

RP7 Guidance Response

Kelvatek

Date: **4th May**

General Price Control Approach

Kelvatek welcome the regulators more nuanced approach to the price control, a 6-year duration with a possible mid-point reopener is the correct approach and would go some way to mitigating the uncertainties presented by the drive to net zero especially in light of the significant uncertainty presented by the electrification of heat and transport. We would urge the regulator to adopt this approach which would bring Northern Ireland broadly inline with the GB networks. This strategy allows the regulator the flexibility to ensure value for money for consumers while promoting a more resilient, future proof distribution network.

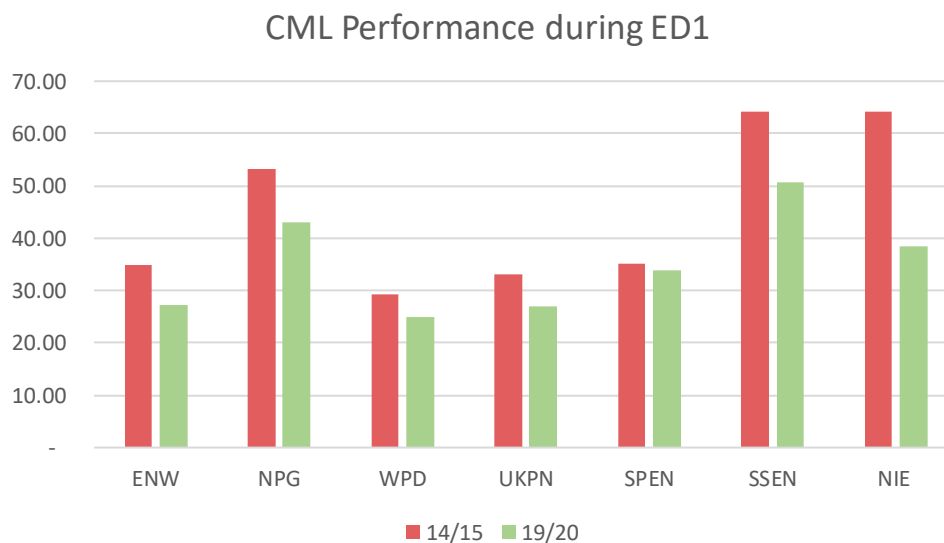
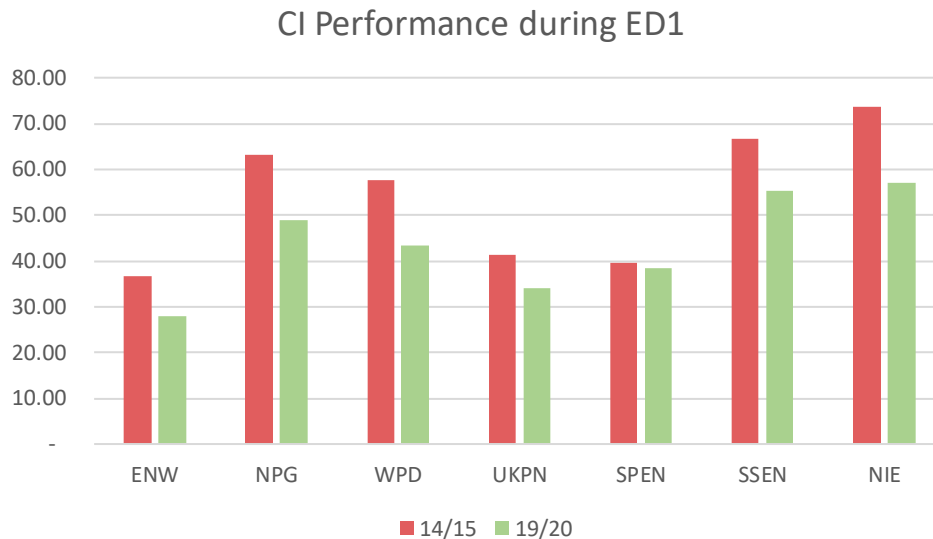
The 50/50 cost risk sharing mechanism may need to be adjusted for selected areas of the business plan submission depending on the broadness of uncertainty related to the projected spend, but overall the mechanism is largely in line with the GB networks.

