Are you comfortable?
What will a 700% increase in EVs do to the peak power demand?
How can technology and policy influence the peak power demand?
Agenda

Case Study

Model

Results
Case Study - Norway

Geographic Location
Similar climatic conditions

Similar Number of Plug-in Vehicles

Population
Norway: 5.4 million
Finland: 5.54 million

Norways Plug-in Vehicles
- 2016: 131,963
- 2022: 645,237

Finnish Plug-in Vehicles
- 2021: 101,970
- 2030: 700,000

Statistics Norway - www.ssb.no; Statistics Finland - pxdata.stat.fi
Case Study - Norway

Norway’s peak power grew ~3% from 2016 to 2021

Norway 2021

Demand (GW)

Finland 2021

Demand (GW)
Building Finnish Peak Power Model

**Fixed data**
- Amount of Vehicles
- Energy consumption
- Distance driven
- Charging split

**Consumer behaviour**

**Non-EV demand**
Models Fixed Data

1. Amount of Vehicles
2. Electricity Consumption of EVs
3. Driving Distance Per Day
4. Charging split
Consumer Behaviour
Where do people charge?

- 85% Home
- 12% Work
- 3% Public
Charging Profiles
When do people charge?
Shifted Home Charging Scenario

The graph shows the % of daily charging over a 24-hour period, with two distinct profiles:
- The blue dashed line represents the 'Shifted home charging profile'.
- The red line represents the 'Home charging' profile.

The profiles exhibit peaks and troughs throughout the day, indicating variations in the percentage of daily charging at different times.
Electricity Demand on Peak Day in 2030

With EVs

Without EVs

+3.9%
Shifted Peak

![Graph showing electricity demand with and without peak shift. The graph indicates a +0.4% increase in demand with the peak shift compared to without the peak shift.](image)
Should you be concerned?

Increase in Peak Power Demand:

- Current Situation – 3.9%
- Shifted Peak – 0.4%