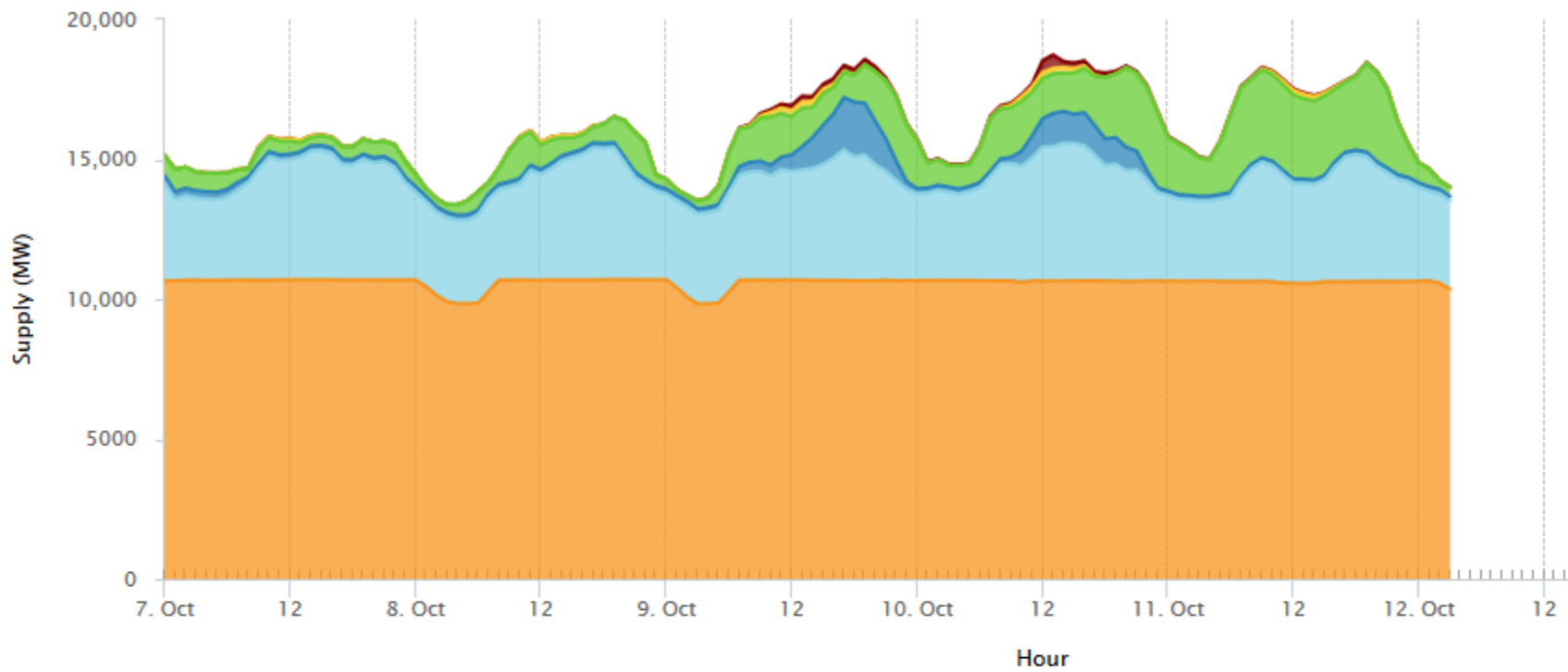
A building which is able manage its demand and generation according to local climate conditions, user needs, and grid requirements



