

# Scarcity Pricing & Default Buyback Technical Group

## Framework for cost benefit assessment

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### Purpose

1. Section 172F of the Electricity Act 1992 (the Act) requires the Electricity Commission to seek to identify all reasonably practicable options for achieving the objective of a regulation, and assess the benefits and costs of each option.
2. The Act does not specify a requirement to undertake a quantitative cost benefit analysis, but the Commission seeks to do this where it is practical.
3. This paper describes the framework the Commission proposes to adopt for assessing the costs and benefits of scarcity pricing and default buyback mechanisms. It sets out:
  - the intended approach for making a quantitative assessment of costs and benefits;
  - the categories of potential benefits that will be assessed; and
  - the categories of potential costs that will be assessed.
4. The paper concludes with a brief discussion of the limitations that need to be borne in mind with quantitative cost benefit assessments. For these reasons, the Commission may also consider qualitative issues in its assessment.
5. Feedback is sought on the proposed framework, so that any necessary modifications can be made before the framework is actually applied.

### Proposed approach for quantitative assessment

6. It is intended that a conventional cost benefit analysis will be undertaken of scarcity pricing/default buyback mechanisms.
7. The key steps in this approach are:
  - identify the set of changes that will be evaluated (the factual case) and the alternative if scarcity pricing/default buyback mechanisms do not proceed (the counterfactual case);
  - estimate the expected annual costs and benefits of scarcity pricing/default buyback mechanisms, relative to the counterfactual; and
  - convert the estimated future costs and benefits into present value terms, to derive an overall net benefit estimate.

### Factual case

8. In terms of the factual case, this will obviously depend on the outcome of the design processes for scarcity pricing and default buybacks.
9. At this point, it is envisaged that a single factual case will be evaluated based on the combined effect of the proposed scarcity pricing and default buyback mechanisms. The factual may also incorporate the effect of other Market Development Programme initiatives if relevant, such as a locational price risk management tool.
10. If there is a realistic prospect that some elements might be implemented without others, then separate factual cases will be required.

### Counterfactual case

11. In terms of the counterfactual, it is expected that this will largely mirror current arrangements.
12. The only potential modification that is apparent at this time is the treatment of the Reserve Energy Scheme. The government has introduced legislation to terminate this scheme, and it may therefore be unrealistic to treat the Reserve Energy Scheme as part of the counterfactual.

Question: What is your view of the proposed counterfactual to scarcity pricing/default buybacks?

### Annual costs and benefits

13. Costs and benefits can be analysed from the perspective of New Zealand as a whole (i.e. economic efficiency effects) or from the perspective of electricity users (i.e. including costs and benefits which are transfers from/to other parties).
14. In previous cost benefit analysis<sup>1</sup>, the Commission has focussed primarily on economic efficiency effects.
15. However, one of the specific concerns raised in relation to scarcity pricing is the potential impact on aggregate prices from an increased exercise of supplier market power.
16. If such an effect did occur, it would not necessarily cause an economic efficiency loss<sup>2</sup>, but instead shift wealth from consumers to suppliers. The possible magnitude/likelihood of this effect could be a consideration in assessing the merits of

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<sup>1</sup> For example, when considering transmission investment proposals, and in assessing the net benefit of locational price risk management tools.

<sup>2</sup> Strictly speaking, it would depend on whether change in prices caused a distortion in consumption, and/or induced less productive efficiency.

scarcity pricing/default buybacks, even though it would not be an efficiency loss per se.

17. In light of these factors, it is proposed that the cost benefit assessment will treat economic efficiency consequences at the national level as its primary focus.
18. However, separate consideration will be given to the potential impact of scarcity pricing/default buybacks from the perspective of electricity users.

Question: What is your view of the basis for assessing costs and benefits of scarcity pricing/default buybacks?

### **Time period and discount rate**

19. The estimated annual costs and benefits will be considered over a defined time period. In the case of scarcity pricing, it is important to use a time period that is sufficiently long to incorporate investment effects.
20. For this reason, a time period of 20-25 years is proposed. This corresponds to the time that an investor in a new generation plant would use for assessment purposes.
21. It is proposed that the discount rate applied to cash flows will be the same as the default rate used for the Grid Investment Test. That rate is currently set at 7% in pre-tax real terms.

Question: What is your view of the proposed assessment timeframe and discount rate?

### Sources of potential benefits

22. Three sources of *potential* benefit have been identified from scarcity pricing/default buybacks.

### **Investment adequacy**

23. The introduction of scarcity pricing/default buybacks is intended to improve incentives for investment in high merit order plant/demand-response capacity. If there is insufficient resource of this nature on the system, it will lead to excessive involuntary demand curtailment, with an overall cost to the economy (and consumers).<sup>3</sup>
24. It is intended that quantitative and scenario analysis will be undertaken to estimate the likelihood and magnitude of these benefits.

