

# Open Networks

Embedded Capacity Register  
Inclusion of assets <1MW

December 2020



## Introduction

The following slides further consider ECR Use Cases and potential benefits to weigh up the extension of ECRs to include assets <1MW. The costs of extending and maintaining the ECRs are not considered at this stage.

The slides cover:

- Summary of Use Cases based on stakeholder engagement (slides 3 & 4).
- Summary of ECR user access and asset coverage (slide 5).
- Quantitative estimates of value based on i) Flexibility Market development, and ii) Capacity Market efficiencies (slides 6 & 7).
- Maximising value with limited input (slide 8).
- Proposed Next Steps (slide 9).
- Further slides (slides 10 to 12).

## Wider arguments for extending the ECR – Use Cases

Stakeholders were generally supportive of extending the ECR. Some were strongly supportive. Some were supportive but did not see this area as an immediate priority. (Further details of stakeholder views on slide 11)

Use Case	Description	How Value is Created	Stakeholder Views	Further Comments
<b>Improved NetCo Whole System Planning &amp; Operations</b>	Data sharing on resources <1MW could improve NetCo forecasting in longer & shorter term timescales.	More efficient investment in network reinforcement, flex services & balancing services. Small data improvements can provide large savings.	Supported by several stakeholders.	Could be achieved through NetCo data sharing and may not require wider ECR publication.
<b>DER Connections</b>	ECRs include location and timing information on existing and pipeline projects.	Information allows further projects to be more effectively located saving developer time and costs.	Supported by several stakeholders. Some further value in including assets < 1MW	
<b>Flexibility Market Enabler</b>	ECRs would allow providers and aggregators to engage further DER assets in providing services.	Extending ECRs makes further assets visible such that they will be able to participate in flexibility services more quickly.	Supported by several stakeholders. Some further value in including assets < 1MW	Similar arguments used to support Flexr project.

## Wider arguments for extending the ECR – Use Cases

Use Case	Description	How Value is Created	Stakeholder Views	Further Comments
<b>Capacity Market Operation</b>	Better information on assets and asset types can improve the efficiency of the capacity market.	DCP 350 case argued on improved technology “derating” factors and more accurate forecasting of capacity needs.	May be further value in including assets < 1MW .	Given CM value, small improvements provide large gains. But not clear there are further benefits in extending below 1MW.
<b>Local Smart Energy System Facilitation</b>	Stakeholders can identify local assets and participants for local schemes.	Existing and pipeline projects can be engaged early in local schemes.	Supported by several stakeholders. Some further value in including assets < 1MW	There are a limited number of local schemes.
<b>CO<sub>2</sub> Management and Reporting</b>	Better information on assets & fuel types enables a more complete picture of electricity carbon intensity.	E.g – the CO <sub>2</sub> intensity of ancillary services can be estimated by knowledge of resource types and services provided.	Supported by several stakeholders.	ECRs would provide a limited solution as the real-time usage of assets would also be needed.
<b>Wider Innovation Benefits</b>	ECRs make data available to a much wider set of stakeholders.	Sharing new data will promote opportunities not currently envisaged.		.

## ECR Use & Asset Visibility – Some Dimensions

### Existing ECR Asset Coverage and User Access

- The existing ECRs include around 5000 assets >1MW capacity.
- Monitoring indicates that ECRs are being accessed 35 to 60 times per month per DNO.

Number of Assets>1MW	Connected Assets	Accepted to Connect Assets
4964	3376	1588
Total MW Reported	MW Connected	MW Accepted to Connect
61450	29990	31460

### Extending the ECR to include assets down to 50kW

- There are 2 to 3 times<sup>[Note 1]</sup> additional connected assets in the range 50kW to 1MW.
- Assume each of these has an average size of 300kW.
- The additional reported assets would amount to circa 8000 and would total around 2500 MW of connected capacity.

[Note 1] – Based on estimates from 2 DNOs



## Quantitative Argument 1 – Enabling flexibility markets

One area of value is to bring forward flexibility markets and thereby avoid network costs.

