AEMC

INFORMATION

Potentially significant benefits from integrating price-responsive resources

Integrating price-responsive resources can deliver significant cost savings

We have published modelling results indicating $1.5-$1.9b of potential net present value cost reductions from undertaking reform to integrate price-responsive resources in the National Electricity Market (NEM). These substantial figures underscore the significance of progressing with the rule change promptly.

Price-responsive behaviour will increase and needs to be incorporated

Households and businesses are increasingly taking up batteries, electric vehicles, solar panels and home energy management systems. These resources are being aggregated by energy service providers (retailers and aggregators) to form Virtual Power Plants (VPPs) which are actively responding to price signals in the NEM. There are also commercial and industrial resources such as chillers and hydrogen electrolysers which could be price-responsive and have a significant impact on the energy market in the future.

Currently these price-responsiveness resources are not effectively integrated into the NEM. They are not appropriately considered when determining how much electricity demand needs to be met, how to meet this demand and the price at which electricity is purchased.

The modelling was to understand the potential maximum benefits of reform

Submissions to our consultation paper in August 2023 generally agreed that an increasing amount of invisible and unscheduled price-responsive resources would result in inefficiencies and challenges for the operation of the system. However, some stakeholders wanted more definition of where and when specific inefficiencies arise. On 14 December, we published an update paper indicating that we would undertake modelling to better understand the benefits of the rule change; this publication provides this modelling.

We engaged IES to answer the question: what are the potential benefits of undertaking a reform to better integrate unscheduled price-responsive resources into the NEM? The benefit modelling assumes there is full participation from all devices/participants that are capable of participating.

IES modelled three different potential worlds between 2025 and 2050.

- **Base case**: this is the no reform world, where no rule change is made. AEMO's forecasting systems attempt to identify potential price-responsive resources in its demand forecast without specific reliable information in operational timeframes. Substantial increases in these resources over time lead to material demand forecasting errors and consequential inefficiencies.
- **Visibility**: this is a 'generic' visibility reform. It has the following core features, but is not related to a specific visibility proposal. Price-responsive resources remain unscheduled and are not dispatched by AEMO. However, participants submit information in operational timeframes to AEMO which reduces demand forecasting errors. The lower barriers to entry incentivise higher participation than the Dispatch world. However, this is offset by lower forecast accuracy than in the Dispatch world.
- **Dispatch**: this is a 'generic' dispatch reform. It has the following key features. Resources are integrated into central dispatch and scheduling processes. Modelling assumed higher barriers to entry than Visibility, resulting in lower participation. However, participation in central dispatch means higher forecast accuracy and higher participation in frequency control markets because of dispatchability.

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Substantial cost savings support progressing the rule change promptly

Without reform, the lack of visibility results in significant forecasting errors. Through reform to provide operational information and/or direct participation of these resources there are significant cost reductions.

The key benefits for the rule change are:

- lower FCAS requirements (between $711 and $889 million NPV);
- lower use of scheduled generation;
    - resulting in lower emissions (between $514 and $719 million NPV), and
    - lower generation costs (between $154 and $186 million NPV), and
- lower requirements for emergency reliability measures ($121 million NPV).

In addition, reform is expected to lower spot prices (between $10 and $11 billion NPV) and FCAS prices (between $586 and $738 million NPV).

These substantial figures underscore the significance of progressing the rule change. Furthermore, the benefits begin to arise immediately, with a sharp increase to 2030 (that is, reflecting the increase in price-responsive resources) and continue throughout the period to 2050.

The AEMC will further develop solutions and an understanding of how to achieve the greatest benefits

On 19 February, the AEMC will be holding a public forum to provide an overview of the Commission's work to date on the rule change, including the potential benefits modelling. The forum will allow stakeholders to ask questions and provide comments.

This modelling estimates the potential benefits. The second stage of the cost-benefit analysis will be considered in May when the design of the solutions is sufficiently progressed to be able to cost them. Furthermore, we will determine, based on the solution design, how much of these potential total benefits can be achieved.

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