

# Enabling the system operator's Dispatch Service Enhancement project

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Decision

14 August 2018



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# 1 We have decided to amend the Code and the Approved Systems Document

- 1.1 The Electricity Authority (Authority) has decided to amend the Electricity Industry Participation Code 2010 (Code) and the Approved Systems Document. The amendments enable the system operator's Dispatch Service Enhancement (DSE) project to replace the existing GENCO system it uses to issue electronic dispatch instructions. These amendments allow the system operator to adopt two alternate communication protocols for dispatch: Inter-Control Center Communications Protocol (ICCP) and web services.<sup>1</sup>
- 1.2 The amendment to the Approved Systems Document:
  - (a) introduces two new approved systems for the system operator to issue electronic dispatch instructions under clause 13.76 of the Code (ICCP and web services)
  - (b) applies a sunset clause for GENCO's status as an approved system for that purpose of 31 December 2020.
- 1.3 The amendment to the Code:
  - (a) simplifies clauses 13.71, 13.73, and 13.84 by removing unnecessarily repetitive or specific language
  - (b) improves clause 13.76 by clarifying that ancillary service agents should also be dispatched by an approved system, or by other means stipulated in an ancillary service arrangement (but without stating what they may be)
  - (c) simplifies clause 13.79 by removing the requirement for generators and ancillary service agents to use 'reasonable endeavours' to acknowledge receipt of dispatch instructions within three minutes
  - (d) introduces provisions in clauses 13.79 and 13.81 allowing the system operator to agree alternate dispatch acknowledgement arrangements with a participant (eg, automated, or no acknowledgement required)
  - (e) clarifies that generators (13.83) and ancillary service agents (13.84) should have staff or facilities available to acknowledge dispatch instructions, subject to any alternate agreement with the system operator
  - (f) simplifies clause 13.86, and clarifies that instantaneous reserve and frequency keeping are not subject to the dispatch thresholds.
- 1.4 The final amendments to the Code and the Approved Systems Document are contained in Appendix A and Appendix B, respectively.

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<sup>1</sup> The system operator's DSE project is detailed on its website at <https://www.transpower.co.nz/system-operator/so-projects/dispatch-service-enhancement-project>.

## 2 The amendments will promote our statutory objective

### **Replacing GENCO with alternate communication protocols will improve competition, reliability, and efficiency**

- 2.1 The amendments will improve competition, reliability, and efficiency by:
- (a) ensuring secure and reliable delivery of dispatch communications
  - (b) reducing technical barriers to market entry and participation, including for new technologies and business models
  - (c) increasing flexibility and reducing complexity of the dispatch service.

### **The benefits of this amendment will outweigh higher costs identified after consultation**

- 2.2 We expect the system operator's DSE project will result in quantitative net benefits with a present value of \$0.133 million, assessed over a period of 15 years. This amount is reduced from the system operator's earlier assessment of \$0.6 million, due to its revised estimate of quantitative costs in the final DSE business case (see paragraph 3.5).
- 2.3 However, we consider there are compelling qualitative benefits that have not been quantified. Replacing the proprietary and inflexible GENCO platform with well-supported protocols used internationally will help future-proof the New Zealand electricity system. GENCO is at the end of its life, costly and difficult to run, and maintaining it beyond 2020 will incur significant further costs.<sup>2</sup> The Authority understands current dispatch participants regard continuing to rely on GENCO is simply not viable.
- 2.4 We are firmly of the view replacing GENCO is necessary to promote the long-term benefit of consumers. It will increase reliability and resilience, reduce barriers to entry and greater participation, and make it easier and less costly to introduce new forms of dispatch. It would also support introducing real-time pricing in the wholesale spot market.
- 2.5 We therefore consider the amendments will provide benefits that significantly outweigh the costs of implementing the system operator's DSE project.

### **The Code amendment is consistent with regulatory requirements**

- 2.6 The Code amendment is consistent with the requirements of section 32(1) of the Electricity Industry Act 2010.
- 2.7 The amendment is also consistent with the Authority's Code amendment principles: it is lawful and it will improve the reliability and efficiency of the electricity industry for the long-term benefit of consumers. The Authority has clearly identified an efficiency gain and has used quantitative and qualitative analysis of costs and benefits to assess long-term net benefits for consumers.

