Response to the Green Paper on Energy

Dear Sir/Madam,

Activation Energy and EnerNOC are pleased to have the opportunity to comment on this consultation and thank the DCENR for the time it has spent putting together this document. Activation Energy plays a leading role in the development of Demand Response and the Smart Grid in Ireland. Its parent company EnerNOC Inc (Nasdaq:ENOC) is a world leading Energy Intelligence Software provider with businesses across 4 continents.

Having reviewed the Green Paper we are disappointed regarding the exclusion of Demand Response from the document, particularly considering the contributions it can make to the six priorities the Paper sets out. Below we detail these contributions but initially we would like to explain how Demand Response works.

Demand response refers to changes in electric usage by end-use customers from their normal consumption patterns in response to changes in the price of electricity over time, or to incentive payments designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardised.

Demand response makes energy markets more cost-effective for consumers and reduces stress on the electric grid. With the proper planning, demand response resources can meet a variety of needs on the grid, including providing capacity, energy, and ancillary services. Demand response also allows customers to reduce their electricity bills through peak load management, and other facility management tools.
Benefits of Demand Response and the Smart Grid
Demand Response can provide many services to the electricity system and provides many benefits. Among these benefits are the following:

- Provision of Capacity
- Reduction of energy costs for all
- Facilitation of Renewables
- Improvement of system security
- Returning of funds to energy users
- Increasing flexibility on the electricity system
- Diversification of energy sources
- Improvement of energy efficiency on users sites

Provision of capacity
Capacity is required in an electrical system to adequately meet the maximum demand of the system. Demand Response offers the ability to reduce this maximum in a way that provides the same net result but without having to build and support peaker power plants.

Reduction of energy costs
By reducing the need for costly peakers to run in the electricity system, the cost of generation can be lowered for all. This saving can then be reflected to all consumers, not just those who provide demand response. Furthermore as demand response is lower in cost than peakers, it has been shown to reduce capacity costs in many markets where the service has matured.

Facilitation of Renewables
Intermittent energy resources can be challenging for system operators to manage as the natural demand curve of the system may not match the availability of generation. Demand Response and the Smart Grid offers a way to manipulate this load curve and so allow for increased integration of renewables.

Improvement of system security
As Demand Response can be faster acting than tradition generation it can improve the resilience of the system significantly. Furthermore the dispersed nature of the service means that there is a lower risk of an interruption of supply. Finally due to the diverse range of the fuel provision (from Diesel to simply switching off loads), the risk to the fuel supply is greatly reduced.
Returning of funds to energy users
Demand Response is provided to the Grid by the users themselves. This means that industrial and commercial users who are struggling with high energy prices can offset these costs against the payments they receive from the grid. This can mean the difference between increasing demand in Ireland (and the associated jobs) or moving to a lower cost economy.

Increasing flexibility on the electricity system
Some electricity systems can struggle with the rapid ramp rates required by quickly changing loads or changes in generation. Demand Response is generally fast acting and so can better facilitate these changes than larger slower traditional generators. Further flexibility can be provided by the geographically spread nature of Demand Response, whereby local area schemes can be used to avoid system constraints and local grid loading problems.

Diversification of energy sources
Demand Response is provided by a range of provider types. These can range from simply switching off non-essential equipment such as pumps, chillers or process equipment, or by using local energy resources such as backup diesel generators. These diverse sources demonstrate the diversity provided by Demand Response and the resulting improvement it provides to Security of Supply.

Improvement of energy efficiency on users sites
As consumers focus attention on their energy usage as part of Demand Response and the Smart Grid, it has been shown that this also results in the consumer carrying out energy reducing projects onsite. This reduces Ireland’s energy demand generally, reduces greenhouse gas emissions and reduces energy imports.
European Recognition of Demand Response Internationally

The beneficial nature of Demand Response is shared by ACERs, who view Demand Response as the most valuable opportunity which the Smart Grid can provide to the system. This view is demonstrated in the slides below which consider all parts of Demand Side involvement and rank these on the basis of the value they could provide.

