



# Submission on updating the regulatory settings for distribution networks

Submitted by Westpower

[www.westpower.co.nz](http://www.westpower.co.nz)

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## Summary at a glance

This submission on updating the regulatory settings for distribution networks is presented by Westpower Ltd, the EDB supplying the west coast of the South Island from Lyell to Paringa.

The key observations of this submission include...

- The view (supported by expert advice) that an EDB-led transition from the current DNO model to the expected DSO and DMO models is more likely to achieve both (i) the Authority's statutory objectives, and (ii) the statutory objectives of other agencies.
- The observation that business models and regulatory frameworks are emerging in which EDB's may be able to own but not operate DER's.
- A rejection of the view that a market-led approach is necessary because EDB's are likely to take a narrower view focused only on distribution benefits.
- An assertion (supported by observations from literature) that DER owners will be driven by self-interest.
- A view that at least some correct and workable technical standards are critical to making DER's work, and conversely that regulatory interventions are unnecessary.
- A note that Part 6 of the Code is not fit for purpose, with the principles and the details needing extensive re-thinking.

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# **1. Introduction**

## **1.1 Introductory remarks**

Westpower appreciates the opportunity to make a submission to the Authority on the regulatory settings for distribution networks. This submission includes a wider range of views, thoughts and observations on the energy transition as well as responses to the Authority's questions.

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## **1.3 Westpower's role in the distribution system**

Westpower distributes electricity to approximately 13,000 end-use customers between Lyell and Paringa on the rugged and beautiful West Coast. That location provides a unique combination of ruggedness, isolation and climate challenges that Westpower has successfully navigated with a mix of lines, embedded generation and demand response.

## **1.4 Westpower's views on the energy transition**

As the Authority's Chair notes, EDB's are at the centre of an accelerating change that will be both unprecedented and difficult to navigate. Westpower believes that the Authority's statutory objectives (promoting competition, reliable supply and efficient operation) along with wider public policy objectives such as reducing emissions would be best achieved by allowing DSO's to lead the transition with minimal regulatory intervention, and conversely that a market-led transition led by DER owners or by other third parties such as flexibility traders, to the exclusion of EDB's could require more regulatory interventions to counter the self-interest of DER owners or other commercial actors.

## 2. Responses to specific questions

Westpower's responses to the Authority's specific questions are set out below...

### 2.1 Information on power flows and hosting capacity

#### **Q1. Have you experienced issues relating to a lack of information or uneven access to information?**

- Yes – historically, Westpower was able to derive little if any information from its LV network (other than very discrete information about loads and voltages such as fuses blowing, hot joints, steam coming off a transformer lid on a wet day, or from temporary voltage recorders being installed to inform customer complaints), which Westpower recognises as a major impediment to DER roll out.
- Westpower expects that smart meters will be rolled out across its network (by the respective retailers), but also recognises that...
  - Whilst half-hourly kWh consumption is useful for retail purposes, it is of limited use for network planning and of no practical use for DER integration. Smart meters are designed to ensure accurate *energy* measurement and data collection for revenue reconciliation purposes, which is carried out in a post-processing environment. They are poorly suited for DER management, which requires accurate *power* measurement where voltage, current, phase angle and frequency needs to be collected and transmitted in near real time.
  - Retailers appear reluctant to make the smart meter data available to EDB's, either in sufficient granularity or in a timely manner.
- Westpower observes that obtaining the full value of DER integration will require significant intelligent grid enabling, which the recent South Australian, Queensland and Victorian distribution revenue proposals have estimated to cost between \$50 and \$100 per network customer.
- Use cases such as value stack capture by offering flexibility resources into the reserves market requires flexible and timely monitoring and control functionality working to timeframes of individual seconds, which will require decision-making at the edge.

#### **Q2. What information do you need to make informed investment and operation decisions?**

- Two classes of information are required...
  - Real-time information for network and DER operation.
  - Aggregation of that real-time information over time for long-term investment planning.
- Westpower notes that United Energy and CitiPower have had some successes with smart meters (ranging from deferring transformer upgrades to identifying broken neutrals), but would be cautious in assuming that advanced functionality on a customers' switchboard on its own can substitute for monitoring on the actual LV network, such as at the distribution transformer where temperatures can be monitored to measure loss of life.

