Pilot Region Aosta Valley

The Smart Node Pilot Project
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Before AlpStore: Our Challenges

• A rapid growth of distributed, stochastic generation from renewable energy sources. Which are effects on the energy system? Which is the role of storage solutions?

• To successfully implement a real life application of a low-budget, small-scale, energy management system;

• To address a large user group on the territory;

• To get some “on field” data of the system and

• To increase our expertise for the planning phase.
During AlpStore: Our Activities

- **Permitting**: bureaucracy and a lack in the regulatory framework

- **Testing**: running two different objective functions:
  - User added value: *maximum self-consumption*;
  - Grid/System added value: *maximum load leveling*;

- **Electric Vehicle**: demand side management;

- **Simulation**: building the mathematical model and running large scale simulations.
After AlpStore: Our Achievements

✓ Successfull energy management;
  ✓ +27% of self consumption (not-working day);
  ✓ Load leveling for long periods.
✓ No major drawback or problems for the users;
✓ Calculated battery average efficiency 83,3%;
✓ + 10% of self consumption due to the EV recharge priority;

✓ Economics:
  ✓ Some value for the user; the business model?;

✓ Relevant added value for the system and the grid
After AlpStore: Our Recommendations

1. Consider coupling a PV system and a battery storages, it does create value for the user and the energy system;

2. A correct sizing maximize the benefits: the AlpStore studies offers some preliminary design information;

3. The Smart Node model applies and fits many kind of target users and load;

4. In the next future we expect a significat battery cost reduction and an increase of performances.

5. Use a simulation tool to fully understand the behaviour of the system.