

HOURLY METERING OPENS FOR NEW BUSINESS OPPORTUNITIES AND IMPROVED CUSTOMER SERVICE

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ABSTRACT

Vattenfall has completed a large evaluation of actual customers' interest in more advanced consumption services accessible through the Internet.

Approximately 2500 private customers in Sweden participated in the 12-month test, giving them the opportunity to follow up on their electricity consumption on an hourly level. The result from this test is now the base for Hourly Metering roll-out in Sweden related to the new legislation.

INTRODUCTION

According to the legislation, in force since July 1st 2009, all 5.2 million customers in Sweden have received a new meter for electricity that facilitates the remote measuring of monthly values on electricity consumption. Vattenfall Distribution Operations Nordic has about 850.000 private and SME customers with a fuse size less or equal to 63A.

The Swedish government commissioned the Swedish regulator, the Energy Markets Inspectorate, in 2010 to examine the financial and legal impact of moving from monthly to hourly billing for residential customers. Hourly metering is a prerequisite to utilize the full potential of the future Smart Grids. It opens up for new possibilities on the electricity market with new tariffs and contracts, but also possibilities for new roles such as aggregators and "prosumers".

The Swedish government commissioned a new legislation for Hourly Metering (prop. 2011/12:98) by 1 october 2012. This legislation opens for active customers to sign up for new agreements based on hourly metering, with no additional costs involved. This regulatory framework was dedicated to give electricity suppliers a market place for new types of contracts based on hourly metering. The new legal requirements for Hourly Metering and Visualization for customers were delivered to its customer within 2012 as planned by Vattenfall Eldistribution.

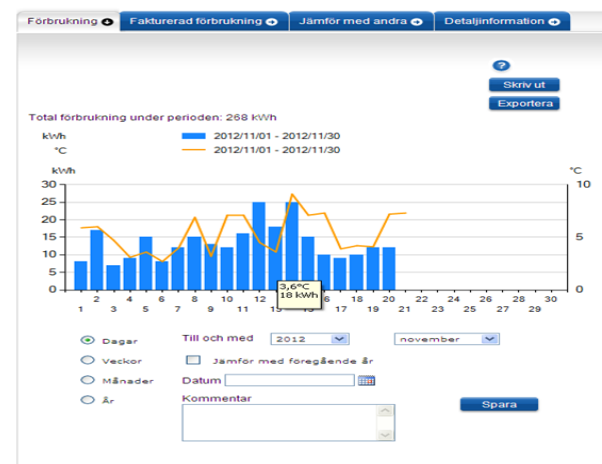
The intention is to promote the introduction of new

renewable energy resources through an efficient market place with demand response and more active customers. These new products will also enable the customers to reduce their energy costs by more active managing of their electricity consumption and by installation of energy demand control equipment.

This legislation has been an important step towards full implementation of hourly metering and need for visualization to its customers.



Picture 1: Values2Web launched in 2011



Picture 2: Monthly values on MyPages 2011

BACKGROUND

Vattenfall Smart Meter roll-out started in 2003 with different phases to learn and select best meter/systems for each phase:

- AMR 1: Actaris
- AMR 2: Iskraemeco
- AMR 3: Echelon/Telvent

Today most of the electrical meters in Sweden are prepared for hourly metering which will open for new business opportunities, e.g visualization of meter values on the web, energy estimations and calculations for households on the web and in mobile applications.

Already in 2011 Vattenfall Eldistribution launched My Pages (Picture 1) project called Values2Web (Picture 2), where customers could login and view its consumptions on a daily basis. This service has been an important communication channel with the customer, and a platform for upcoming new services.

This service was designed for 850.000 customers with monthly reading and with a limited volume of hourly metering. With the new legislation all customers are entitled to hourly metering free of charge, even though the cost of collecting will increase for the distributor.

Vattenfall Eldistribution decided already in mid 2012 to start collecting Hourly Values from all its meters. This task is still ongoing and will be finished in Q1 2013, and will then generate more than 20 million values per day.

The biggest challenge have not been in collecting the hourly values from the meters (even with PLC), but to validate 24 times the volume of meter values every day with the existing IT systems, and within the same timeframe and legal demands as of today.

Many of the systems where not designed for the task, and with processes based on manual labor this was one of major challenges to be meet with in this project.