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<sup>2</sup> Paragraph 2.12 of our April 2018 consultation paper explained continuing to use GENCO beyond 2020 would require upgrading its underlying software platform, at likely significant cost. These upgrades would be unavoidable, because the current software platform will no longer be supported from 2020.

### 3 We consulted on the proposed amendments

- 3.1 On 10 April 2018, we published the consultation paper, *Enabling the system operator's Dispatch Service Enhancement project*.<sup>3</sup> The paper proposed amendments to the Code and the Approved Systems Document to enable the system operator to replace GENCO through its DSE project.<sup>4</sup>

#### **Current dispatch arrangements affect competition, reliability, and efficiency**

- 3.2 In combination, the current Code and the Approved Systems Document say the system operator can only issue electronic dispatch instructions using GENCO. This restriction adversely affects:
- (a) competition—the complex GENCO system presents a technical barrier to entry, making it harder for new technologies and business models to participate in dispatch
  - (b) reliability—the ageing GENCO system is subject to reliability issues, is difficult to service and maintain, lacks redundancy, and its IT platform becomes unsupported in December 2020
  - (c) efficiency—the GENCO system adds cost for participants, prevents them from improving their own systems, and hinders innovation around the dispatch process.

#### **We proposed amendments to enable the system operator's DSE project to address these problems**

- 3.3 We proposed enabling the system operator's DSE project to address these problems by:
- (a) introducing the two alternate communication protocols as approved methods for issuing electronic dispatch instructions in the Approved Systems Document
  - (b) applying a sunset clause ending GENCO's status as an approved system on 31 December 2020, to ensure a timely transition to alternate communication protocols
  - (c) amending Part 13 of the Code to:
    - (i) expand the rules around acknowledging dispatch instructions (allowing for automated responses)
    - (ii) clarify alternate arrangements for dispatching ancillary service agents
    - (iii) make a small number of minor improvements to related clauses.

- 3.4 This paper sets out the Authority's decision to amend as proposed the Code (with one addition) and the Approved Systems Document, and gives reasons for that decision.

#### **We separately approved DSE's capital phase in June 2018**

- 3.5 The Authority approved funding for the capital Deliver Project phase of DSE in June 2018, based on the system operator's final business case provided in May 2018. That decision to approve funding is separate to this decision to make the amendments necessary to enable DSE.

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<sup>3</sup> The consultation paper is available on our website at <https://www.ea.govt.nz/dmsdocument/23319>.

<sup>4</sup> The Authority sets out the systems it approves for use—the approved systems, where required by the Code—in the Approved Systems Document. It is published on our website at <https://www.ea.govt.nz/code-and-compliance/the-code/definitions/>.

- 3.6 The system operator's final DSE business case estimated quantitative net benefits with a net present value of \$0.133 million in the base case over 15 years at a 6% discount rate. The updated sensitivity estimates are:
- (a) a net benefit in the lower cost case of \$0.840 million at a 4% discount rate
  - (b) a net cost in the higher cost case of -\$0.422 million at a 8% discount rate.
- 3.7 This updated estimated net benefit in the base case is lower than the earlier assessment of \$0.600 million discussed in our April 2018 consultation paper. Similarly, the sensitivity estimates have reduced from \$1.318 million in the lower cost case and \$48,000 in the higher cost case.
- 3.8 These reductions are due to the system operator updating information on costs in preparing its final business case:<sup>5</sup>
- (a) the capital cost of building and implementing DSE increased to \$3.640 million (from \$3.375 million), based on detailed system design
  - (b) the transition costs for moving participants off GENCO increased to \$0.801 million (from approximately \$0.580 million), based on:
    - (i) a more robust and granular assessment of transition costs for each existing GENCO site, rather than the number of participants using GENCO (ie, some participants have multiple sites)
    - (ii) a scenario analysis assessing costs for participants choosing to use their existing ICCP connections for dispatch, and those taking up web services over either dedicated private connections or public internet.

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<sup>5</sup> See a detailed description of these costs in section 3 of our April 2018 consultation paper.

