eMeter
A Siemens Business

"SMIP Consultation on the Draft DCC License and License Application Regulations"

eMeter, a Siemens Business Unit welcomes the opportunity to respond to DECC Smart Smart Metering Implementation Progamme's Consultation on "the Draft DCC Licence and Licence Application Regulations".

We understand that according to DECC's plans the DCC role is to provide communication and services with smart meters at all domestic gas and electricity consumers premises. We acknowledge this consultation aims to get views on:

- the DCC license, which will be used to overseeing the conduct of the DCC
- the license application regulations, which provides the regulatory framework for the award of the license

eMeter, a Siemens Business Unit is a smart meter software company that provides a smart network application platform (SNAP) to integrate smart meters and smart grid communications networks and devices with utility IT systems. Being vendor-neutral toward all meter, hardware, and legacy utility software systems (e.g. CIS and Billing), eMeter has a unique, unbiased and global perspective on smart meter IT issues. In addition, eMeter's principals have participated in the definition and development of the smart grid for nearly three decades, including leading advanced metering working groups in regulatory proceedings, participating in a wide variety of industry standards groups, founding the Demand Response and Smart Grid Coalition (DRSG, managing consumer- oriented Smart Grid pilots (e.g. PowerCentsDC and the Ontario Smart Price Pilot) that have been recognized for demonstrating best practices, and testifying before the U.S. Congress and various state legislatures on these issues. eMeter has also been active in Europe, participating in EU and ERGEG activities and consultations, founding the Smart Energy Demand Coalition (SEDC) and having been an active participant in DECC and Ofgem's previous and current smart metering consultations, including those regarding DCC scope and functionalities. Finally, eMeter's software is in use in Smart Grid projects around the world, including several in Europe and successful multi-tenancy implementations of clearing house similar to the DCC, such as the IESO's centralized meter data management and exchange platform in Ontario, Canada.

eMeter's response consists on comments around the DCC license and the DCC license application regulations.

"SMIP Consultation on the Draft DCC License and License Application Regulations"

eMeter's Response to DECC SMIP Consultation on DCC License and its Application Regulations"

1. According to the draft, the DCC license is proposed to be granted for a fixed, non-rolling term, which is 12 years, with a potential 6 year extension. We want to call attention to the fact that also all DCC services providers should secure that could also provide data to any DCC holder.

2. DECC proposal is to set up key performance indicators to evaluate DCC. These KPI will be focus on the delivery of its own services and its procurement and contract management activities. eMeter would like to recommend DECC to choose solutions that enable audits as a feature of the services provided. KPI should be defined in a manner that looks at several stage of the roll out of the smart metering systems, tracking:

- that the installation of the meters have been done effectively
- and that connections among different interfaces have been done correctly

3. According to the DCC current process design, it is assumed that the DCC will not hold any information that allows grouping. We believe that the DCC should keep track of meter group. Otherwise it could be unbalanced from an operational point of view. Our expertise in the Ontario clearing house tells us that the DCC needs to track the specific features of each meter regarding what devices that meter is connected to. This is needed to support troubleshooting for failed communications, not to mention protecting consumer security and privacy. The DCC needs to control which entities can send information to or receive information from each other devices connected through each meter.

4. DCC Objective

We reckon that DCC will be putting forward suggested flexible designs for tested data management and modular software applications including; multi organization access control, scheduling, registration and asset management, data delivery services, privacy and security, metering system communications management, and synchronisation of multiple AMIs and legacy systems. Modular architecture will enable smart grid to configured and implemented via solutions that ensure ongoing compliance with current and future regulatory and market requirements.

5. eMeter welcomes the transparency of the four stage process selection of DCC candidates process. We would like to recommend DECC to run proof of concept presentations, workshops where the different

DCC candidates could prove evidence and presentment on how to overtake DCC activities and mostly and aiming to mitigate future integration issues to ask also for proof of capability managing and integrating a variety of systems and services. Proven capabilities of multi-tenancy will lower the burden of integrating different data uses and sending data to different stakeholders, for regulated services as well as for extra ones. E.g. to enable new tariffs products and services not only the retailers should have access to the metering systems but also distributors and third parties.