# Canadian context







Today 11-13 Oct 7-13 Oct

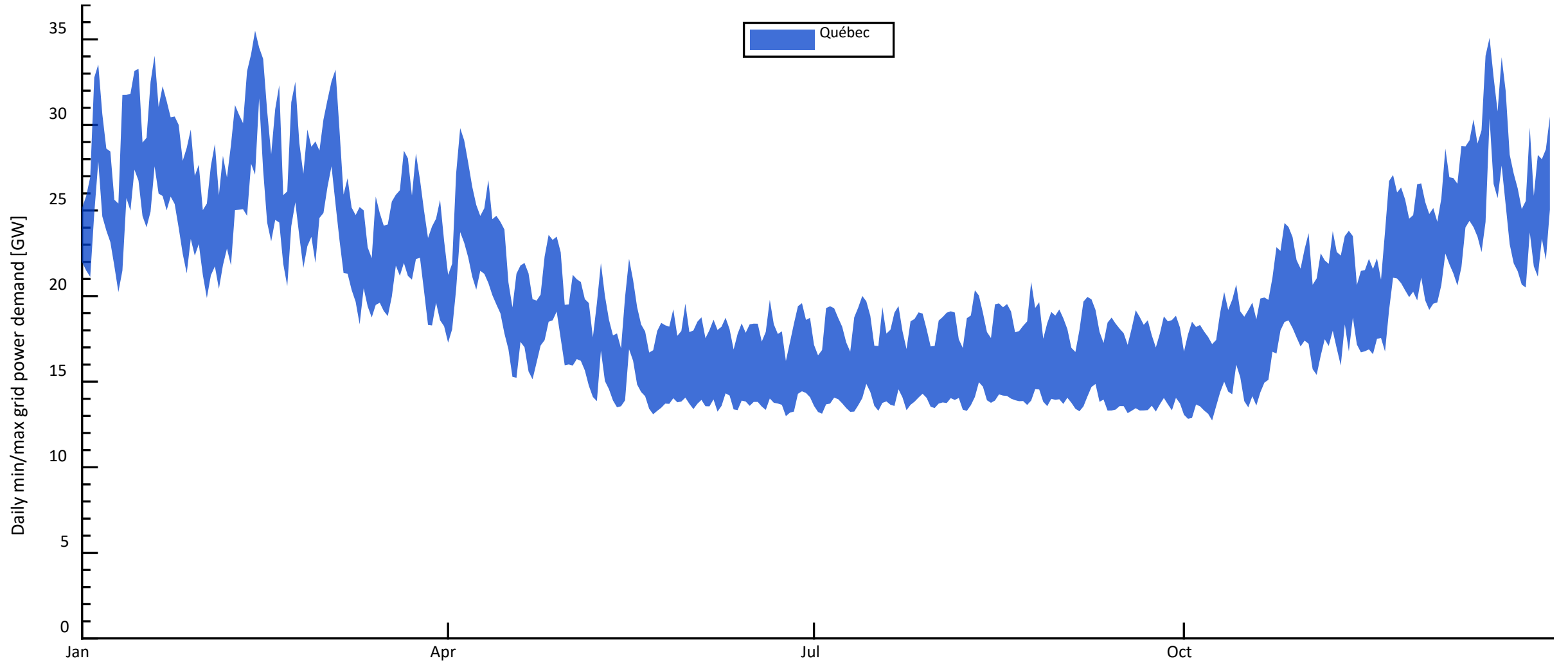
- Generation By Fuel Type - Hourly
- Nuclear █ Hydro █ Gas █
  - Wind █ Solar █ Biofuel █