In terms of CI/CML incentives we would encourage the regulator to bring itself inline with the current IIS scheme in GB. This has delivered a significantly more reliable network to consumers, with the financial motivation providing a real incentive to network operators in both the operational and asset management area of the network companies.

Within the GB Network incentives/penalties can equate to as much as £15 per interruption and £22 per hour of no supply per customer.

Kelvatek works with all the GB DNOs and NIE Networks to provide reclosing equipment (such as Bidoyngs and Weezaps) and services (Sapient Fault Assistance Centre) to provide fault locations from these devices to operational staff to reduce the impact of LV underground cable faults on customers. This technology has been further developed and now many network operators will move from a mixture of reactive and proactive fault management to a predictive and proactive fault management strategy. This strategy significantly reduces operational costs, decreases the number and level of short interruptions experienced by customers and delivers carbon efficiencies as the necessity to

repeatedly visit sites effected by transient faults in danger of progressing to permanent faults reduces significantly.



Sources:

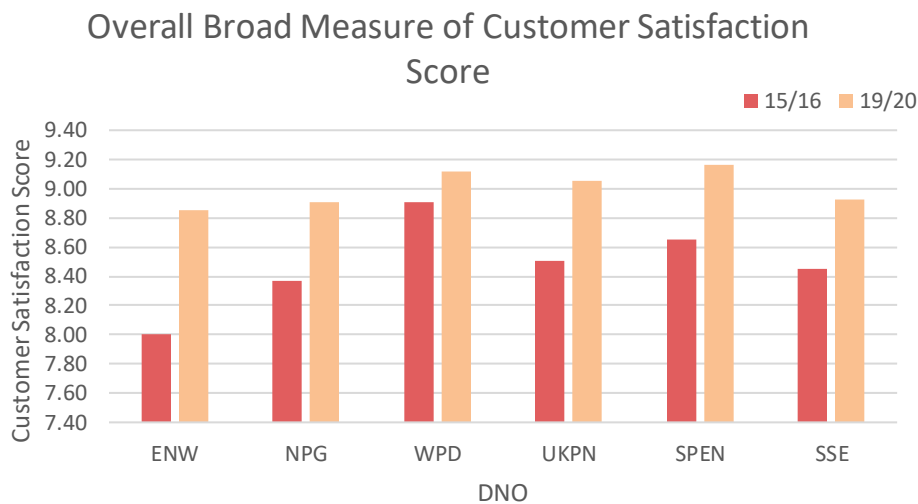
OFGEM RIIO ED1 Annual Report 2019-2020 Supplementary Data File

NIEN Condition 19 Transmission and Distribution System Performance Report 2020/21

GB DNOs target Customer satisfaction, (such as the Broad Measures of Customer Satisfaction score) and Guaranteed Standards of Performance metrics (e.g. penalties for outages >12hrs). Extended outages negatively affect both customer scores and incur penalties.

GB DNOs have historically not managed to spend their asset replacement and refurbishment budgets and overspent on operational support and faults. Moving areas of overspend to areas of underspend could potentially drive-up performance

for the consumer and improve network health, making it easier to maintain and enabling more connections.



Source: OFGEM RIIO ED1 Annual Report 2019-2020 Supplementary Data File

As the graphs show these financial incentives have provided significant improvements to the consumer experience, driving network operators to provide a greater level of network resilience and support while rewarding them for doing so.