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<sup>3</sup> If the Reserve Energy Scheme were to be retained, a different outcome might be expected. Instead of excessive demand curtailment, it is likely that further investment in Reserve Energy scheme resource would occur. However, this is unlikely to produce a least cost mix of supply and demand response.

## Operating decisions

25. The introduction of scarcity pricing/default buybacks is intended to improve incentives for the management of fuel resources (dry year energy context) and for commitment of plant/voluntary demand response (in the real time capacity context).
26. If there is inadequate incentive to efficiently manage fuel or commit plant/offer voluntary demand response, it will lead to excessive involuntary demand curtailment.
27. It is intended that quantitative and scenario analysis will be undertaken to estimate the likelihood and magnitude of these benefits.

## Downstream confidence

28. Users' confidence in the electricity system is reported to have been undermined in recent years by repeated security scares, such as the 2001, 2003, and 2008 'dry years'.
29. Anecdotal evidence also suggests that these concerns may have reached a level where it affects some parties' willingness to undertake further demand-side investment in New Zealand (this issue appears to have been a consideration in the Ministerial Review of the Electricity Sector undertaken in 2010).
30. These concerns by downstream parties could be reduced by scarcity pricing/default buybacks. It is intended that quantitative and scenario analysis will be undertaken to estimate the likelihood and magnitude of these benefits.

Question: What is your view of the proposed categories of potential benefit? Are there any others that should be considered?
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## Sources of potential costs

31. Three sources of *potential* cost have been identified from scarcity pricing/default buybacks.

## Implementation and running costs

32. Implementation and running costs would include items such as changes to market software and system testing for scarcity pricing. In the case of default buybacks, retailers are likely to need to make some changes to their systems (though the extent will vary with different options). In each case, it will be important to identify the *incremental* cost, as this may vary over time.
33. The estimated magnitude of these costs will be developed based on past experience and industry knowledge.

### **Distortion to dispatch signals**

34. The introduction of scarcity pricing/default buybacks may create unintended distortions to dispatch decisions. For example, a scarcity price floor applied during public conservation campaigns could have the unintended effect discouraging thermal generation leading up to the floor trigger point. If this occurred, it would give rise to an economic cost in the form of higher thermal fuel burn and/or hydro spill.
35. It is intended that quantitative and scenario analysis will be undertaken to estimate the likelihood and magnitude of these costs.

### **Competition effects**

36. As noted earlier, a potential concern about the introduction of scarcity pricing is the extent to which it might increase supplier market power at times of tight supply. If this occurred, it could reduce competition in:
  - the wholesale market by making it harder for non-portfolio generators to enter or expand their positions; and/or
  - the retail market by increasing the risks for net purchasers.
37. If these effects were to arise, they could cause two forms of economic cost:
  - an increase in market prices, which distorts consumption decisions; and/or
  - reduced pressure on suppliers to operate efficiently, resulting in excessive costs.
38. There is a separate but related concern arising in relation to default buybacks, which may deter entry/expansion of retailers.
39. It is intended that quantitative and scenario analysis will be undertaken to estimate the likelihood and magnitude of these effects and consequent costs.
40. In addition, as noted earlier, competition effects may give rise to costs which are transfers from consumers to producers, rather than economic losses from a wider national perspective. The planned quantitative and scenario analysis will also seek to assess the potential for these effects.

Question: What is your view of the proposed categories of potential cost? Are there any others that should be considered?
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### **Limitations of quantitative assessments**

41. The preceding discussion described the planned approach for undertaking a quantitative assessment of scarcity pricing and default buybacks. In common with other assessments of this type, there are some important limitations that need to be borne in mind.

42. Assumptions will need to be made about some issues (e.g. behaviour of different categories of market participant). In some cases, the results may be quite sensitive to these assumptions. For this reason, the effect of varying the most important assumptions will be reported as sensitivity cases where this is practical.
43. Given the expected range of uncertainties, the overall result for net benefits is likely to be reported in the form of a range, rather than a single point estimate. It is possible that the range of uncertainty may be large relative to the central estimate - in which case the overall result may not be clear.
44. Even if this is the case, it appears worthwhile to undertake a quantitative analysis. It requires a disciplined approach to be adopted, and makes it easier for parties to understand the key areas of judgement. It could also shed useful light on qualitative issues (such as the relative balance of risks) on which a final decision might rest.

### Advice sought from SPDBTG

45. Advice is sought from SPDBTG on the following questions.

1. What is your view of the proposed counterfactual to scarcity pricing/default buybacks?
2. What is your view of the basis for assessing costs and benefits of scarcity pricing/default buybacks?
3. What is your view of the proposed assessment timeframe and discount rate?
4. What is your view of the proposed categories of potential benefit? Are there any others that should be considered?
5. What is your view of the proposed categories of potential cost? Are there any others that should be considered?