There were several challengers to be met for the project:

- Re-configure existing meters or change to a new version.

- Secure the infrastructure capacity.
- Modify functions within the AMR systems.
- Secure existing monthly reading for those who will only visualize hourly vales (additional services).
- Secure all existing and new demands in reporting to authorities.
- Automate all collection and reporting

DEPLOYMENT

Since Vattenfall have been involved in the legislation for Hourly Metering it was not a surprise when the decision was taken.

The deployment of Hourly Metering within Vattenfall Distribution started out as rather straightforward project with a clear focus on meeting the legal demands 1 October 2012.

The project started officially in April evaluating all the stakeholders and related projects that could have an impact on the delivering parameters.

After just a few meetings it was clear that several internal and external projects had a direct impact on the timeline. The decision was to divide the project in 3 phases:

- 1) Meet the legal demands by receiving all new requests from customers via PRODAT messages (see picture 4).
- 2) Secure all existing integrations (SAP, AMR etc.), infrastructure, and that all meters could deliver hourly values 3 months after the customer request.
- 3) Go Live on My Pages with a new design, for all customers that requested hourly metering from 1 October 2012.

The project focused on deploying these 3 main tasks, however it was clear that tasks as automate all collection and reporting had to be addressed after the first Go-Live.

The project was only given 5 months for deploying the first phase and less than 8 months (1 January 2013) before the first customer should be receiving its hourly metering values on MyPages. Vattenfall goal was to deploy its first customers before end of 2012, this was successfully meet with Go Live 19 December.

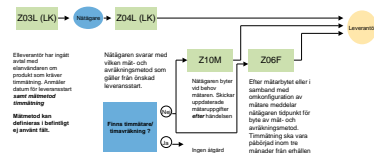
Looking at the process chain (Picture 3) of these services its important to understand its complexity where each part of the chain is closely linked with each other. This was one of the biggest risks with the project changing in one end could lead to

incorrect in parameters for following systems.



Picture 3: Process chain for Hourly Metering

The first phase involved systems like SAP and process changes, based on the decision that limited changes was needed to receive this messages.



Picture 4: PRODAT messages for Hourly Metering

Second phase was more complex since most of the existing systems were not prepared for the volume of validated values and implementation of new validation system (MDMS) was in the loop for deployment.

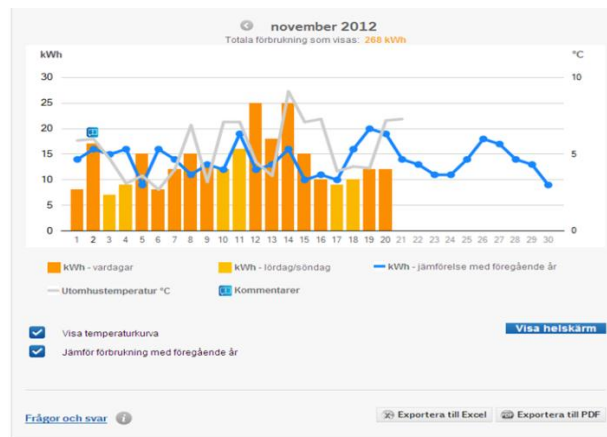
Each of the three AMR systems where in place before the project start and was said to meet the specifications for hourly metering. However none of the systems where tested with 24 times the amount of data, and no supplier could guarantee the quality of delivery. Vattenfall have decided to implement a new MDMS system that is going to manage the volume of more than 1 million meters. However this is to be implemented in 2013, therefore the existing systems had to be used for the project. This opened for extensive performance testing of certain IT systems that could jeopardize the project delivery. It turned out that systems would manage the volume expected for 2012/2013, but will not manage a full roll-out of validated values to all Vattenfall customers.

The third phase of the project focused on updating MyPages with new graphics and easier to use. On MyPages Vattenfall customers with different agreement could access specific information why the project had to take this in to account. The challenge was to test all new features for all possible agreements.

The new graphics for Monthly Values (picture 5) is now in place for all customers with the same look and feel.

A strategic decision was made early in the project not to show temperature on this page, since this information is very local and would give very little or even wrong information to the customer if used for

regulation of heat etc.



Picture 5: Monthly values with the new layout

The Hourly Metering values (Picture 6) shows consumption per day.