Digitalisation & Data

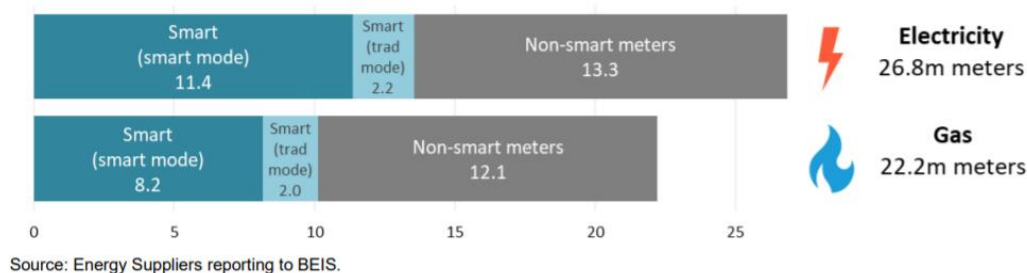
The data agenda for the energy sector was set when the Energy Data Taskforce (EDTF) shared its findings with the industry. Commissioned by the government, Ofgem and Innovate UK, the EDTF report about modernising the energy system through leveraging the huge amounts of data collected by network operators and other market operators had several key recommendations:

- Digitalisation of the energy system
- Maximising the value of data
- Visibility of data
- Coordination of asset registration
- Visibility of infrastructure and assets

Kelvatek welcome the focus in the business plan guidance on data & digitalisation, this is an area where all network operators have traditionally lagged behind the supply side of the industry as direct customer interaction is less frequent and traditionally the granularity of data collected at lower levels of the network are approximations rather than directly measured data. If Northern Ireland is to realise its Net-Zero ambitions, this approach especially at the lower levels of the network which is forecast to see a significant rise in new connections due to the electrification of heat and transport, will not be enough coming into the next funding period, RP7.

The GB DNO's have all published ambitious strategies concerning this area but underpinning of all these strategies is the assumption that they will have greater levels of LV visibility provided by a combination of SMETS-2 smart meters and low voltage monitors. One UK DNO quotes a figure of 80% smart metering penetration per feeder before useful outcomes can be derived from the GB smart metering roll out.

Figure 1: Almost half of all domestic meters with large suppliers are now smart meters
Great Britain, domestic meters operated by large energy suppliers
Q3 2021, millions



In light of this, all are pursuing a hybridised approach to their network visibility strategy deploying a mixture of advanced capability monitors that can provide many different functions such as predictive fault, cable health & LCT detection coupled with cheaper monitors that provide lower resolution load profiles to inform their network reinforcement strategy. In the longer term a combination of these types of monitors with smart meters will give varying degrees of coverage to the entire GB low voltage network.

As you will be aware Northern Ireland does not have a planned smart metering roll out, this means that the criticality of a mixture of high and low capability LV monitors is key to any data and digitalisation strategy. The models, data products and data access that can be developed to save consumers money, enable more LCT connection, defer reinforcement and make the network cleaner to run by reducing losses can only be realised with the underpinning data.

An assessment of the GB DNO's data & digitalisation strategies as well as a close track of the many OFGEM working groups dealing with the standardisation of data models such as the LTDS working group will provide an excellent insight into the

significant challenges the GB network operators face in defining common standards across the industry that allow consumers and third parties to plan investments, take advantage of new flexibility markets and provide other distributed generation services to different market actors.

The recognition from the Utility Regulator that NIE Networks will need specialist staff, outside of the traditional engineering disciplines to have a truly data driven business is encouraging. Addressing complex data science tasks like building and maintaining machine learning models, constructing data models and a host of other use cases would require a dedicated department within the NIE Networks organisation that can supplement different business units and operate within their specific fields of analytical interest. This allows experimentation with the data collected to find new and innovative solutions to business challenges, it enables the democratisation of data, opening up insights to the organisation and the wider industry while allowing the measurement of any impact of changes implemented on the network.

The type of roles that would normally fulfil these skill sets are data engineers, data scientists, machine learning engineers and developers, all with experience of working within the utilities industry or capable of working in partnership with subject matter experts.

These roles are in extreme demand across the entire business world as data drives many different sectors. Northern Ireland is home to leading academic institutions that both provide electrical engineering and the specialist roles mentioned above, it is also home to innovative businesses, who work in the energy sector that can work in partnership with NIE Networks as well as provide market insights into strategies adopted in GB and beyond.