- Imports Hourly █
- Exports Hourly ⋯
- Net Import/Export - Hourly █

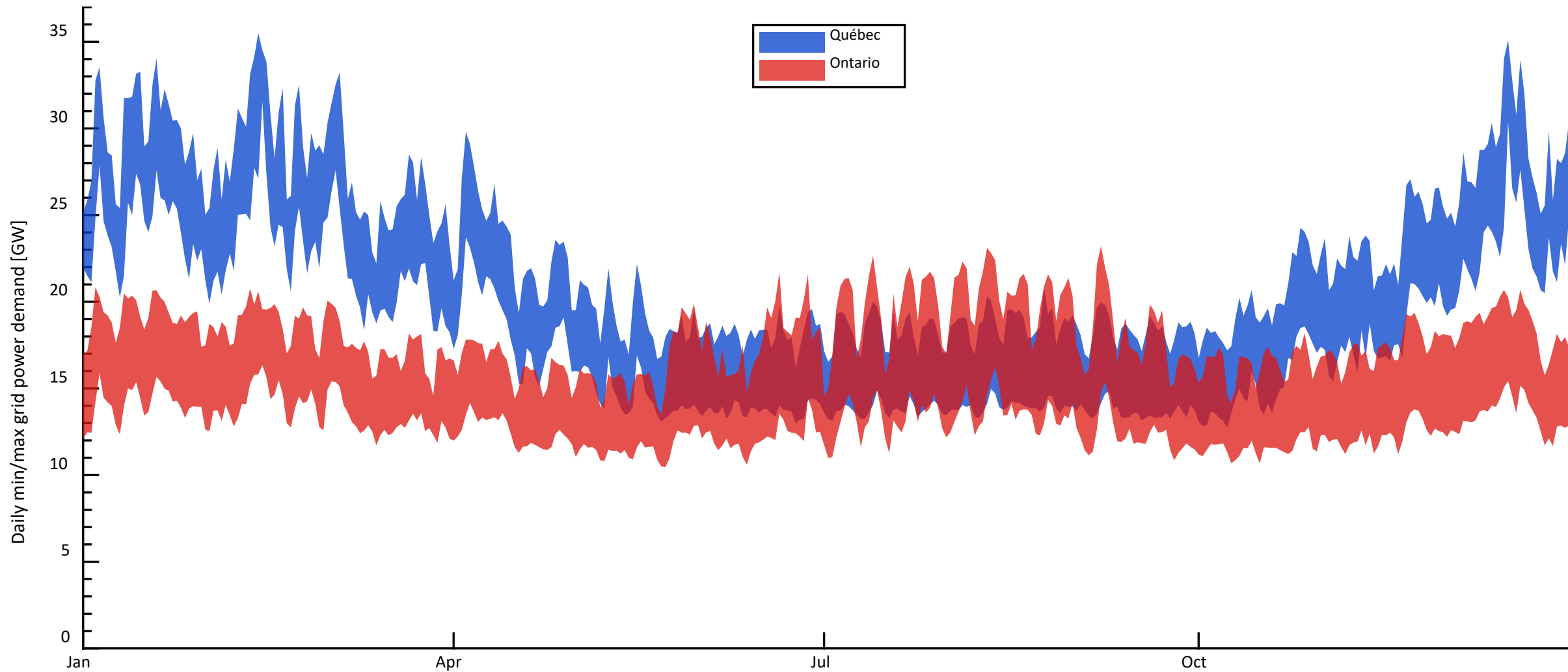
**Compare With**

- None
- HOEP █

# Daily power demand (min – max)

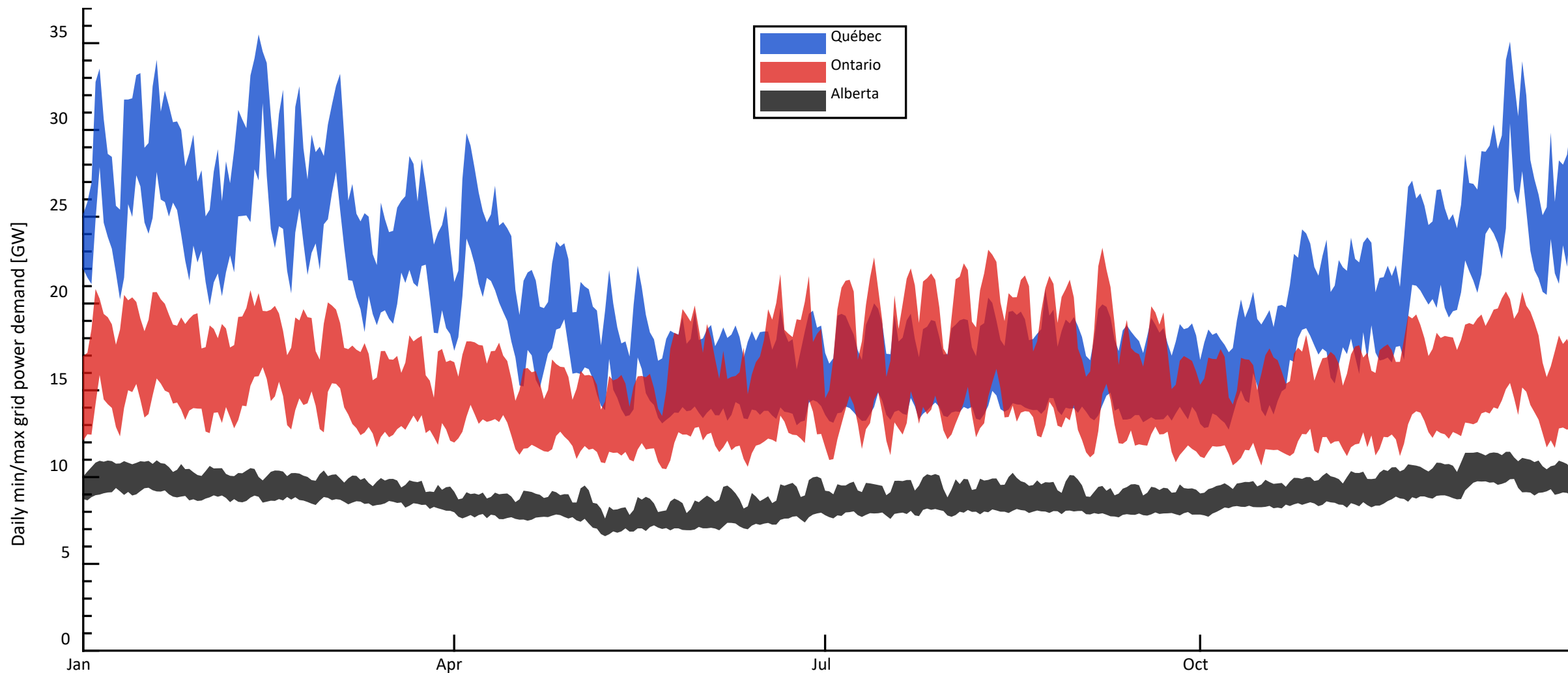


# Daily power demand (min – max)

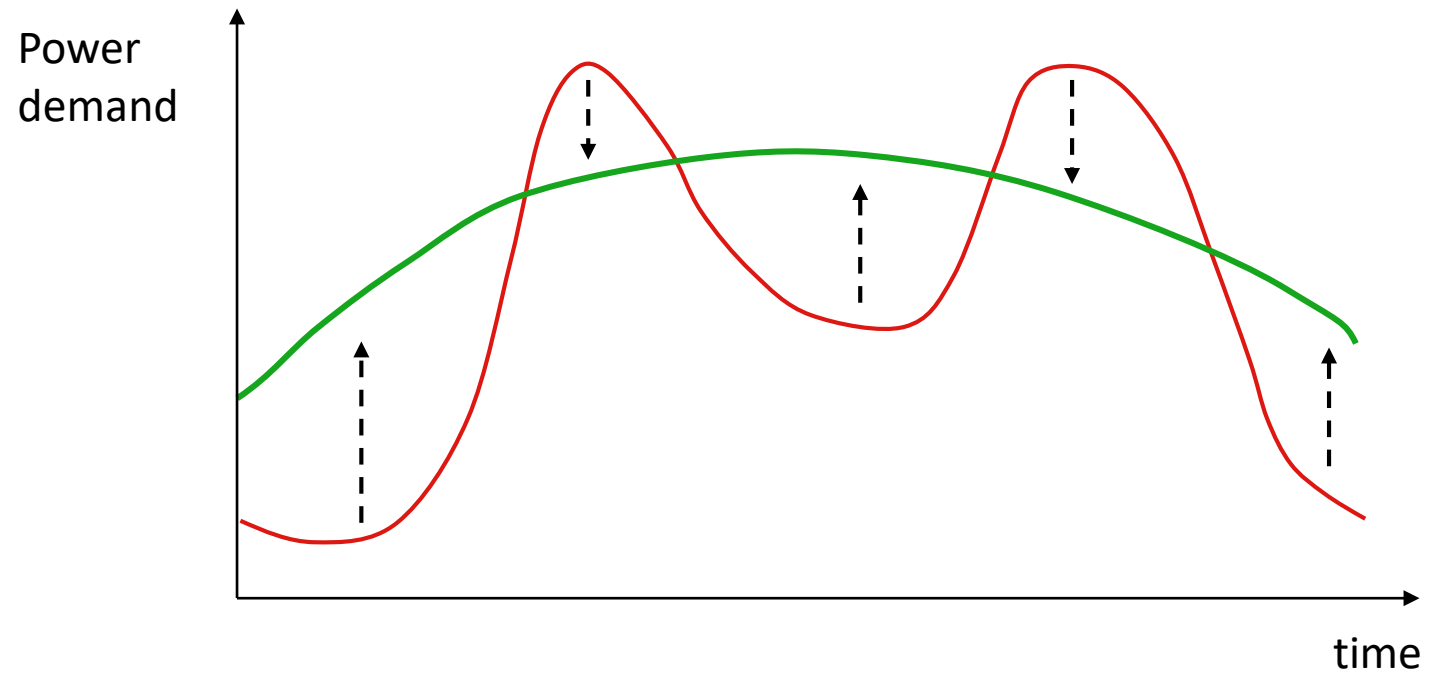




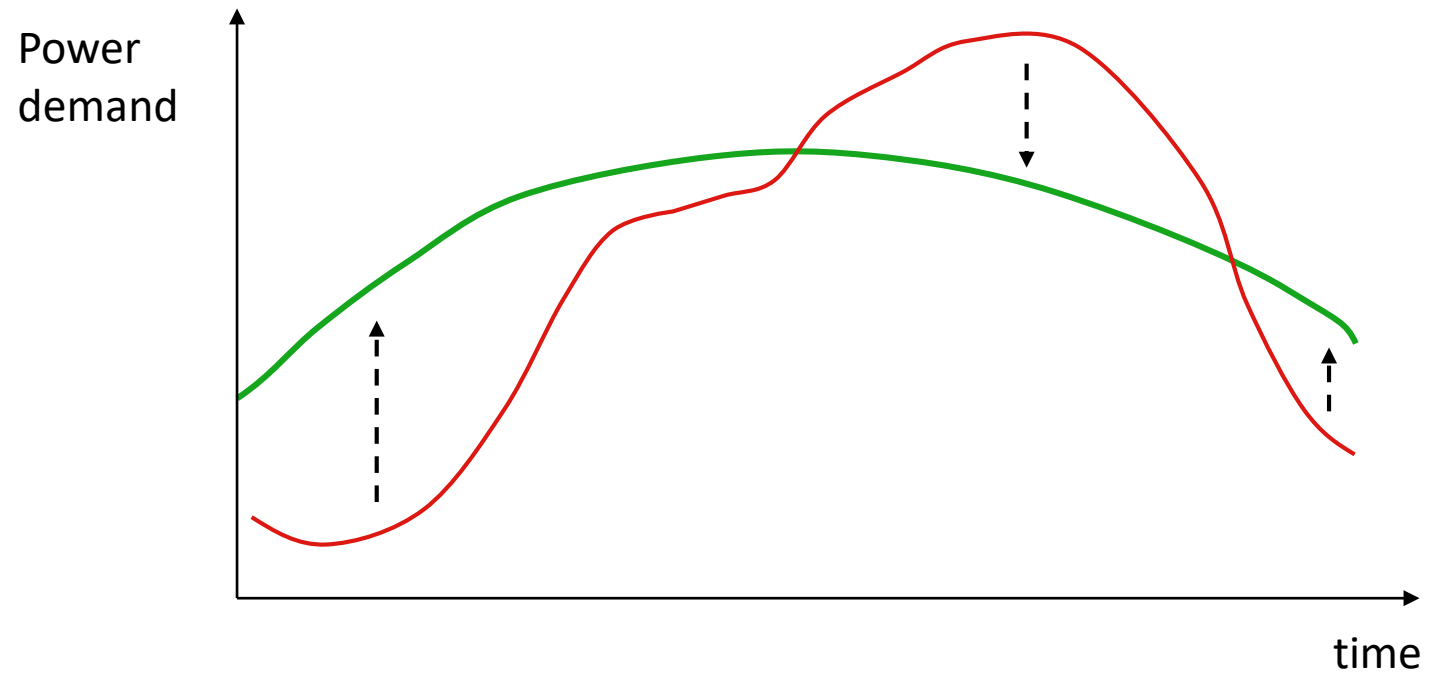
# Daily power demand (min – max)



# Daily profile – typical winter peak



# Daily profile – typical summer peak



# Flexibility programs in Canada ?

- The need is there and will be stronger with more heat pumps
- No general framework
- Some examples
  - Ontario has time of use rates for residential market (6.5 ¢/kWh to 13.2 ¢/kWh)