- To take this forward, Westpower presents the view that...
  - Information must be continuous (not aggregated to half-hourly).
  - That information must be available to all participants in real-time (not delayed).
  - Standardised data format must be simple and cost-effective so as not to create entry barriers to small DER's.
  - Confirmation is required that data at a customers' switchboard is sufficiently representative of the LV network conditions to be used as a substitute.

### **Q3. What options do you think should be considered to help improve access to information?**

- Westpower believes that the following should be considered to help improve access to information...
  - That the information required by (i) DER owners and operators, and (ii) EDB's be clearly defined. Westpower would expect the high-level principles to be time-invariant, but the details to evolve over time.
  - That standard data formats should be established, most likely using the predominant industry standards. For instance, Westpower is aware that open standards such as OpenADR are available and directly applicable to these situations.
  - That retailers should be required to make smart meter data available, including (i) in disaggregated form, (ii) in real-time, and (iii) in a format so that the usefulness of smart meter data as a substitute for LV monitoring can be confirmed.
  - That the privacy uncertainties and concerns around customer metering data be publicly examined, and an official industry-wide policy position reached that usefully balances the Privacy Act requirements with the extent of data sharing necessary to allow DER's (flexibility resources) to be effectively managed in order to create the greatest possible value.
  - Regulatory expectations on whether the cost of intelligent grid enabling should be recovered from all EDB customers at large (the emerging picture in Australia is that it will be recovered from customers at large up to a specified limit), or from specific market segments. Given the historical angst over subsidies from customers without rooftop solar, Westpower believes that clear guidance is required to ensure that the eventual cost recovery is consistent with the Authority's expectations of efficiency and cost-reflective pricing.
  - Various forms of centralised data storage have been proposed in other jurisdictions and the potential dynamic efficiency benefits to be gained by democratisation of key data make a compelling argument for adopting a similar approach in the New Zealand context. Access to data is also a key element in any efficient market and data availability is thus a key issue that needs to be addressed.

- Of course, as with any collection and storage of data relating to individuals, such as electricity consumption, there still needs to be adequate control in place around data privacy but this should not be at the expense of providing essential data required to maintain the security and performance of the electricity network.

## **2.2 Electricity supply standards**

### **Q4. Have networks experienced issues from the connection or operation of DER?**

- Westpower does not yet have sufficient penetration of dispersed, small third-party DER's, but is well aware of the constraints, as well as the over-voltage and system stability issues that SA Power Networks, Energex and Horizon Power are facing from high penetrations of residential rooftop solar.
- On a positive note, Westpower has a proven connection agreement that encourages generation investment on the West Coast to reduce losses and improve reliability, which includes assisting applicants through the connection process.
- Westpower has experienced the following mix of DER connection and operation issues and benefits, and therefore has a good understanding of many impending DER issues...
  - Recognising the benefits from the Amethyst, Wahapo and Fox Glacier hydro stations' combined 11.5 MW for (i) reducing grid demand, and (ii) providing additional security of supply to the Hokitika market segment.
  - Recognising the benefits of demand management through historical ripple control of hot water, which is a very valuable flexibility resource. It is highly interruptible and needs to be leveraged for the benefit of the DER owner, which is generally the consumer.
  - Recognising the additional value that could occur from bidding interruptible load into the combined Reserves Markets.
  - Significant forecast 66kV sub-transmission investment to host its own proposed Waitaha hydro.

Hence, operating a network with legacy DER's (of which some are now owned by TrustPower and other independent generators), as well as bulk Transpower supply, is in Westpower's DNA and positions Westpower well to lead the transition to a DSO.

### **Q5. Do the Electrical (Safety) Regulations require review? If so, what changes do you think are needed (a) in the near term, and (b) in the longer term?**

- Westpower believes that the following aspects of the Electrical (Safety) Regulations require review in the near term...
  - Clause 2 – consider amending the definition of “installation” to include “control” or “curtail” electricity. This is necessary to ensure that a device that can “control” or “curtail” electricity (but not “consume”, “generate” or “store” electricity) does not become “works”. The definitions of “appliance” and “fitting” may also require some review.