Picture 6: Hourly values with the new layout

The project managed to deploy all three phases with a Go Live in 19th of December 2012. Based on this success Vattenfall have decided to take the hourly metering one more step forward, and try to deploy hourly metering (only visualization) for all its customers even if they haven't requested it.

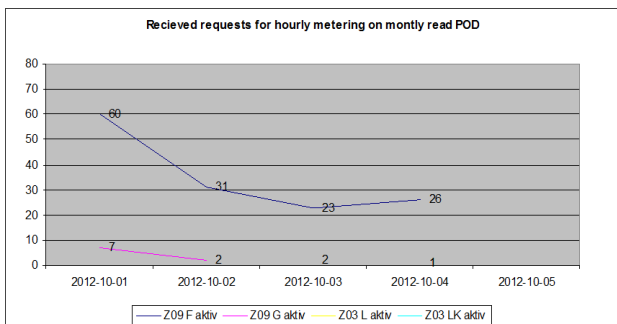
The deployment of automate all collection and reporting is also underway, these task will be an ongoing development over time to reduce manual labor.

EVALUATION

The project will be fully evaluated during first quarter of 2013. However several important issues have already been addressed from this deployment and that should be considered for future project with in Vattenfall.

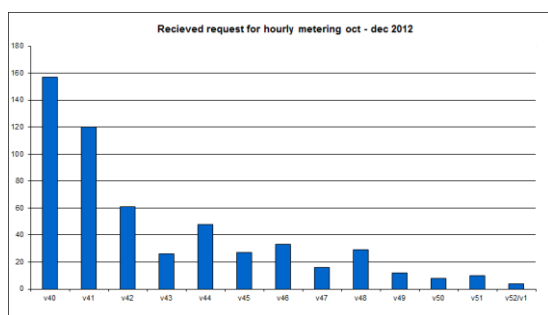
- The timeline was fixed with limited time for deployment with many complex tasks to perform.
- The test period was crucial with several tasks that had to be performed in the right order (see Picture 3).
- Resources was taken out of the daily work to focus on the deployment.
- To many internal projects have been deployed at the same time which have resulted in tight resource planning.

The project had to plan for a large volume of new customers by 1 October, to estimate how many requests, a market survey was conducted over time that showed little activities by other distributors and sales organizations. The decision was made to focus on marketing of Hourly Metering for all 2013. The survey also showed that it probably will be the early adopters and customers that already are using hourly metering that would request for hourly metering. This turned out to be true in the first week a peek was registered (Picture 7) with 157 customers.



Picture 7: Number of customers registering for Hourly Metering

In the period of October-December 551 customers



have requested the service (Picture 8).
Picture 8: Number of customers October-December 2012

A conclusion could be that customers in Sweden are interested hourly metering but don't want to change their agreement during the cold period. Another is probably that existing agreements are not directly

linked to consumptions/price per kwh, when this will be in place its of more interest to the customers able to regulate consumption based on price.

FUTURE

In order to meet the customers in a good and uniformly way at a common starting point, Vattenfall Distribution Nordic will continue with its customer promises and extend its services.

What impact will Hourly Metering have on the overall business in Sweden and what future customer demands will be the next challenge for electricity companies?

One of the biggest challenges for Vattenfall Eldistribution is to reduce the time from registration within the meter until its shown on My Pages. New ways of supplying customers, and integrators with "real-time" values will become an competitive selling point that will drive new business. The future for hourly values will be in the services to its customers and what benefit they give in reducing cost.

VATTEFNALL PROGRESS

Vattenfall plans to continue the development of hourly metering with service to customers beyond the demands in the regulatory frameworks.

Vattenfall Eldistribution intent to will deliver hourly values to all customers based on raw data from the meter which will be delivered faster to My Pages. This will be a great tool for integrators with energy demand control equipment.

CONCLUSION

The new legislation by 1 of October 2012 have opened for new business models and opportunities based on hourly values. Vattenfall Eldistribution will now continue developing outstanding services to its customers that will reduce their energy costs.

REFERENCES

: [1] Monica LÖF, Kristin SIGMUNDSSON, Daniel ZAJD, 2011, "MAKING THE ELECTRICITY CONSUMPTION VISIBLE ", CIRED2011_0754.pdf