These slides set out the hierarchy of value of which ACER expect from Demand Side Participation. At the peak of these expectations is Demand Response, the reduction of load on the electricity system at times of system stress. The value of the opportunity has already been measured internationally with Demand Response providing significant savings to markets where it provides a large proportion of the capacity, notably in parts of USA and Australia.

<table>
<thead>
<tr>
<th>Market</th>
<th>DR capacity</th>
<th>% of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>PJM</td>
<td>14,118 MW</td>
<td>8.6%</td>
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<tr>
<td>NYISO</td>
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<td>ISO-NE</td>
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<tr>
<td>WEM</td>
<td>499 MW</td>
<td>8.2%</td>
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$11.8 Billion Saved
2013/14 BRA: Impact of DSM

Activation Energy

Activation Energy aggregates customers who can provide Demand Response and provides the service to the electricity system operators. The company currently work with 100MW of customers who can reduce their load on the electricity system for short periods by switching off equipment like chillers or pumps, or switching on their backup generators. This extra flexibility allows the system operator to facilitate more renewables onto the system while also earning a “Capacity Payment” for the customers.

The company which began to develop the project in 2007 worked with the Electricity System Operator (Eirgrid), the Electricity Regulator (CER) and the Electricity Market Operator (SEMO) to develop the rules and regulations around this area of the market. Operation of the “Demand Side Unit” began in 2012 and has since returned in excess of €1,000,000 to electricity users who participate in the programme.

The company continues to be an innovator in the area, holding seats on the SEM Trading and Settlement Code Modification Committee and the Grid Code Review Panel. They are also in ongoing talks with the system operator to identify other services which the Demand Side of the system can offer to the market.

EnerNOC

EnerNOC Inc (Nasdaq:ENOC) is a leading provider of energy intelligence software (EIS). EnerNOC’s EIS solutions for enterprises include applications that help organizations procure energy, manage utility bills, optimize energy consumption, manage peak demand, and participate in demand response. EnerNOC’s EIS solutions for utilities, grid operators and energy retailers include EnerNOC Demand Resource™, a turnkey demand response resource with firm capacity commitment, and EnerNOC Demand Manager™, a software-as-a-service (SaaS) application that provides utilities and retailers with underlying technology to manage their demand response programs.

EnerNOC, which stands for Energy Network Operations Center, has won numerous awards for its technology, customer service, and industry leadership.
Comments on Green Paper Priorities
Please find below an explanation how they apply to each priority set out in the Green Paper.

**Priority 1: Empowering Energy Citizens**
Demand Response and the Smart Grid are key components to Empowering Energy Citizens to maximise their participation in the Energy ecosystem. Demand Response allows customers to choose to provide the services to the system which it requires to run securely. This provides a cost reduction to the system while improving the availability of capacity and ancillary services to the System Operator.

The Smart Grid facilitates the customer to manage their electricity usage around the real time electricity wholesale price and the availability of particular energy resources. This provides the customer with much more control around their electricity procurement and the price they pay for energy.

Considering the place that Demand Response and the Smart Grid plays in facilitating this priority, we believe that a specific policy in Ireland should be to encourage the development and deployment of Demand Response Programmes across the island.

**Priority 2: Markets, Regulation and Prices**
Key to the provision of an effective and cost efficient market is the facilitation of equal and open markets access to all market participants. This means ongoing monitoring of barriers to market entry for new technologies and new trading arrangements. Once all participants are treated equitably, the lowest possible prices should be achieved.

Effective markets also require that Energy Users have cost representative tariffs available to them. This allows customers to respond to market signals and enjoy the benefits of these actions. Demand Response and the Smart Grid represent good examples of this requirement.

Finally regulation must be mindful of all participants to take part in a fair and equitable manner. The regulations which currently exist have been written with the existing generation and supplier mix in mind. The future offers many new generation and supply products which could improve efficiency and system performance. This means that regulation must be nimble enough to facilitate these changes and allow all parties to compete on an equal playing field.

