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USING SIMULATED PREDICTIVE LOAD CURVES TO IMPROVE DSO'S NETWORK DEVELOPMENT PLANNING METHODS INTEGRATING SMART GRIDS FUNCTIONALITIES

Aurélie FERRAGE,
Maxence BOCQUEL
ERDF – France

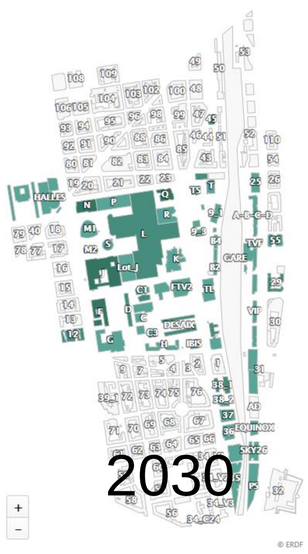
Nicolas KONG,
ERDF – France

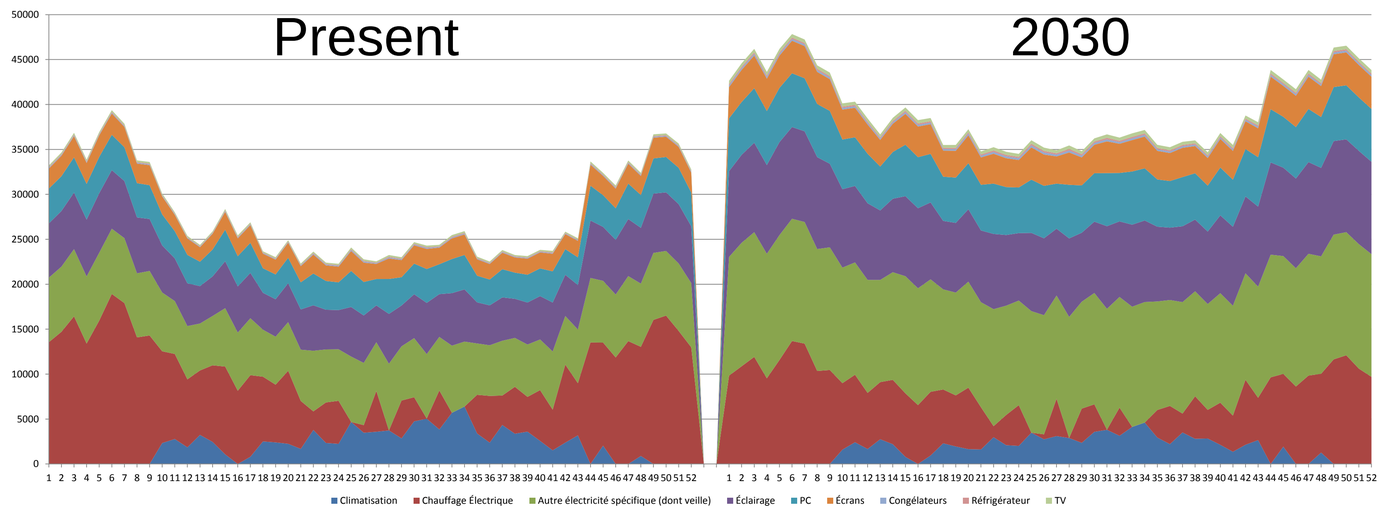
Robin GIRARD,
Thibaut BARBIER, MINES
ParisTech – France

ERDF supports the cities' energy transition

The Distribution System Operator (DSO) must adapt network planning methods to support the energy transition. Therefore ERDF and MINES ParisTech have developed a new Bottom-Up method to forecast electricity consumption needs at the local level.

Tested in Lyon Part-Dieu to simulate the future electrical load curve





A bottom up simulator based on microscopic and macroscopic inputs

1 Physical description of a house

- Based on ERDF, IGN and INSEE data bases
- Type of activity
- Surface
- Height
- Placement in the building
- Performance level
- Inertia level

2 Addition of devices

- Type, number, power, selected randomly according to a distribution depending on the physical description of the house
- Distributions calibrated on existing surveys

3 Generation of launch dates for the devices

- Launch dates chosen randomly for each devices in each house, according to a suitable distribution (with intensity depending on time)
- The temporal distribution is calibrated on existing surveys.

4 Simulation of the load curve

- Integration over each time step of the consumption of each devices in each house
- Each devices consumption can be computed separately.
- Comparison with on site measurements.
- Auto calibration will be carried out in the future according to existing ERDF measurement data. It will concern :
  - The performance level of houses
  - The distributions used in steps 2 and 3.