6. We envisage some potential change that must be included in the regulatory and commercial framework, mostly regarding new regulated activities related to delivering grid benefits, and those that affect other parts rather than! those initially thought of. The introduction of smart meters and smart grid capabilities will bring the necessity to change the scope of regulated activities, and consequently which data that has to be handled by the DCC and passed forward to different holder. For that reason we believe the DCC services providers should be able to bring flexibility that enables a future scenarios of consumer focused smart grid.

Demand-side programs could help balance the network — but to do so, there should be a link between network operators and their customers' base. For instance, where smart meters are deployed, network operators could get involved in demand side efforts such as electric vehicles, heat pumps, and distributed generation. Consumers should be able to sign up for automated demand response programs and control systems. This will allow them to receive price signals or price information, to which they can respond by modifying their energy use. Thus, simple demand becomes smart energy demand.

Examples of how consumers can respond to dynamic prices:

- Cut peak demand
- Shift usage to off-peak hours.
- Reduce total energy consumption.
- Actively manage electric vehicle charging.
- Actively manage energy usage to respond to the availability of solar, wind, and other renewable resources. For example, programming a dishwasher to run only when wind resources exceed a certain threshold previously established. A smart dishwasher could communicate with the grid operator to get this information via the HAN gateway or the internet.
- Purchase more efficient appliances and equipment, based on a better understanding of how each device uses energy.

These actions maximize savings to consumers and other energy users. And in the bigger picture, aggregators will use information from smart meters and home interfaces to help keep the overall power grid balanced and efficient. DCC might at some point in the future start handling these data, enabling somehow some standardization around these activities.

7. Responsibilities. A clear definition of the scope of the functionalities of the DCC will enable more accurate responsibilities' breakdown. If we look at the case in Ontario (see Annex 1), the Independent Electricity System Operator (IESO), the province's electricity grid and market operator, was designated by the Governments to be the Smart Metering Entity responsible providing the provincial meter data repository (MDM/R) service. In Ontario, the MDM/R collects consumption data from each distribution company, validates it and converts the hourly data into total consumption for each TOU billing period. These TOU billing determinants are then returned to the distribution company for customer billing. Once introduction of TOU rates is complete across the province, the MDM/R will collect and process hourly interval data from approximately 4.5 million smart meters.
Ontario more recently introduced a robust feed-in-tariff that is driving significant investments in renewable generation. One of the province's targets is that by 2030 nearly 13% of electricity generated is from wind, solar and bioenergy.27 Much of this new renewable generation is expected to come from small several hundreds or thousands of generation facilities at homes and farms, each requiring bidirectional meters that measure and report both energy consumed and generated.

When looking at the scope of functionalities of the DCC, therefore responsibilities' allocation regarding the DCC License and what to expect from its services providers.

8. Proven capabilities and vision. We recommend that the DCC should have a vision of what Smart Grid will look like in the future and which functionalities might the DCC will be asked to deliver. The future vision has to be included when defining responsibilities and the license of the DCC. We recommend DECC to specify responsibilities and the assumption on the future vision and how it should be delivered. We also recommend DECC to dismissing risk of the final DCC solution providers choosing proven technologies. There is underestimated complexity in the process of providing a central hub that enable a smooth transaction to smart metering system. Delivering Smart Grid application functionality requires a complex integration of these millions of devices in environments that challenge communications technologies. More than the other Smart Grid technologies, they have a direct daily impact on energy consumers' lives and all the associated implications.

ANNEX 1: Ontario MDM/R

Facing significant shortfalls in generation capacity in coming years, in 2004 the Province of Ontario launched an ambitious program to reduce peak electricity demand through a variety of programs. Central to that objective was the intro- duction of smart meters and associated time-of-use rates across the entire pro- vince by the end of 2010. The deployment of smart meters in Ontario is complicated by extremes in customer density with very congested urban areas contrasting with rural and extremely remote communities throughout large expanses in the north of the province. Ontario also has over 80 different electricity distributors, ranging in size from 1.2 million customers to several dozen with fewer than 10,000 customers.

After an extensive consultation period, the provincial government announced a two-tiered IT model with some functions remaining the responsi- bility of the local distribution companies, and others being centralized into a new province-wide service. This model achieves three key policy objectives:
Scale economies. The Province was faced with having up to 80 separate MDM implementations, one for every local distribution company. As noted, some of these have fewer than 10,000 customers. By having a cen- tralized repository, the Province is able to capture the scale economies asso- ciated with having a single system and single implementation.

