Best Practice description

REScoop: Hvidovre Fjernvarme, FDHvidovre, and Avedøre

Country: Denmark

Name of Measure: Technical support to members "FJR-ordning"

Third party involved: EBO Consult

Description of measure

The FJR-ordning is a check of the consumers heating installations every second year:

The first check is a check of their district heating unit and a thorough energy analysis of their houses, i.e. how the consumer can save energy in their house. After the check, the consumer receives an energy report of their house. In the report, the consumer is informed on whether their heating consumption is below or above the average consumption and it entails guidelines for what the consumer can do to optimize the energy efficiency of their house. This type of check is repeated every sixth year.

Two years after the first check, a maintenance check of the district heating unit is performed in order to adjust the unit in the most energy efficient and energy saving way. This type of check happens every second year.

Description of actions

The different checks of the heating installations are performed by authorized service engineers, found through quotations from local authorized plumbers. In Denmark, each utility company has to realize energy savings at the end users. Every year, the government sets an energy saving target, which each utility company has to obtain. In order to fulfil the energy saving target, the utility companies can implement measures themselves (FJR-ordningen) or buy energy savings at a liberal market, where different actors sell their energy savings at a fixed price.

The consumer cannot individually sell the energy savings at the liberal energy market when the consumer accepts the FJR-ordning. Instead, they obtain higher energy efficiency and an improved cooling of their district heating water. When multiple consumers accept the FJR-ordning it follows that the cooling in the whole district heating system improves, which ultimately benefits the consumers. It is due to the fact that Hvidovre Fjernvarme buys heat at a transmission company. The transmission company needs cold water to cool the electricity turbines in a CHP plant. Therefore, the transmission company has implemented a cooling tariff on the return water from the district heating system. One heating degree costs 26.889 euros. It follows that the cooler the return water is, the less Hvidovre Fjernvarme has to pay in cooling tariff. If the cooling in the whole district heating system is improved, it, therefore, reduces the production costs in Hvidovre Fjernvarme, which ultimately decrease the consumer's heating bill.

Cost of implementation:

Hvidovre Fjernvarme pays the service engineers to perform the checks at the consumers. The consumer does not have to pay anything for the checks. It is partly enabled by an energy saving agreement between the Danish government and the utility companies.

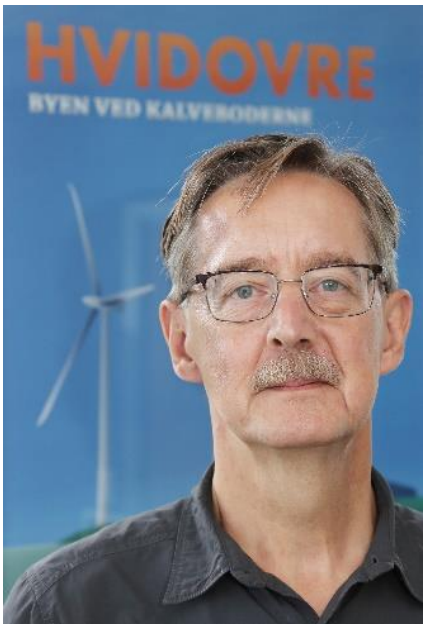
In 2015, the price for one kWh was 0.07 euros and the energy saving target for the district heating company was: 6.888.430,107 kWh. The target increases every year, and it is punishable, if the utility company cannot fulfil their individual energy saving target. Therefore, Hvidovre Fjernvarme is

interested in achieving energy savings at the end users. Therefore Hvidovre Fjernvarme offers the FJR-ordning for free, and in return Hvidovre Fjernvarme gets the energy savings that the consumer achieves.

