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Lighting up the smart grid

Nate Cochrane | Jul 28, 2009 2:36 PM

CRN spoke to consultant Marchment Hill on the future of the smart grid.

CRN: What are the benefits for electricity distributors and retailers, consumers and third-parties such as system integrators?

Marchment Hill: One of the very interesting aspects of smart meters is that we can begin to inform customers [about the electricity they use] so their decisions to turn on the switch are more informed.

Smart metering is the first step to smart grids committed to in Victoria. **Energy Australia** has a smart grid initiative they're progressing in NSW but that will probably start in earnest with smart metering initiatives.

The distribution businesses, as they start deploying, will start to realise operational improvements from being able to collect data remotely (in half-hour increments or daily) rather than having a meter reader.

Communication with those meters provides the ability for close to real-time identification of faults in their control room, allowing them to deploy field crews to rectify those problems faster, thus improving network reliability. There's a flow-on effect to customers in reduced downtime.

In terms of information, it will be vastly greater than what electricity distributors had previously. They should be able to manage capital improvements better and invest more efficiently to deliver electrical services to consumers. So distributors will get the first lot of benefits.

From a retailer's perspective, the benefits around smart metering will be driven by a significant increase in the amount of information available to organisations. Being able to slice and dice and analyse the information will help inform them on energy procurement.

So wholesale energy purchasers should benefit and customer segmentation will be enhanced by load profiles of customers and matching retail pricing to wholesale costs in a way they've not been able to do.

In the current environment every customer with a simple accumulation meter has the same profile, where in future you'll have specific information about each specific customer and electricity providers will be able to group their customers. They may have done that in the past based on assumptions (such as their demographic) but they'll be able to do it with more certainty using smart meters.

The benefits to consumers are an ability for retailers to send messages to consumers through the communication system set up and linkages to in-home display devices that could be put into a customer's premises. And electricity retailers will be able to develop new products and services.

In-home display is not something being mandated or incorporated in smart meter programs. They're seen as infrastructure to communicate to in-home devices. But electricity retailers will either package up or customers might be able to go down the road to Dick Smith and buy a device like that to talk to the electricity meter. That will develop over time as retailers have products and services to offer and as their understanding of the market potential evolves.

CRN: Are we likely to see variable tariffs that charge consumers more based on the time of day and their marginal rate of electricity use?

MH: Some issues around less well-off electricity consumers (such as the unemployed and pensioners) may never come because there may be too much political opposition to it (variable tariffs).

The Government has a green program related to energy efficiency in homes and companies, offering in-home displays where you could have your house audited or get software to manage your house's power use, based on smart meters that can monitor your home in real-time.

The companies providing such services are generally new and relatively small ; they're waiting on regulation around energy efficiency in homes to be finalised. But even now they've already got home assessors and contractors lined up, ready to go and in future they'll want to install software that will read your meter.

We're also aware that bigger companies not directly involved in the energy space are getting interested. Any organisation with powerful IT systems, mass market retail experience and strong logistics could potentially play in this space.

The key thing with this change is it's very hard to see where it will go but with more technology and more data it will be possible to extract value from that data. The electricity industry has well-established processes and systems they may find it difficult to move at the speed of smaller, new companies.

There's lots of risk for big electricity companies in the new, smart meter technology. For them, this change probably represents more of a risk than an opportunity. The newer thinkers, and they're circling, are the ones that probably have the most to gain.

Major telecommunications players have looked at the option of the electricity market but shied away from it because the risks were hard to manage on the wholesale side.

There's going to be an extraordinary sheer volume of data that needs to be managed and mined and businesses that can do those things stand to win - there's a significant market opportunity. The internal capability of existing retailers to mine their data probably isn't as developed as in other retail businesses because it's had very simple up until now.

We haven't heard of IT integrators working with electrical retailers on business intelligence systems.

An interesting aspect is the extent to which consumers will choose to change behaviour based on real-time information and tariffs based on time of use and shifting their patterns. There's no research that says people are itching to behave in different ways. British research found 7 percent of 1500 households showed some interest in changing demand patterns, and of them only 10 percent made a material change to the electricity bills by shifting demand. Without a sustained education program and communication program to the

community, they're not well-prepared to receive messages about options they'll receive in the future.

At the same time, nearly a million individual and business consumers in Australia have elected to purchase green power, so there is already a substantial group of informed and engaged consumers out there.

There are parallels around other social obligations such as with water restrictions where people guilt neighbours into not watering their gardens during times of drought and peak water use.

Electricity prices are slated to continue rising and the extent to which a carbon price or need for new generation has to flow on to the retail sector provides a carrot as a social instrument to do something about it yourself as a consumer.

Another major factor will be the introduction of electric vehicles. If these become a significant part of the automotive sector in the next five to 10 years that will change demand for electricity. Retailers will want (and need) information about who's charging when and where. The whole electricity sector will need to manage the impact of growth in electric vehicle use and it will be important to plan for that.

We believe that electric vehicles will come in scale and in the next 20 years. The hypothesis that re-charging electric vehicles will flatten out the electricity demand profile over the course of the day could be true provided the cars are recharged in a very smart way.

Telecommunications and software will be needed to allow such a large appliance to be sympathetic to network needs and generation price. EVs have the potential to fill in valleys in the demand curve but not to cap peak demand. A well-managed implementation of electric vehicles with sensible charging is the best opportunity that distribution businesses have to change their profitability over the next 10 to 15 years.

They have the potential to move so much more product down the existing infrastructure at low risk. A badly managed implementation, non-smart management of that large energy demand could throw up some really significant operating challenges.

Some in the electricity business are implementing projects today and going out through tenders. Others may be exposed to it but haven't thought strategically about impacts, and others are preparing so there's a variety of awareness about what smart grids and smart businesses mean. Those businesses can look at this and understand the value chain and where smart metering or smart grids can identify that potential value.

CRN: Where can resellers plug the gaps in utilities' skills?

MH: There's a lot of opportunity in the data management area. At the moment for a domestic customer a retail business would receive one or two items of data every three months but when they put a smart meter in they will get 48 items of data a day. They will have to create databases to receive that data and they will have to work out what they do with that data from a billing perspective and how they can use it internally.

There are dozens of small retailers [such as **Red Energy**] out there that will be hungry for competitive advantage so an IT reseller that can provide a turnkey solution to make sense of data and provide better customer information would be in a good position to get that business.

Those smaller electricity retailers with 50,000-100,000 customers will be very keen to make sense of it quickly

ahead of legacy systems that are harder to turn around. A relatively small IT reseller could go to a relatively small retailer and come up with some interesting ideas.

CRN: When should resellers start thinking about hooking up with the smart grid?

MH: If you're an IT or systems developer you need to be thinking about it now. If you are a mum and dad customer do we need to worry? Not at all. If they change the meter on my house tomorrow it won't make much difference to me. If the government changes the tariff structure or deregulates it completely then I will be interested because I'll have some control over my electricity use.

It depends where your interest is. Just as it happened in telecommunications 20 years ago when the sector was deregulated, you can't underestimate what opportunities open up with the smart grid. If there's much more granularity of communication we can't imagine now what opportunities open up for business in the next 15 to 20 years.

Marchmont Hill consults to utilities, infrastructure and resources industries. This is an edited transcript.

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