(Note - Elements of this argument are drawn from the Flexr business case)

	Item	Annual Cost (£/MW)
1	Equivalent Annual Cost of deploying smart hardware based solutions. <sup>[Note 1]</sup>	20000
2	Equivalent Annual Cost of flexibility services. <sup>[Note 2]</sup>	15000
3	Incremental value of flexibility cost	5000

Note 1 - e.g. solutions such as “Active Response”, “LV Engine”, “FUN LV”, “Smart Street”

Note 2 – costs from recent flexibility tenders.

- Making a further 2500MW of resources (estimate in 50kW to 1MW range) more visible to participants will support the development of flexibility markets and bring £ benefits.
- If we assume a %age of these additional resources would participate in flexibility markets because they are more visible through the ECR, the value would be:

%age attributed to ECR Visibility	1%	2%	5%	10%
Annual benefit of ECR	£0.125m	£0.25m	£0.63m	£1.25m

## Quantitative Argument 2 – Improving the Capacity Market

Another area of potential value through may be to improve Capacity Market (CM) efficiency.

- For the DCP 350 change, it was argued that improved data visibility could improve the derating factors used for different resource types. If there is over-procurement of capacity because incorrect derating factors are used, this leads to additional costs.
  - Avoided over-procurement of 100MW say at a clearing price of £25/kW would save £2.5m.
- Also, more accurate forecasting of underlying demand and capacity requirements could allow a lower target capacity to be set for CM auctions. This could in turn lead to a lower clearing price for successful parties.
  - For example, if the CM auction is seeking 50GW of capacity, a £0.1/kW lower clearing price would lead to a saving of £5m.

A more accurate view of resources <1MW will improve CM efficiency but it is not yet clear how much £m benefit could be attributed to the ECR changes.

## Maximising Value with Limited Input

- If the resources to support extension of the ECRs are limited, one approach could be to focus on higher value subsets of assets.
- Some stakeholders would welcome this approach if full coverage of assets below 1MW cannot be provided.
- Different stakeholders prioritise different types of assets and different data attributes but the more frequently mentioned asset types to include are:
  - Storage resources
  - Solar and wind powered resources
  - Resources providing services to DNOs and the ESO
- In addition, particular geographical areas and/or data fields could be focussed on.
- This approach could be more straightforward to apply as:
  - Extensive data on these resource subsets may already exist.
  - The simple spreadsheet solution currently used could continue to be applied.
- However, the need to filter out particular sets of assets would also add to workload



## Conclusions & Proposed Next Steps

### Conclusions

- Stakeholders are generally supportive of extending ECRs and identified areas of potential value.
- The quantitative arguments are inconclusive. (They are based on broad assumptions and much of the Use Case value has already been accessed through making assets >1MW more visible.)
- The numbers of assets in the range 50kW to 1MW may mean that the costs and complexity of extending ECRs may not be as great as previously thought.
- If resources are limited, it may be best to focus on higher priority areas of data drawing on existing data sets. These might include particular resource types, geographical areas and data fields.

### Proposed Next Steps

- Subject to Steering Group views, the WS1 P1 team could carry out work in early 2021 to firm up:
  - Resource required to extend ECRs to include >50kW assets for i) all asset types, and ii) priority asset types, priority geographical areas and priority data fields.
  - A preferred technical solution given the numbers of assets and types of changes (e.g. Extend existing Excel ECRs or database solutions).
  - A timescale over which the changes could be implemented.

