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Uncertainty, Regulation and the Pathways to Net Zero

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In this paper we focus on suggestions on how energy regulation needs to change in the light of the likely ongoing and possibly increasing uncertainty which the path to net zero involves.

Net zero involves a significant challenge for conventional economic regulation of electricity and gas sectors. Many energy regulators already struggle with the conventional regulatory trilemma of keeping prices down, delivering adequate security of supply and minimising environmental impact. Add a hard target of delivering economy wide net zero by an exact date and the conventional energy trilemma either threatens an explosion of system costs and/or a substantial deterioration in quality of service. Even leading jurisdictions are beginning to experience the degree of the challenge they face.

If possible, economic regulation needs to rise to the challenge of net zero. In doing this, we argue that regulation will have to get better at learning by incorporating information from the past, the present and the future as it unfolds. It will have to do this in conditions where there is currently a large amount of uncertainty, some of which could be reduced by government policy but much of which will have to be lived with for the foreseeable future, until net zero is realised (or abandoned as a policy goal). Economic regulators are one part of the energy system governance landscape in any jurisdiction, and they can only play the hand that they have been dealt as well as possible.

We argue that there are things that regulators can do in the circumstances (and that their governments could encourage them to do). We begin with a discussion of the uncertainty problem of regulation on the path to net zero. Next, we consider what regulation for net zero should focus on. We then move on to the role of regulation within the national

governance system for the energy sector. After this we outline how best practice regulation should evolve in the light of both theory and experience. Finally, we introduce some possible regulatory lessons from other sectors, namely water, autonomous vehicles and airports.

We argue that net zero implies a high and continuing level of uncertainty facing energy regulators which they will have to both manage and live with.

To some extent regulators can know what net zero implies for the scale of the challenge they face and the continuing importance of good economic regulation. Net zero is an increasing economic challenge which requires increasingly good economic regulation of the energy sector.

Institutional arrangements around regulation, likely, need to change in the face of net zero. Regulators need complementary institutional structures with which to work, and they need sufficient powers to do their job effectively. Possible institutional changes may involve vertical and horizontal reorganisations of the energy sector and the strategic use of public (and private) ownership. It would be surprising if industry ownership and sector governance structures designed prior to the net zero era could not benefit from some reorganisation.

Best practice regulation continues to evolve. Theories of regulation suggest key roles for both learning and for trade-offs in regulation. We advocate for the development of a 'learning regulator' which simultaneously learns from the past (dynamic regulation), in the present (responsive regulation) and anticipates future learning points (adaptive regulation). While current best practice regulation involves the first two types of learning, the third remains a work in progress.

Other regulated sectors can offer lessons for energy. We highlight some examples from water, road transport and airports where regulators are implementing the features of both responsive and adaptive regulation to better deal with uncertainty.

This paper has looked at how even best practice current regulation might need to evolve to meet the challenges of net zero. However, many jurisdictions cannot hope to facilitate net zero with regulatory systems that are a long way from best practice. For them learning the lessons from existing best practice regulation remains the priority.

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