- Clause 5 – definitions of prescribed electrical work.
- Clause 57(3) – this might require review to ensure that ostensibly low-powered devices (e.g. Wi-Fi routers) that could go live to mains voltage are correctly treated.
- Westpower believes that the following aspects of the Electrical (Safety) Regulations require review in the longer term...
  - A more responsive regulatory framework is required to keep up with the ever increasing pace of technological change. The inertia and challenges involved with changing regulation requires a new approach, such as a move to more reliance on Publicly Available Specifications (PAS) that can be developed much more quickly.
  - More use should be made of the significant pool of technical expertise available in the industry such as through the Electricity Engineers' Association (EEA) to ensure safe, technically agile regulation is provided that supports rather than hinders the rollout of DER.
- Perhaps more importantly, Westpower believes that it will be necessary to educate the public about (i) the importance of electrical safety in general, (ii) complying with the Regulations, and (iii) that unauthorised work or installation may void insurance cover.

**Q6. Does Part 6 remain fit for purpose? If not, what changes do you think are needed (a) in the near term, and (b) in the longer term?**

- Westpower believes that both the intent and some of the details of Part 6 (of the Code) are no longer fit for purpose.
- In regard to intent, Westpower recalls that the original Electricity Governance (Connection of Distributed Generation) Regulations 2007 were prompted by the former Minister's (Hon. Pete Hodgson) concern that EDB's were imposing unreasonable conditions and costs on intending embedded generators (for which Westpower saw little evidence). This resulted in Regulations that mandated an application process and approval costs that were unreasonable to EDB's.
- Westpower also notes its own demonstrable record of assisting intending generators to get connected, reducing the case for a regulated approach.
- Westpower contends that a smart EDB will clearly see the benefits of DER's, rendering heavily regulated connection obsolete.
- Westpower believes that the following detailed aspects of Part 6 should be changed in the near term...
  - Schedule 6.1 – distributors decision on application...
    - The requirement for an EDB to approve an application in Schedule 6.1, Part 1, Clause 3(2)(b) needs to be amended to ensure that an EDB can (i) decline an embedded generation application for specific network reasons such as insufficient hosting capacity or high penetrations of DER even if the connection and operation standards are met, or (ii) recover the efficient costs of creating sufficient hosting capacity directly

from the applicant. The corresponding clauses for other kW ratings should also be similarly amended

- Schedule 6.4 – pricing principles...
  - Given that the Authority expects efficient markets for DER services to emerge, it would seem unnecessary to continue mandating cost-based pricing principles.
- Schedule 6.5 – prescribed maximum fees...
  - The application fees need to be increased – they were initially too low, and are now even lower in real terms. Noting that a large part of the application process is technical rather than simply administrative, an hourly rate reflecting a professional engineer’s fees would be reasonable.

It is moreover noted that technical assessments of applications are likely to become more complex as DER penetration increases and hosting capacity is used up.

- The fees for observing testing also need to be increased – they were initially too low, and are now even lower in real terms.
- Westpower believes that the following aspects of Part 6 should be changed in the long term.
  - At the risk of complicating the processes resulting from Part 6, it may be useful to introduce additional ranges of kW ratings.

**Q7. Is there a case to be made for minimum mandatory equipment standards for DER equipment, specifically inverter connected DER’s?**

- Westpower recognises that excessive technical standards for any device may be undesirable from a market entry perspective, but also asserts that at least some technical standards will be necessary to ensure that the emerging world of DER’s actually works.

For instance, Westpower commends the Authority for its recent decision entitled “Improving network capacity to host distributed energy resources” of 27 July 2021, which gives EDB’s a clear mandate to insist on active voltage management in the LV network. This will maximise hosting capacity and enable much greater penetration of PV and other inverter connected resources at a minimal marginal cost.

- Westpower has observed that technical standards for devices such as routers, phones, PC’s, and smart TV’s are (i) common, (ii) don’t appear to have discouraged market access, and (iii) to the contrary, seem to have encouraged market access through simplification and standardisation.
- Westpower therefore respectfully suggests that the correct balance can easily be found by EDB’s, device suppliers and DER owners without regulatory intervention.
- In regard to inverter connected DER’s, Westpower believes that mandatory minimum standards are necessary, viz...

