

Granular Energy: Response to Ofgem's Call for Input on the Future of Distributed Flexibility Markets

1. What do you think distributed flexibility could contribute to the energy system?

Granular Energy broadly agrees with the benefits of distributed flexibility outlined in the main document.

2. Will a focus on CER flexibility also help enable other forms of flexibility, especially distributed flexibility?

Yes.

Yes, enabling CER flexibility implies building information sharing networks and other systems that are crucial to other forms of distributed flexibility as well.

3. Is there a 'case for change' and a need for a common vision for distributed flexibility?

Yes. There are currently very limited incentives for flexibility on the grid, especially distributed flexibility, and the creation of effective incentives requires a common vision that both creates incentives for flexibility and allows participants to effectively respond to these incentives.

4. What is your vision for how to accelerate the delivery of accessible, coordinated and trusted markets for distributed flexibility?

As renewables increase their share of electricity production, energy consumers and producers will need some kind of signal to change their behaviour based on the availability of intermittent renewable energy generation. The most effective coordination mechanism for this purpose would be an hourly price signal for renewable energy. However, the pricing mechanism for renewable energy in the UK is currently based on the REGO system, which only offers a price signal on an annual granularity, which therefore cannot incentivise consumers to respond to intra-day, or even seasonal, variations in the availability of clean energy on the grid. An hourly price signal for clean energy, however, incentivises consumers to shift their demand to times of the day when clean energy is plentiful, and away from periods when renewables are scarce. A [study](#) from Princeton University on the Californian grid has shown that the creation of an hourly price for renewable energy can create renewable energy prices that vary by up to \$106 within a single day, creating a very strong incentive for flexibility assets such as batteries or other distributed flexibility resources to perform arbitrage on the intra-day clean energy certificate price, by changing their consumption behaviour. Furthermore, introducing locational restrictions on how these hourly REGOs are traded, based on the capacity of the distribution and transmission networks, can be used as a next step to create what in effect are local energy markets, which can then be used to incentivise distributed flexibility that also benefits the local distribution network. Thus, were there to be a glut of renewables in the North of the UK, and a penury in the South, consumers in the North would be incentivised to increase their consumption, and in the South consumers would be incentivised to reduce their consumption by the local, hourly REGO price differentials.

5. Will certainty of an end vision help accelerate enabling work and make it cohesive?

Yes. There is already a lot of scepticism surrounding REGOs in the UK, and several [companies](#) are moving away from them, because they have identified that they do not currently incentivise flexibility or investment in renewables in the way they should. However, the creation of an hourly clean energy certificate system, as is currently under development in countries such as Germany, the Netherlands, and Denmark via the [Energy Track and Trace](#) consortium of TSOs, can create certainty for flexibility assets such as batteries by providing reliable revenue streams.

6. When should a common digital energy infrastructure be in place? And therefore, when should development begin?

Common digital energy infrastructure is essential for the creation of hourly REGO markets, and therefore this infrastructure needs to be put in place as quickly as possible, preferably within the next two years. Development should begin as soon as possible.

7. What should a common digital energy infrastructure look like, and why? Please consider the archetypes or develop your own proposition.

The infrastructure on which flexibility markets will depend is the REGO registry, currently provided by OFGEM (The CHP and Renewables Registry), and this registry needs to be moved to an hourly granularity. The [EnergyTag](#) standard sets the international guidelines for hourly energy certificate registries, as well as common API standards that allows flexibility market participants easy access to data on their current certificate holdings. We would propose an archetype similar to the medium archetype, with the hourly REGO registry used as the source of trust and transparency in the various markets. We would envisage multiple different markets, specifically a futures market, a day-ahead market, and an intra-day market for hourly REGOs, which will provide accurate price signals for flexibility assets to coordinate their operations based on.

8. What is your view on the desirability and feasibility of the archetypes or your own alternative proposition?

Granular Energy would argue in favour of the medium archetype, due to its balance of flexibility in terms of the ability for different types of markets to co-exist and interact, and centralised governance, through a registry, which allows the high level of transparency that is necessary for efficient markets.

9. Should a common digital energy infrastructure be new-build, or should it build-out from existing infrastructure?

Some of the infrastructure can be new-build, but re-using existing infrastructure is preferable, for example by upgrading the existing REGO registry to allow hourly, Watthour granularity on its energy certificates.

10. What are the important areas for consideration when designing institutional delivery models for a common digital energy infrastructure?

Transparency is essential for fostering trust in the system, as it is the lack of transparency in the REGO system that has played a large role in the discontent currently aimed at the system by various market participants. Thus the creation of an easy-to-access (hear: API-accessible) hourly registry for clean electricity certificates will be an essential consideration when designing the institutional delivery models for digital energy infrastructure. Granular Energy also wants to highlight that NationalGridESO is a more natural curator of the registry than a regulator such as OFGEM, as TSOs

already have access to most of the data and expertise necessary for running an hourly REGO registry, and are also neutral, trusted actors within the energy market.

11. What are the important areas for consideration when designing financial delivery models for a common digital energy infrastructure?

No opinion.