## Further Slides:

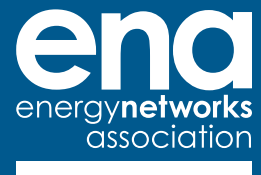
- Stakeholder Views
- Summary points from Ofgem CFE on Distributed Generation

## Extending the ECR – Stakeholder Views from 1-2-1 Interviews

Stakeholder	Summary
ADE	<ul style="list-style-type: none"> <li>• Maybe too many projects/initiatives doing similar things FlexR, RecordER, MEDA etc.</li> <li>• Members are becoming less willing to share information about their assets.</li> <li>• ADE support lowering the threshold but not perhaps a matter of urgency.</li> </ul>
STA	<ul style="list-style-type: none"> <li>• Value in including assets above 50kW. (Solar assets &lt;50kW are in micro-generation certification scheme).</li> <li>• The ECR data would i) improve resource deployment/planning, ii) improve forecasting and, iii) improve investment appraisal.</li> </ul>
ReGen	<ul style="list-style-type: none"> <li>• One use case is the Rugeley Smart Local Energy System. The ECR has helped identify participants including existing and pipeline projects. Other demonstration projects are being assessed.</li> </ul>
Cornwall Insight	<ul style="list-style-type: none"> <li>• Would like ECRs to identify resources in ANM zones (as well as those in ANM schemes.)</li> <li>• &lt;1MW resources may support the use of flexibility services including residential flexibility.</li> <li>• May be value in focussing on particular resources (e.g. Storage, CHP, Industrial sites).</li> <li>• One use case may be around better understanding the CO2 intensity of flexible services.</li> </ul>
Centrica	<ul style="list-style-type: none"> <li>• Use Cases are new connections, flexibility services, and local smart system arrangements.</li> <li>• Becoming less enthusiastic about publicising &lt;1MW. Concerns about GDPR.</li> <li>• Would like to see better information on network capacity and constraints.</li> </ul>
CEE	<ul style="list-style-type: none"> <li>• Potential value for bringing together community energy schemes.</li> </ul>
BEIS	<ul style="list-style-type: none"> <li>• Strongly supportive of extending register.</li> <li>• Should be wider value for DNOs in whole system planning and operation.</li> </ul>

# Non-NetCo Responses to Ofgem Call for Evidence on DG

Response		Points in respect of Generation Visibility (NOT A FULL SUMMARY OF THE RESPONSE)
1	Association of Meter Operators	<ul style="list-style-type: none"> <li>Distributors should already be able to identify all major generators connected to their Distribution system.</li> <li>There is already a Distribution Code requirement to advise Distributors of connected generation.</li> <li>Distributors also have access to the data used for DUoS charging. Every site with a registered export MPAN (&gt;30kW BSC requirement) is identified. The only generators that may not be apparent are those embedded in a site and stand-by generation which does not operate in parallel with the distribution system.</li> </ul>
2	BUUK Infrastructure	<ul style="list-style-type: none"> <li>Could provide information, as per DCP 350, down to a lower threshold based on connection agreements.</li> <li>Significant investment would be required to monitor, collect, store and disseminate data.</li> <li>Ofgem should play a central role in CBA to ensure information provision is in the best interest of consumers.</li> </ul>
3	Centrica	<ul style="list-style-type: none"> <li>Support work to date to improve the visibility and transparency of assets connected on the networks.</li> <li>Consider if DG should provide a data feed to the ESO on assets connected such as generation profile.</li> </ul>
4	EDF	<ul style="list-style-type: none"> <li>It is probable that the programme to change the loss of mains relays would be making more progress if a comprehensive register of distributed generators (with protection data) had been in place.</li> <li>Potential savings in RoCoF management costs (forecast to exceed £400M this year).</li> </ul>
5	LCCC	<ul style="list-style-type: none"> <li>Concerned that details within the A.BMU (additional BMU) filename may be commercially sensitive and therefore cannot be published. This will impair the completeness of the dataset of the distribution register.</li> </ul>
6	RenewableUK	<ul style="list-style-type: none"> <li>Support the objectives of DCP350 and the work carried out on the SWRR which has increased visibility of DG.</li> </ul>
7	ScottishPower Renewables	<ul style="list-style-type: none"> <li>Don't believe there are regulatory or legal barriers that would stand in the way of improving the visibility of DG. Rather, there is a lack of clarity around the expectations for these assets when operating at the DNO level.</li> </ul>



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