- In regard to the “power” components, to ensure that voltage and harmonic limitations are adhered to, noting that the Authority has quite rightly raised issues such as DER’s interfering with neighbours.
- In regard to the “comms” components, to ensure compatibility with commonly used protocols and formats. Timely operation of devices in response to grid and market events is fundamental to capturing value from DER’s, and conversely, the failure of even the simplest device could cost market participants dearly. Westpower further asserts that the minimum standard must include remote switching capability, based on observations from SA Power Networks need to curtail rooftop solar on hot days with minimal grid demand.

#### **Q8. What standards should be considered to help address reliability and connectivity issues?**

- Westpower would prefer a set of high-level principles around parameters such as voltage, harmonics, capacity, phase balance, reliability etc, but concedes that at least some prescription including both national standards (e.g. AS/NZS 3000:2007, AS/NZS 5033, AS/NZS 4777.1:2016, AS/NZS 4777.2:2020, AS/NZS 61000.3 etc) along with individual EDB’s technical and operating standards may eventually be necessary.
- As noted above, standards will need to address...
  - “Power” components, to ensure that voltage and harmonic limitations are adhered to.
  - “Comms” components, to ensure compatibility with commonly used protocols and formats.
- Westpower notes that there is also a high level of communication and interaction between EDB’s through the EEA, the ENA and various other less formal arrangements. This is evidence that common standards and approaches are in place without regulatory intervention.

#### **Q9. Is there a case to look at connection and operation standards under Part 6 with a view to mandating aspects of these standards?**

- Westpower believes that a flourishing and competitive DER industry will be best served by minimal mandated standards (such as AS/NZS 4777.2:2020) overlaid with specific regional requirements, and will conversely be dampened by either (i) standards that are so general they become a one-size-fits-all, or (ii) standards that attempt to codify every situation and become too complex.
- Recognise that Part 6 duplicates the DG Regulations which were written before today’s solar, batteries and comms technologies were available.

## **2.3 Market settings for equal access**

#### **Q10. What flexibility services are you pursuing?**

- As already noted, Westpower currently operates the following flexibility services...
  - Ripple control of hot water cylinders.
  - Use of Amethyst, Wahapo and Fox Glacier hydro to (i) manage grid and network demand, and (ii) provide additional security of supply to the Hokitika market segment.

- Use of TrustPower’s embedded hydro stations to provide some ancillary services.
  - Participation in the Reserves Market.
  - Managing the off-peak charging of EVs through use of Westpower’s PowerPilot Low Voltage Management System and interfacing this directly with EVSE equipment.
  - Investigating opportunities for V2H and V2G services from compatible EV and EVSE equipment. Note that this technology is still emerging, but is becoming commonplace in some jurisdictions such as Japan.
- Westpower’s February 2021 residential customer survey revealed the following low appetite for emerging technologies...

Emerging technology	Response
Buying an electric car	Over 95% of respondents will not buy an electric car within 5 years.
Installing rooftop solar	Over 79% of respondents will not install rooftop solar within 5 years.

It therefore appears that few if any of the future flexibility services on Westpower’s network will be residential, at least with any scale, in the near term. It is intended to repeat this survey in early 2022.

#### Q11. Are flexibility services being pursued through a competitive process?

- Although Westpower does not currently competitively purchase any flexibility services, it (i) does not see any obvious theoretical barriers to competitive purchasing in the future, and (ii) reiterates its previous point that it has a well-established embedded generation application process.
- Notwithstanding that (i) Westpower is exempt from revenue regulation, and (ii) the IEA’s recommendation that all EDB’s should be revenue regulated, Westpower is deeply concerned about the Authority’s proposed option of linking EDB’s regulated revenue to their progress in developing the use of flexibility services, which seems to overlook the following issues...
  - Are the opportunities for DER’s actually there e.g. a network with a lot of legacy capacity headroom and low growth may not need to consider flexibility services.
  - Are flexibility providers actually interested? Are the opportunities too small (or even there)?
  - This could perversely encourage the use of non-network alternatives where they are not the lowest cost or most reliable (which would seem inconsistent with the Authority’s statutory objective of efficient operation), just to get the box ticked.
  - That DER integration may in fact require (rather than avoid) network investment e.g. the requirement for 66kV sub-transmission investment if Waitaha hydro proceeds.