Highest service levels. By concentrating the capability in a single operation, Ontario is able to provide higher levels of service and functionality than individual utilities could afford—especially the smaller utilities. For example, for disaster recovery, Ontario has a full back-up system up and running—at a separate geographic location—to take over operations in the event of an event damaging or destroying the primary facility. Another example is expertise; the centralized operator can afford to hire the best experts, because any additional cost is de minimus when allocated across the many users of the system.
Consistent and reliable data. Finally, by having all the utilities use a single system, the Province ensures that all customers, regardless of the utility ser- ving them, receive the same, consistent accuracy and reliability of smart meter data.

These benefits of centralization occur as a matter of course in competitive industries. For cellular telephone billing in the United States, for instance, two companies handle almost all of the billing. In contrast, there are hundreds, perhaps over a thousand, billing system for the 3,000 electric utilities in the United States.26

Distribution companies are responsible for installing and maintaining smart meters, ensuring hourly consumption data is collected daily, customer billing and collecting, answering customer queries, and generally being the agent for conservation programs with the customer. The Independent Electricity System Operator (IESO), the province's electricity grid and market operator, was desig- nated by the Governments to be the Smart Metering Entity responsible provid- ing the provincial meter data repository (MDM/R) service.

The MDM/R collects consumption data from each distribution company, validates it and converts the hourly data into total consumption for each TOU billing period. These TOU billing determinants are then returned to the distribution company for customer billing. Once introduction of TOU rates is complete across the province, the MDM/R will collect and process hourly inter- val data from approximately 4.5 million smart meters.

Ontario more recently introduced a robust feed-in-tariff that is driving significant investments in renewable generation. One of the province's targets is that by 2030 nearly 13% of electricity generated is from wind, solar and bioenergy.27 Much of this new renewable generation is expected to come from small several hundreds or thousands of generation facilities at homes and farms, each requiring bidirectional meters that measure and report both energy consumed and generated.

ANNEX 2: The Future of Smart Grid Data Analytics

The analytics opportunities smart meters present are just beginning to be identified. As this whitepaper illustrates, time-interval consumption data from smart meters alone presents a plethora of opportunities ranging from planning new dynamic pricing rate structures to distribution equipment sizing, load forecasting, theft detection and more. But time-interval data is merely the tip of the smart grid data analytics iceberg. Smart meters are capable of producing additional types of data, each opening a range of new opportunities and uses.

Here is a brief summary of additional types of smart meter data and some of the analytics opportunities we expect to emerge in the near future:

- **Voltage data.** With smart meters, it is now possible to collect voltage readings from the edge of the distribution network. This data can be collected and matched with other voltage readings further upstream in the distribution network, then analyzed to optimize voltage regulation. Voltage conservation can be used for technical demand response and/or to improve overall power delivery efficiency.
- **Power quality data.** Reactive power readings from smart meters can be captured and analyzed to measure power quality and to determine adjustments in the distribution network to reduce power harmonics, increase delivery efficiency, and provide a high-quality product to customers.
- **Peak demand readings.** Time-interval consumption data follows a time-based sampling methodology. Within any given timeframe, there will be a maximum draw of power – in other words, a peak demand reading. Peak demand data can be analyzed to learn more about consumption patterns, including the identification of 'heavy-hitter' appliances like pool pumps, central air conditioners, electric hot water heaters, and in the future, electric vehicles.
- **Home area networks (HAN).** Many of the dynamic pricing trials underway include a HAN component that connects energy management systems inside the home with utility systems. While the ultimate vision is some form of elegant machine-to-machine (M2M) interaction to achieve peak reduction, some level of analytics by utility personnel will be necessary to orchestrate power consumption. It will be necessary to be able to analyze the portfolio of available customer load assets at any given time and to interrogate their current status (potentially including thermostat settings and current indoor temperatures, for instance), including modeling the amount of power made available by different actions. Although HANs will be outside of utility direct control, it will still be desirable to create data records for them and to make them ready to receive communications (provisioning and commissioning).
- **Electric vehicles.** Electric vehicles are a new type of consumption asset – a mobile device that can draw power at multiple points across the grid. Data analytics will enable utilities to visualize and analyze EV charging trends, create new charging plans, and to identify changes in distribution sizing and planning necessary to accommodate these new power-hungry devices.

Source: Understanding the Potential of Smart Grid Analytics
(http://www.emeter.com/documents/anylst-papers/Understanding-the-Potential-of-Smart-Grid-Data-Analytics.pdf)