We believe that a specific regulatory function should be considered to review and action barriers to new market entry and to work with new technologies providers to remove these barriers as quickly as possible.
Priority 3: Planning and Implementing Essential Energy Infrastructure
Demand Response and the Smart Grid provide an exciting opportunity in the minimisation of need for new infrastructure as it encourages customers to provide energy services locally. Demand Response is used in many jurisdictions to reduce demand on congested system nodes at times of high demand. With the correct price incentive the Smart Grid can also be used to increase demand on congested system parts of the system at times of high generation.

We believe that a specific policy direction should be made to require the consideration of Demand Side Management to reduce the need for the development of new infrastructure. This consideration should be forward looking with the development of programmes well in advance of problems being critical.

Priority 4: Ensuring a Balanced and Secure Energy Mix
Demand Response provides the most diversified system capacity possible as it is made up of a mixed group of customers who reduce load in different ways. Some customers can reduce demand by switching off electricity using equipment while others reduce demand by utilizing onsite generation. In general the methods of demand response are exclusive of each other and so the mix can be used to significantly improve fuel diversity.

In addition the dispersed nature of Demand Response customers means that natural geographic diversity is provided by the service.

We believe that Demand Response should be used as another resource in the accomplishment of a Balanced and Secure Energy Mix in Ireland both by increasing fuel diversity and decreasing the need for fossil fuel consumption. This could facilitate reduced need for the construction of new infrastructure (such as overhead power lines) and the related challenges these entail.

Priority 5: Putting the Energy System on a Sustainable Pathway
Demand Response provides an excellent solution to the integration of intermittent renewables into the system. A significant barrier to the large scale deployment of renewables is the System Non-Synchronous Penetration (SNSP) limit and the ability of the reduced amount of online traditional units to provide ancillary services to the system.

As Demand Response resources are always online and available for dispatch, they can significantly reduce the need for online traditional generation. In this way they can allow for high rates of non-synchronous units (usually wind) to be generating as the ancillary services can come from the demand side rather than the generation side of the equation.

We encourage the consideration of market structures and regulations which financially reward customers and participants for their part in Demand Response and Smart Grid programmes which assist Ireland to balance its Renewable Energy Resources.
Priority 6: Driving Economic Opportunity

Paying willing customers to provide the Electricity Capacity and Ancillary Services (as part of Demand Response) required by the electricity system reduces their net electricity costs and so facilitates them to be more competitive. The Smart Grid facilitates customers to make further savings as they can chose to consume electricity at times of lower cost. This reduces the energy cost for all while also facilitating more low cost electricity sources on the system. It creates an opportunity for energy intensive industries in Ireland.

Demand Response has also been shown to reduce energy costs in the market generally in jurisdictions where it is mature and functioning properly. This is due to the lower cost nature of the resource versus peaker power stations and the increased level of renewables penetration it facilitates. A further opportunity for Demand Response and the Smart Grid is evident in the leading role Ireland can play in its adoption worldwide. Ireland can play a leading role in the development and demonstration of systems and technologies to drive this industry. This can lead to a large employment and export opportunity for the country as a whole.

We believe that Demand Response and the Smart Grid represents and excellent new opportunity for economic Growth in Ireland we that Government Policy should recognise this opportunity.
Conclusion

We believe that Demand Side Participation and Demand Response should form a significant pillar of the government’s energy policy for the coming years. Already the resource has provided significant efficiencies, savings and reliability improvements to the National Grid, while also returning millions of Euros to industrial and commercial enterprises. Furthermore the opportunities it represents for the future have been recognised and measured internationally.

Specific to the content of this paper, Demand Response can be seen to deliver significant progress on all six of the governments stated priorities for country. This contribution takes the form of:

- Job creation
- Reduction of energy costs
- Reduction of energy imports
- Integration of renewables
- Empowerment of energy users
- Improvement of system reliability
- Leadership in an exciting new area of energy technologies

We ask that you therefore consider inclusion of Demand Response as a major part of the forthcoming White Paper and for any other policy documents which the government develops in future.