Westpower doesn’t necessarily disagree in principle with the Australian and UK requirements to consider non-network alternatives, but would need to understand (i) how the respective

thresholds of A\$6m and £1m were arrived at, (ii) what drivers would be used to determine suitable values for New Zealand EDB's, and (iii) whether different thresholds would apply to large EDB's versus small EDB's.

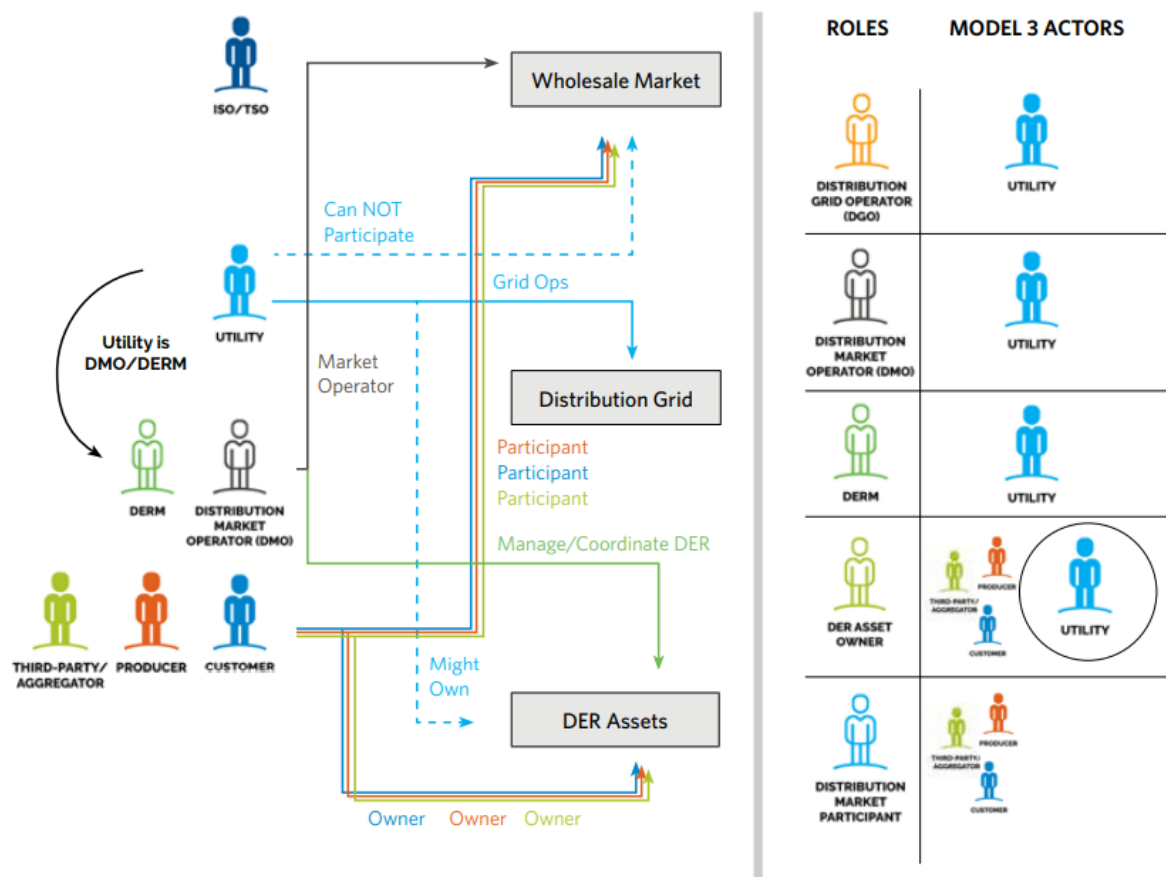
#### **Q12. What options should be considered to incentivise non-network solutions?**

