Case Study S3C

AlpEnergy – VPS Allgäu

S3C related keywords:
- Transparent information
- Static and dynamic tariff structures
- Regional integration

"Residential and commercial end-users in the Alpine space show great interest in energy efficiency topics"

Project Summary

The AlpEnergy project conducted several smart grid trials with the primary goal of testing different **Demand Side Management Options**. The Allgäu Case Study of AlpEnergy tested the **applicability of a Virtual Power System (VPS)** model for the Allgäu region. It sought to adapt the generation from regional **Virtual Power Plants (VPP)** to the consumption within the so-called **Virtual Load Plant (VLP)**. **The VLP is made up of** residential, commercial and agricultural end-users and their overall electricity consumption. The VPS integrates, manages and controls distributed energy generators and storage capacities and links their technical operation to the demand of consumers and the energy market. The project is focused on monitoring and **adapting electrical consumption** and **forecasting the potential of generation** from RES (Renewable Energy Sources).

Figure 1: The online VPS simulation [www.alpenergy-visualisierung.de]

The study on commercial end-user was mainly of a theoretical nature. The main objective was to find out whether and how **much load shifting potential** existed in **SMEs.**

The field test for residential end-users tested two different tariff structures and a measure that relied on transparent consumption information.

- Customer group 1 could only access feedback on their overall household consumption. This group was supposed to answer the question: "**Does feedback raise awareness?"**

- Costumer group 2 was to test a static price model in addition to the feedback incentive. This strategy was supposed to answer the question: **"Can/Do customers want to shift energy consumption manually?"**

- Customer group 3 tested a more complex and dynamic price model that applies short term prognoses for price formation. A part of this group was equipped with a smart home automation system. This group was supposed to answer the question: **"Does an automated solution support end-users in reacting to dynamic tariffs?"**

What sets this project apart from other Smart Grid projects?

The Alp Energy project worked with a strong regional integration concept. Local decision makers, opinion makers and media representatives were recruited to increase the acceptability of the study and to increase the willingness to participate.

The project tested three different end-user engagement strategies with residential pilot customers. Customer group 1 received no monetary incentive, while group 2 was rewarded if they managed to shift their consumption into the designated static 'saving zones' (0,05 €/kWh).

The dynamic tariff structure was directly connected to the regional energy production. Also, a part of group 3 was equipped with a Smart Home Set through which appliances were controlled automatically according to the price signals. Remote control of household appliances was relatively untested at the time of the study. Participants of customer group 3 received 0,02 €/kWh or 0,05 €/kWh depending on whether they managed to shift their consumption to the according pricing zones.

What happened?

In no small part due to the strong regional integration of the project, residential as well as commercial end-users showed a strong general interest in energy efficiency topics and were willing to participate in the study. In total, 260 residential and 33 commercial end-users could be recruited as participants in the VPS Allgäu study.

Comparison	without intervention		with intervention
customer group 1 only information	2010	=	2011
customer group 2 static tariff	2010	+2%	2011
customer group 3 dynamic tariff	2010	+1%	2011

Figure 2: Load shifting potential due to pilot activities (AÜW, 2011)

The static tariff model achieved the best result, with end-users shifting 2 % of their energy to the designated zones. Several end-users judged the dynamic tariff to be too complicated and laborious.

Further information / Contact

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References:

AlpEnergy Homepage: www.alpenergy.net