Amsterdam University of Applied Sciences

me²

POLICY RECOMMENDATION SET

me² – Policy Recommendation Set

Projects like me², that aspire to create innovative business models out of the emerging European electric industry, would benefit from the understanding of the various existing and evolving market players, market design and regulatory issues in the sector. This is important as such initiatives and ventures are expected to be an integral part of the future EU electric grid management. For instance, TSOs that are responsible for managing the overall transmission systems, need to ensure that supply of electric energy equals the load in real time so that the frequency of the electric supply is kept within acceptable limits. The other major players in the market worth noting are the DSOs that manage the local distribution networks. Their task is increasing as highly intermittent solar and wind energy sources are being connected to the electric grid via the local distribution networks which are requiring a greater network management role from DSOs. Furthermore, the expected huge roll out of PEVs would result in local network congestion unless various optimized charging schemes are utilized. me² with ***demand side response*** as part of its value proposition, would be an integral part of the local grid management. To achieve this, as proposed in the me² project, end customers' energy usage flexibility in homes with smart meters as well as the smart charging of aggregated PEVs (which offer huge flexibility options).

As the Smart City Aggregator - SCA is at the very heart of me², the exact role and relationship of such an aggregator with the incumbent energy retailers in the evolving EU electric market is also important. Within the existing market scenario, such emerging aggregators in business ventures like me² need to figure out how to work with end consumers who may already have an energy contract with incumbent retailers.

Based on data from the two me² pilots, analysis and simulations have been carried out. Firstly, pilot data analysis shows that more reduction in both consumption and costs has been achieved in Portugal than in the Netherlands for 30 (PT) and 27 (NL) analysed users. This is both the case when the measured data is analysed, and when the measurements have been adjusted with countrywide data to account for changes in seasonal patterns. In fact, the Dutch participants largely increased their peak hour consumption, although 7 out of 27 analysed achieved peak hour cost reduction. In Portugal, however, 17 of 30 analysed households reduce their peak hour consumption by more than 5% between the initial phase and the final phase of the pilot.

More than half of the users in both countries have achieved a smoother load curve, when seasonal compensation is taken into account. During a challenge involving late EV charging in the Dutch community, participants reached 32% reduction during peak hours.

Simulated scenarios based on Dutch household and EV charging data indicate that users' willingness to adopt peak shaving behaviours is a key factor in achieving peak hour reduction. Increasing the acceptance rate of an aggregator's peak shaving attempts has a larger effect than increasing the peak shaving amount from 10% to 30% of measured peak load. With EV charging accounting for 30% of peak hour household consumption, automated options for smart charging would yield the highest results.

However, even though project pilot results are promising, the realization of me² would not be straightforward in the EU electricity market as various regulatory issues, market design issues, pricing issues have direct and indirect bearing in its implementation. Coordination issues would also be important. For instance, in the emerging electric industry DSO and TSO need to coordinate in a new workable way as otherwise they may end up competing for the same energy resources for their respective activities.

Thus, the project derived the following **Policy Recommendation Set** summarizing various factors in the existing EU electric industry that would have implications on me^2:

- As aggregated demand response is one main contribution of me^2, its level of penetration and adequate compensation in the EU market has a direct bearing for the practical implementation of me^2.
- Very high minimum bid figures in the electricity markets would discourage innovations and startup aggregators in business ventures like me^2.
- The proposed value of me^2 in providing balancing services to the grid for frequency regulation as well as providing demand response to the local grid would be more profitable if adequate payments for capacity existed as well.
- New ventures like me^2 would need a stable regulatory framework for their implementation and attractiveness for investments.
- Positive European directives and regulatory reforms need to be followed by all concerned bodies for their rapid implementation in individual member states.
- Regulation of the retail price of electricity would be an obstacle for new ventures like me^2 that assume a competitive environment. In addition, the me^2 platform could allow end users to trade energy with each other which would not be viable if there is regulation on retail prices.
- With automated smart charging of PEVs, me^2 could work with dynamic or real time pricing. Also smart meters in homes as proposed in me^2 enable dynamic pricing of electricity. Accordingly, such emerging dynamic pricing schemes (and also time variable grid tariff designs) in EU could support the economic viability of concepts like me^2 and therefore should be considered.
- Ventures like me^2 would only be theoretical without an adequate charging infrastructure in place in EU member states, hence all concerned bodies should push for the realization of positive EU legislations concerning this issue.
- Stable coordination between DSOs and TSOs with clearly demarcated responsibilities would benefit the implementation of ventures like me^2 by creating favorable environments and also in making clear various business niches and their corresponding stakeholders.

Partners

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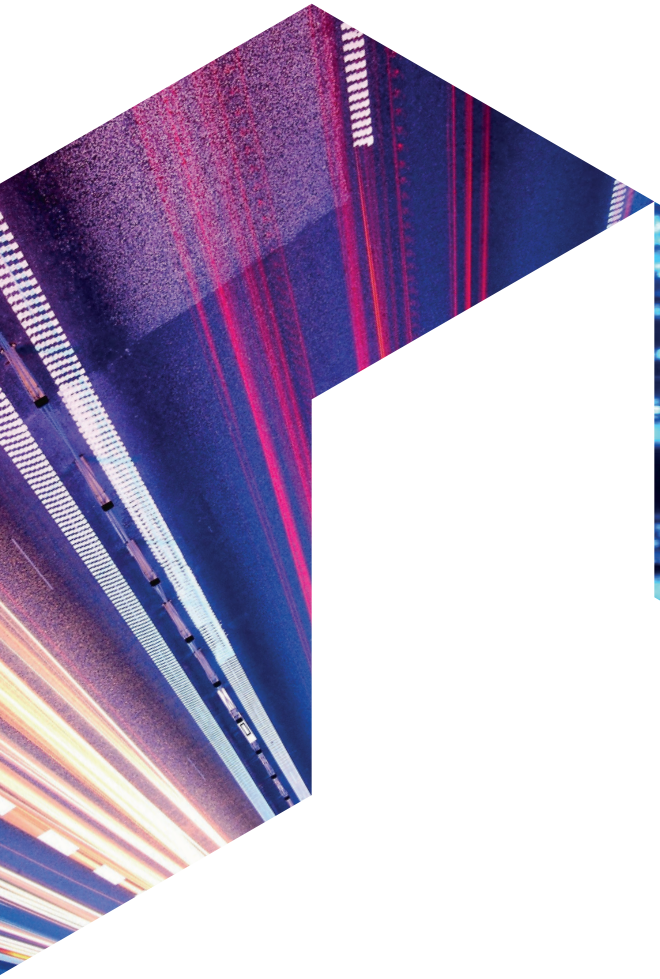

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