- Westpower doesn't believe that any regulatory incentivising of non-network solutions is required, as smart EDB's will usually always adopt the solution that optimises the balance of Capex, Opex and reliability (which strongly aligns to the Authority's statutory objectives). It is important to recognise the following...
  - EDB's have historically embraced ripple control of hot water as a significant non-network solution, which in Westpower's case can reduce peak demand by about 10%.
  - It is also noted that Southpower historically installed banks of ripple-controlled orange and red lights in major customers premises to signal peak periods, and also encouraged bottled gas for residential space heating in constrained network areas. Neither of these initiatives required regulatory intervention, but did require stable regulatory frameworks that acknowledged *inter alia* sunk costs.
  - Unlike Westpower which is very blessed to have a lot of hydro potential, not all EDB's have obvious generation solutions.
  - Just because non-network solutions haven't been formally documented doesn't mean they haven't been considered.
- Noting that Westpower is exempt from the DPP, non-exempt EDB's may be encouraged to consider non-network solutions if the recovery of efficient investments made in good faith was more certain.

#### **Q13. What options would encourage competitive procurement processes for flexibility services?**

- As a starting point, EDB's understand competitive procurement and obtaining the best value for money very well so the issue is not a lack of understanding by EDB's.
- Westpower asserts that the biggest encouragements for competitive procurement will be (i) the development of a stable base of competent and capable suppliers, and (ii) those suppliers having confidence that they can compete fairly and transparently.
- Westpower observes that point (ii) above is more likely to occur when a neutral participant such as an EDB sets the rules, as distinct from a dominant supplier.
- Westpower supports the creation of a neutral market supported by effective but minimal market regulation that ensure all participants have open access and are treated fairly and equitably.
- This market needs to be operated in such a way as to provide a brokered dispatch system to manage demand and power quality in the network, ensuring that the constraints published by the Distribution Network Owner (DNO) are not violated.

- Such a market would allow new entrants to effectively manage their risks while minimising entry barriers such as having to set up and manage bilateral contracts.
- On the surface, there is no apparent reason why the DNO cannot also take on the roles of DSO (the party owning and managing the distributed energy resource management system) and DMO (running the market and its settlement engine or Flexibility Management System). This could require some additional restrictions e.g. allowing the DNO to own but not offer DER's into the market.
- On the other hand, the DNO is the investor of last resort and so may need to install DER on the network if this is the lowest cost alternative to capital intensive network reinforcement. Therefore, there may need to be some regulation to ensure that this “last resort” approach is only used if there are no other options available on the market. This might also lead to two categories of DER's – competitive, and uncompetitive (last resort investment).
- We draw the Authority's attention to a model<sup>1</sup> that shows how such an arrangement might work, noting that some of the terms used here are different to what we are used to in the New Zealand context...



- Third-party aggregators are able to participate in the market, alongside producers and consumers, and can thus ensure that the use of their flexibility resources is appropriately value stacked, returning the greatest possible value to the DER owners, most of whom will also be consumers.

<sup>1</sup> Reproduced from the publication “Distribution System Operator (DSO) Models for Utility Stakeholders” by Black and Veatch.

- Another name sometimes used for third-party aggregators is Flexibility Traders, but this has the connotation that they also take on the role of the Distributed Energy Resource Manager (DERM) with an associated Distributed Energy Resource Management System (DERMS) to manage the flexibility resources that they control.
- This may be an unnecessary complication and create high barriers to entry for smaller aggregators, who need to develop what could be quite sophisticated systems to interface with the DER that they contract. Moreover, it could result in a multiplicity of DERMS and associated interfaces that the DSO and the aggregator will need to manage, likely creating inefficiencies in the market.
- By leaving the DERMS in the ownership of the DSO, a single platform can be rolled out that interfaces directly with the DER market and the DERs themselves, greatly reducing costs and complexity. Producers and consumers will thus be able to readily switch between aggregators, according to who offers them the best deal, without having to change any of the equipment and interfaces.