  - Québec residential market: flat rate, 7 ¢/kWh (but “smart” meters)
  - Québec commercial / institutional
    - Cost for energy and power
    - Incentive program uses the flexibility definition (actual – reference)
      - Value = 70 \$/kW for “flexibility events”

13:00	Michaël Kummert	Welcome
13:10	Søren Østergaard Jensen Danish Technological Institute (Annex 67 Operating Agent)	General presentation on the Annex and links with other international / European initiatives
13:40	Henrik Madsen & Rune Grønberg Junker Danmarks Teknisk Universitet	Characterizing the energy flexibility of buildings and districts
14:10	Kun Zhang & Behzad Barzegar Polytechnique Montréal	Energy flexibility in residential buildings: thermal mass and PV+battery systems
14:40	Alexi Miller New Buildings Institute	The GridOptimal initiative – measuring buildings as grid citizens
15:10	Coffee break	
15:30	Andreas Athienitis Concordia University	Energy flexibility studies for a smart solar institutional building & application to predictive control
16:00	Michaël Fournier Hydro-Québec	Energy flexibility: the perspective of a utility
16:30	Véronique Delisle CanmetENERGY Varennes	Overview of the Canadian Government Demand Flexibility R&D Activities
17:00	Closing remarks and discussion drink/reception	

# References

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