## 4 Submissions fell into four broad categories

- 4.1 We received submissions on our April 2018 consultation paper from the six parties listed in Table 1. All submissions are available on our website at <https://www.ea.govt.nz/development/work-programme/operational-efficiencies/dispatch-service-enhancement/consultations/#c17042>.

**Table 1: List of submitters**

Submitter	Category
Contact Energy Limited (Contact)	Electricity generator and retailer
Major Electricity Users' Group (MEUG)	Representative consumer group
Mercury NZ Limited (Mercury)	Electricity generator and retailer
Meridian Energy Limited (Meridian)	Electricity generator and retailer
Norske Skog Tasman (NST)	Electricity generator and purchaser <sup>6</sup>
Nova Energy Limited (Nova)	Electricity generator and retailer

- 4.2 The Authority has considered these submissions. We also reviewed a summary of submissions prepared by the system operator, including its responses to those submissions, attached as Appendix C.
- 4.3 All submitters broadly supported the proposed amendments to enable DSE. We have considered matters raised by submitters, which fell into four categories:
- (a) The timeframe for transitioning off GENCO before the sunset date is tight.
  - (b) Costs for dispatch participants may be higher than estimated.
  - (c) The system operator should allow dispatch over public internet-facing web services.
  - (d) We should remove ambiguity in the Code for acknowledging dispatch instructions.
- 4.4 Each of these issues is discussed below.

### **The timeframe for transitioning off GENCO before the sunset date is tight**

- 4.5 Contact, Mercury, Meridian, Nova, and NST accepted the system operator's proposed sunset date ending GENCO's status as an approved system on 31 December 2020; MEUG did not comment. However, Mercury and Nova noted this is a tight deadline, assuming DSE is implemented on schedule in July 2019. Mercury stated it requires more technical information before it can be 'completely satisfied that the proposed sunset date ... allows us sufficient time to transition to the new communication protocols'.

<sup>6</sup> The Authority understands NST on-sells some electricity to other parties.

### **Our response**

- 4.6 We recognise Mercury and Nova's concerns. However, we consider the 31 December 2020 deadline gives participants enough time to engage with IT providers (if needed) to complete their transition off GENCO. The system operator states it is committed to working with all GENCO users to provide the technical information and support needed to ensure their transition is successful. It provided new technical information when announcing the Authority had approved DSE's delivery phase in early July 2018, and gave a timeline for further technical workshops with industry participants.<sup>7</sup> We consider the system operator is actively providing participants the technical information they need to effectively plan their transition off GENCO.
- 4.7 On balance, we consider the risks for operational security and likely extra costs incurred by retaining GENCO past 31 December 2020 justify this sunset date.<sup>8</sup>

### **Costs for dispatch participants may be higher than estimated**

- 4.8 Mercury submitted the costs for dispatch participants to transition off GENCO 'are highly likely to be greater than estimated' in the system operator's cost-benefit analysis. Mercury considered it needs more technical information before it can accurately estimate its likely costs.
- 4.9 Regarding the proposed amendments, Nova commented 'there is no mention of any objective of reducing overall industry costs, which should be a consideration of any solution'. Nova also submitted that 'the stated cost-benefits are marginal in the context of the overall investment required'. Nova considered 'it is clear that the costs of this [DSE] project must be closely managed to ensure the net expected benefits are in fact realised'.

### **Our response**

- 4.10 The Authority's statutory objective is to promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers. The consultation paper stated the proposed amendments would promote all three limbs of our statutory objective by:
- (a) ensuring secure and reliable delivery of dispatch communications
  - (b) reducing technical barriers to market entry and participation, including for new technologies and business models
  - (c) increasing flexibility and reducing complexity of the dispatch service.
- 4.11 We consider the amendments will provide net benefit through enabling the system operator's DSE project to replace GENCO. We recognise the system operator's updated quantified net benefit in its final DSE business case is not large (\$0.133 million in the base case). However, we consider replacing GENCO is absolutely necessary to promote an efficient and reliable dispatch service, as stated from paragraph 2.3.

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<sup>7</sup> This announcement included an updated FAQ on the system operator's website at <https://www.transpower.co.nz/system-operator/so-projects/edf-fags>, and a separate document on high-level design. The workshop timeline is provided at <https://www.transpower.co.nz/system-operator/so-projects/dispatch-service-enhancement-project/dse-workshops>.