One of the primary challenges NIE Networks will face is attracting this highly rarefied talent to the domestic energy industry in Northern Ireland, many young highly qualified people graduate from Northern Irelands prestigious academic institutions which give them access to an entire world of work, the key will be the regulator, NI Government and Private Enterprise working in tandem to establish graduate programs that attract the brightest and best Northern Ireland have to offer to help manage the transition to a digitalised energy network that enables the Net-Zero transition.

Delivering the Energy Strategy – pathway to net zero

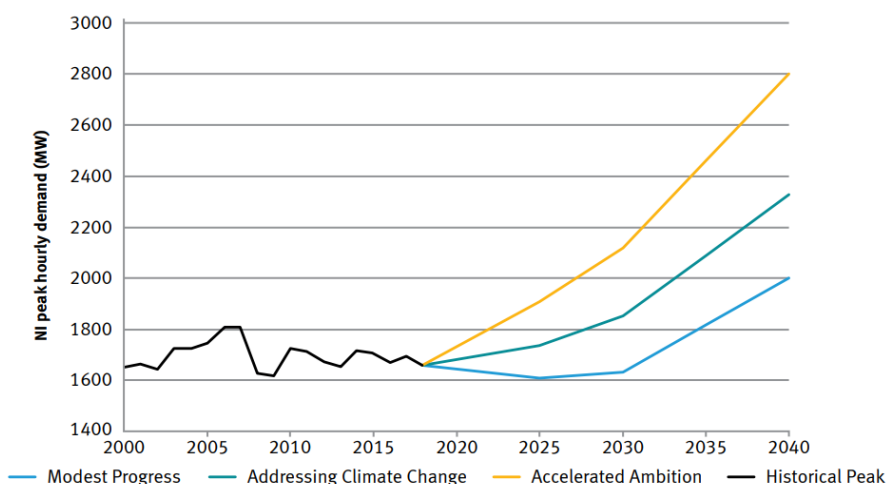
The electricity network faces several challenges.

- Connecting LCTs (EVs, Heat Pumps, Domestic Generation)
- NIE Networks forecast of increased demand – 50-70% by 2050
- An EV generates as much domestic load as an entire house
- A heat pump generates as much domestic load as 1.3 houses
- Intermittent domestic generation causes reverse power flows
- Large increase in regulated revenues

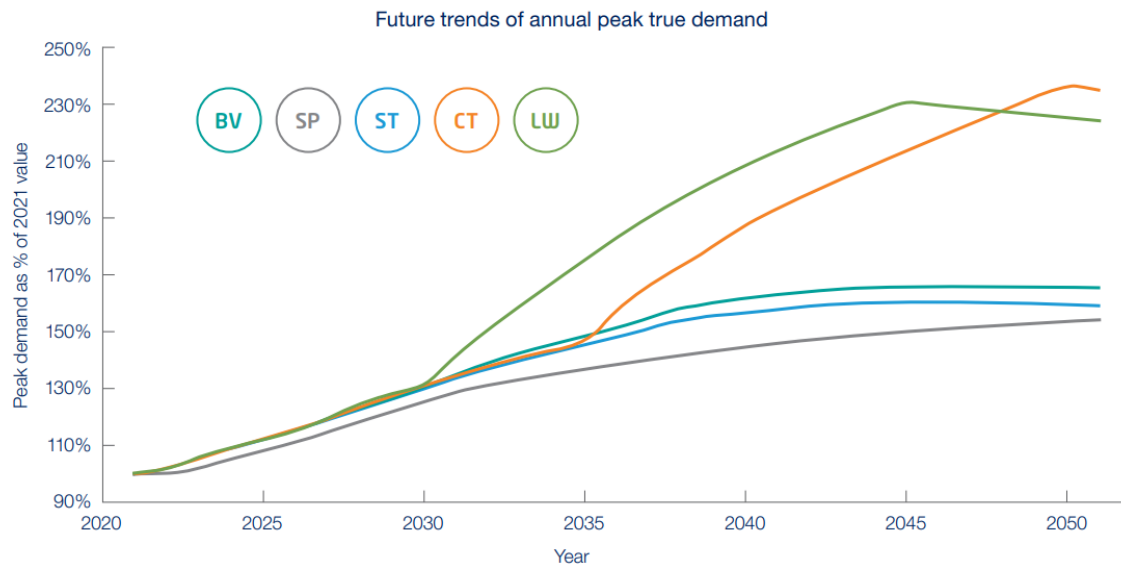
To avoid huge network reinforcement investment, the focus is on smart data driven solutions. Connecting more EVs and Heat pumps means:

- Network performance will be challenged
- Relies on monitoring to understand where the problems lie

The TESNI predicts 11.2% increase in Peak by 2030 under the Addressing climate change scenario and a 31% increase under the accelerated ambition scenario



By 2030 a comparable GB DNO is predicting peak demand grows by 30% across almost all scenarios that address Net Zero



The regulator must ensure that the funding award for the impacts of Net-Zero do not underestimate the level of investment needed to ensure network resilience while simultaneously promoting a greater level of new connections. As previously mentioned Kelvatek welcome the flexible approach to the new price control in light of significant uncertainties that are present in LCT uptake and the associated load growth. A comparable GB DNO has requested a 53% increase in funding in ED2 based off its forecasts, the average across the GB DNO's is 34%.

As part of all the GB DNO's business plans are network operator designed uncertainty mechanisms, where if certain conditions are met, or are not met, will trigger a variation in funding. OFGEM recognised that GB DNO's are well placed to estimate their own level of uncertainty and the funding variations needed to support their business plans. Does the utility regulator intend to give NIE Networks a similar level of control over uncertainty mechanisms, the conditions that trigger the mechanisms and the level of investment needed to fulfil any variation?

Network visibility will play a key role, especially at the low voltage level, in deferment of reinforcement. Some GB DNO's have submitted their business plans for the rollout of tens of thousands of LV monitors purely predicated on the investment savings from network reinforcement deferment. If Northern Ireland wishes to attain the same level of investment saving, LV monitoring, especially when considering the lack of a smart metering program, will need to enact a similar strategy.

This is not to say that a shorter term more targeted approach to network visibility, stacking benefits from load visibility, network resilience and asset health could not deliver large benefits, but in the longer term a more pervasive LV visibility deployment will be needed.

Innovation

Kelvatek note with disappointment that the Utility Regulator has not proposed a dedicated innovation fund for Northern Ireland. GB DNO's can take advantage of 3 separate innovation funding streams, NIA, NIC and SIF. The new Strategic Innovation Fund in particular highlights the need for broad whole system innovation to manage the energy transition, leveraging resources from the energy, water and gas distribution networks as well as transmission level cooperation. Northern Ireland faces the same transition and has a huge pool of renewable energy to call on to use in new and innovative ways. In the opinion of Kelvatek a dedicated energy innovation fund for Northern Ireland is needed to allow for no regret experimentation and development of new products and services that can meet the challenges of the NI distribution network. Kelvatek are a Northern Irish based company and working in partnership with GB DNO's have introduced products and services through the NIA and NIC fund that have revolutionised the way GB DNO's manage their LV network.

The BIDOYNG smart fuse which provides reclosing capabilities in under the regulatory limit for an interruption while providing accurate fault locations for underground low voltage cables, the WEEZAP which is a vacuum circuit breaker, that can also be utilised as a network switch and provide long distance protection and the RELINK a link box smart switch were all funded in part through these innovation funds and some are now utilised by NIE Networks. The WEEZAP is a key piece of technology behind Smart Street a pioneering project ran by Electricity North West which was deemed so innovative and beneficial to consumers in terms of reduction of bills that it received an award from the Innovation Rollout Mechanism. These products were all pioneered and developed in Northern Ireland.

In a broader context, if the regulator wishes to ensure that some of the brilliant graduates produced by local academic institutions remain within Northern Ireland and choose to work in the energy industry then it needs to promote this industry as the home of cutting-edge innovation. NIE Networks could lead energy innovation across the entire UK, instead of its current status as a 'fast follower'.