Criteria	Technical service to members	**Score**	**Explanation of Score**
Effectiveness: The effectiveness of energy saving measures exists of different parts			
	Impact: Is there a clear impact on the energy savings of households where the measures were targeted or implemented. The researchers aim to find meaningful correlations between the measures and the variables that determine energy saving in households.	++++	There is a clear impact on energy savings. Statistical analysis shows 20% monthly kWh/(HDD) and kWh/(HDD*m2) consumption reduction for a typical consumer that has received technical support, with a p-value of less than 0.05.
	Outreach efficiency: This criterion looks at the reach in relation to impact. How easy is it to reach a large group of consumers and have an impact on energy saving in that group. Or the other way around, when the measure was implemented in a small group did it had a substantial impact to justify this reach.	+++	Almost all households accept the service. The fact that the service is free contributes to the high impact
	Time Efficiency: This criterion looks at how much time does it takes to implement the measure and the duration between implementation and first results. An example of a best practice would be a short time span (months rather than years) between the implementation of a measure and the first measurable results.	++	First visit is up to 1,5 to 3 hours per household including making up the report. Considering the impact this gets a positive score.
Pre-investments and share of costs: Who bears the pre-investments of implementing the measures and who benefits? How long does it take to cover the pre-investments?		++++	The service is free for the members. If they implement the energy savings the customer benefits from lower energy costs. If the cooperative does not achieve energy savings it needs to pay the government this is why the service is free. The technical service makes sure it has a better cooling. Which creates a better business case in the heating district because of the cooling prices. When costs are lower, it follows that members pay less for their heating bill. Efficiency in cost is shared among the members.
Implementation: This criterion looks at the complexity of implementing the measure. This includes the above criteria of cost, but also administrative burdens, training of employees or volunteers and integration into existing systems.			

	Administrative burdens: Here we will look at the administrative burden that is created with the implementation of the measures, and if it is possible to reduce them with automatization, for example with a basic administrative system. This criterion will always be applied in relation to the impact and reach.	++	Technical service engineers fill in the report in a tool that gives an automated report. Administrative burdens are therefore almost non-existent.
	Training of employees or volunteers: Here we will look at how much time it costs to train volunteers or employees that help with implementing the measures. Also, the level of education is considered.	-/+	Technical service engineers are trained employees. Service engineers giving this service get a course on the district heating unit and how to install in an energy efficient way.
	Integration into existing systems: Here we will look at the ease by which the implementation of a measure can be transferred to another cooperative somewhere else. When adoption of a measure implies the adoption of a complex support system, this Is likely to form a barrier for transfer of this practice to other cooperatives.	+++	Especially in existing district heating it is an extra service to members. It is easy to implement.
Market up take: This criterion evaluates the possibility of replication with workable alterations in different cooperatives.			
	Regulatory context: Important here is to look whether the measures can only be used when certain regulatory measures are in placed or that they can be implemented in any regulatory context.	--	The regulatory context is important. The energy saving target system makes it that the service can be given to members for free. There is a direct incentive for the cooperative to work on energy savings. However when the energy saving target system is not in place, the service could still be offered, but then the customer would have to pay for the service or the costs need to be included in the overall cost of the sale of energy.
	Organisational context: Another important aspect is to analyse whether the measures are linked to any specific organisational structures of the cooperative. For example, when a measure only works when the cooperative is the owner of the electrical grid it will get a low score on the market up take criteria.	--	The business case of the district heating improves when the system is more efficient and has a lower cooling return flow. The cooperative needs to pay when the return water is too warm. This is a specific aspect for this district heating system. However its not a determinant factor for the practice. It only adds as a financial argument to give the service for free to the members.
Ethical performance: This criterion looks at whether there are ethical procedures in place concerning control of end-user, transparency and data management.	Degree of control by end-user: In what terms can end users exercise control of the measures or organisation that implement the measures.	++++	It is not an obligation, customers are in full control. Also they are free to take up the advice given or not.
	Transparency: Is it clear how governance structures or cash flows are organised	++++	Information about the governance structure is open to all customers especially in the cooperative. Information is given when asked.
	Data management: How is data of the tools managed. Is there for example a privacy policy in place?	+++	Customer and service company can access the reports online. If data is used for other purposes it is aggregated and anonymous data.

Expert involved



Erik Christiansen

Holds a master degree in Law. Erik has been employed in the Ministry of Interior (municipalities and health), in a Mayor's office in a municipality (leader of department) and in a housing association (judicial director). For 21 years Erik has been CEO of EBO Consult (www.ebo.dk).

Erik can consult cooperatives generally on helping their members from a transition to district heating. And specifically on the best practice "Package Approach". The package solution is a cooperative business model which is based on the idea of making it possible for all, i.e. poor and rich, to join the district heating system as member and consumer. The package solution is supplemented by the technical service which is free for all and therefore benefits all, independently of the individual consumer's income and social status.

Erik can help starting REScoops to implement the package approach in new REScoops and talk more on the regulatory situation in Denmark.