## **2.4 Operating agreements**

### **Q14. Have you experienced difficulties with negotiating operating agreements for flexibility services?**

- No, as this is clearly a nascent market and there are very few (if any) players such as flexibility traders or system aggregators currently active in Westpower's area.
- Westpower has no objection to contracting with flexibility traders to provide flexibility services, but this would need to be through a neutral market that reflected the economic costs or value of such resources.
- The major flex resources that Westpower uses at present are the hot water load that represents approximately 10% of the load on our network. This is a highly interruptible and deferrable load that provides significant benefit when constraints need to be managed.
- However, the Authority has made clear in the proposed changes to the components of the current Transmission Pricing Methodology, that overly strong economic pricing signals should not constrain the utility value, or quiet enjoyment of the service, if there is no marginal economic cost to the Grid Operator or DNO in providing the service. As a result, strong marginal pricing signals will soon be removed from the TPM, and this may have the perverse effect of greatly reducing the value of any flexibility resources at margin.
- There are currently very few constraints in the Westpower network and the majority of the time the same applies to the National Grid, so the need case for additional flexibility resources, over and above that provided by the existing ripple control of hot water cylinders is hard to identify.
- A better question might be "Do you currently have a need for contracted flexibility services?"

### **Q15. Are the transaction costs of developing contracts a barrier to entering the market for flexibility services?**

- As there is currently no national market for such flexibility services, this question is also somewhat moot, but it is obvious that transaction costs can be a potential barrier to market entry.

- It is for this reason that Westpower recommends a properly managed neutral market platform be developed with clear rules that provide easy and well-defined access for new entrants. This will clearly be more efficient than requiring that each Flexibility Trader desiring to enter the market set up separate bilateral contracts with individual DNO's. It also obviates the need for system aggregators or flexibility traders to contract with multiple upstream parties, possibly with different outcomes and certainly with different systems and processes.
- Westpower believes that the inherent inflexibility of a bilateral contract may result in (i) additional costs to achieve what the parties want, (ii) the possible foregoing of flexibility benefits because negotiating a contract is too hard, and (iii) less-than-optimal allocation of risks between the parties.

#### **Q16. Would an operating agreement help lower transaction costs and level negotiating positions?**

- Westpower concedes that an operating agreement might help lower transaction costs, but might also not provide the parties with exactly what they want i.e. it might be efficient but not effective.
- Westpower is also concerned that further levelling of negotiating positions is considered, and would challenge the view that EDB's are in a stronger negotiating position on the basis that (i) Part 6 provides intending generators with considerable rights of network access, and (ii) that smart EDB's will embrace DER's if they create value and that value is fairly allocated.
- If a neutral market were set up with standard market contracts and operating templates, the DER owners could offer their flexibility resources either directly or through flexibility traders, where system aggregation makes sense and economies of scale provide high-value outcomes for the DER owner. It is expected that an efficient market would, by nature, have such standard operating agreements in place.

#### **Q17. What kind of operating agreement would address the issues described in this chapter?**

- Westpower believes that a model operating agreement would need to embody the following...
  - State the parties' intentions, and exactly what services and assets each party will provide.
  - Identify the benefits, costs and risks resulting from the DER opportunity, and how they will be allocated (perhaps like a mini business case).
  - Performance clauses, noting that failure to perform (e.g. to curtail demand or to inject energy during a peak period) could cost other participants large amounts, which they should be able to recover from the participant who fails. Participation should not be risk-free.
  - Usual dispute clauses that provide for the District Law Society to appoint a mediator.

More personally, Westpower is of the view that fair-minded participants are the most important feature, noting previous comments about the rooftop solar lobby in some US states that appear to want to capture all the benefits whilst blatantly shifting all the costs to the EDB.

- There are a number of possible revenue models that could be built into such an agreement, including...
  - a pay to play subscription model,



- a grid network usage fee (wheeling) model, or
- a transaction fee model.
- Moreover, any payments could be split into...
  - an availability charge (to ensure the flexibility resource is available when required); and
  - a usage charge (when control of the flexibility resources is actually triggered).