<sup>8</sup> See the discussion of these risks and extra costs in paragraphs 2.11–2.14 of our consultation paper.



- 4.12 We also consider all three outcomes listed in paragraph 4.10 will help reduce the costs of dispatch for participants over time. The system operator has recently begun providing detailed technical information to participants, as noted in paragraph 4.6.
- 4.13 Further, the cost-benefit analysis discussed in section 3 of the consultation paper assessed the effect on dispatch participants by estimating:
- (a) quantified benefits from direct cost savings for dispatch participants by avoiding maintenance and operational costs, and reducing costs for new market system enhancements (ie, changes to the dispatch service)
  - (b) quantified costs for dispatch participants to transition off GENCO to the alternate communication protocols.
- 4.14 The system operator has refined its estimate of transition costs, as noted in paragraph 3.8. However, the system operator advises it has no new information to refine estimated transition costs for participants.<sup>9</sup> Actual costs will depend on the integration approach each participant chooses (ie, their choice of communication protocol), as well as any other system investments participants may also undertake.

### **The system operator should allow dispatch over public internet-facing web services**

- 4.15 Contact devoted the bulk of its submission to raising its concern the system operator would prohibit or limit dispatch over public internet-facing web services.<sup>10</sup> If so, Contact argued participants could in effect be forced to use private dedicated communication links for dispatch. This would increase cost and complexity, acting as a barrier to entry. Contact argued in detail that allowing dispatch through web services over the public internet would provide 'significant opportunity and value', subject to appropriate IT security standards.

### **Our response**

- 4.16 We agree with Contact, and welcome its detailed contribution on this issue. We are keen to see efficient use of public internet communication infrastructure to lower costs for dispatch participants and reduce barriers to entry.
- 4.17 We have separately raised concerns about restricting dispatch over public internet-facing web services with the system operator. We accept the system operator's assurance it will:
- carefully consider how the internet may be used to deliver dispatch instructions while ensuring a secure and reliable connection is maintained with each dispatch participant to maintain system security
- 4.18 We want to see web services over public internet used for all dispatch products. We will work with the system operator during its delivery phase to address these issues, and assess the appropriate trade-offs between communication access, reliability, and security. As the system operator notes in Appendix C, it will also address these issues through consultation on amendments to its policy statement.

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<sup>9</sup> The system operator estimated costs for participants through an industry survey it conducted at an earlier stage of the DSE project.

<sup>10</sup> This includes routine dispatch of generation to meet demand for energy in real-time (active power, in MW).

## **We should remove ambiguity in the Code for acknowledging dispatch instructions**

- 4.19 Contact suggested removing the current Code provision requiring participants use 'reasonable endeavours' to acknowledge dispatch instructions within 3 minutes. Contact argued having two acknowledgement times in clause 13.79 is ambiguous; ie, using reasonable endeavours to acknowledge within 3 minutes, as well as the strict obligation to acknowledge within 4 minutes. Contact suggested clause 13.79(a) should instead require participants acknowledge dispatch instructions within 4 minutes only.

### **Our response**

- 4.20 We agree that two acknowledgement times are not necessary. We will amend the Code to remove the requirement to use reasonable endeavours to acknowledge within 3 minutes (the final Code amendment is attached as Appendix A).
- 4.21 In deciding to remove the requirement, we have considered the system operator's advice in Appendix C that:
- (a) the current Code wording can be confusing for participants
  - (b) there would be no operational impact from this change, because most participants already acknowledge dispatch instructions promptly, and those that don't are not likely to be motivated by the 'reasonable endeavours' requirement
  - (c) the DSE project will improve the ability for participants to respond to instructions promptly.
- 4.22 We also have no concern around risks for compliance from this change. In fact, we consider it would be challenging to show any participant didn't use reasonable endeavours if they acknowledge after 3 minutes. A participant acknowledging between 3 and 4 minutes is not likely to materially affect the system operator's ability to manage the power system securely.

## Appendix A Final Code amendment

# Appendix B Final Approved Systems Document amendment

## Appendix C System operator's response to submissions