## **2.5 Capability and capacity**

### **Q18. What are distributors doing to ensure their network can efficiently and effectively manage the transformation of networks?**

- Westpower is doing the following...
  - Embracing many of the initial actions in the ENA Road Map.
  - Clarified the roles of DNO and DSO in its own thinking, including obtaining expert advice which observed that the outcomes of EDB-led transitions are just as likely if not more to achieve the Authority’s statutory objectives as market-led transitions.
  - Developing specific innovations such as PowerPilot, an innovative Low-Voltage Management System designed to interface directly with DERMS system and provide secure, timely and granular monitoring and control (i.e. management) of flexibility resources. This gives complete visibility of the whole low-voltage network, from a distribution transformer right down to individual installations.
  - Approximately 600 PowerPilot devices have been installed so far on installations within Westpower’s network and all new installations will be provided with free-issue devices to install in the meter board as a low cost way of rolling out the technology.
  - To support this, we have updated our Network Connection standards and other associated documents such as our Privacy Policy, to support and encourage connection of new DER.
  - Training sessions are being arranged with contractors to support the installation of PowerPilot devices as part of their site work.
  - A mobile device app (our “Prosumer App”) has been developed to provide customers with ready access to their load information in quasi real-time, as well as the ability to manage their flexibility resources remotely based upon price signal or other terms in the operating agreement. For instance, a consumer may wish to withdraw flexibility resource for a period should they wish to charge the vehicle for a scheduled trip when a full charge is needed at a known time, rather than leaving us up to the DERMS to manage. This gives full control to the DER owner and allows them to override the system when needed.

- Initiating a Proof of Concept trial of a mature DERMS system in areas where there are high concentrations of PowerPilot devices to become more familiar with the capabilities, risks and benefits of such a system.
- Established a process for working with intending DER owners.
- Starting a trial later this year of direct control of EV chargers in domestic installations to determine the feasibility of rolling this out across its whole network. EV owners will be invited to participate in this trial with Westpower providing free or upgraded EV charging points within the installation and then monitoring usage patterns and carrying out trial load management algorithms based on demand or time of day.
- Continuing to publish a high-quality AMP that identifies opportunities for DER participation.
- Participating in EEA and ENA working groups.
- Actively participating and contributing to a South Island forum to discuss potential options around formation of a joint DSO.
- Attending various conferences.
- Taking the opportunity to submit on discussion papers, such as this one.
- Consistently working to reduce its overall costs, for the benefit of the customers who are the income and capital beneficiaries of the Trust.

Westpower reiterates that it is doing most of the above without any regulatory interventions.

- Westpower also asserts that the Authority has overstated the fragmentation and lack of coordination of the industry. Granted that whilst there are 29 EDB's that at a detailed level may do things slightly differently, there are not 29 very different and incompatible approaches. Examples of coordination and commonality abound, from the use of common design and construction standards to the moving of staff throughout their careers.
- In particular, the mutual development of the Upper South Island Load Management group, of which Westpower is an active member, shows the real value that can be created through aggregation of flexibility resources to a very high level, and this has allowed Transpower to defer capital expenditure on its grid feeding the Upper South Island for many years. Even though the strong demand based pricing signal will shortly be removed from the TPM, the Upper South Island network companies have agreed to continue to cooperatively manage the load to a sensible level.
- This also demonstrates how real-time systems can be integrated together to make a real difference and sets the scene for the more complex DERMS systems that will undoubtedly be needed in the future.
- Westpower also notes that other EDB's are doing the following...
  - Recruiting DSO solution architects.
  - Participating in industry forums.

- Updating their connection standards to address DER functionality.
- Embedding many different types of DER's from many different suppliers and intermediaries.

#### **Q19. How are distributors currently working together to achieve better outcomes for consumers?**

- As noted above, most EDB's are participating in the various EEA and ENA forums, attending conferences etc.
- Adopting common design and construction standards so that contractors can be familiar with multiple networks.
- Adopting collaborative structural and service delivery models such as PowerNet that spread overhead costs.
- The Upper South Island Load Management initiative is a clear example of what can happen when EDB's collaborate to provide a common good solution for the overall transmission grid. This has provided excellent value to New Zealand Inc over many years, allowing capital expenditure to be deferred. Moreover, it been accomplished without any regulatory encouragement, showing that EDBs can work together effectively.
- South Island EDBs are currently working collaboratively on an investigation into new DSO frameworks that could be applied to the New Zealand context and how this could best enable the coming energy transformation. This sort of initiative could provide the exact outcomes that the Authority is looking for, but at much lower cost and without the need for regulatory intervention. The Authority is encouraged to consider working with EDB's to see how an industry-led solution could provide better outcomes as an alternative to imposing regulations that could have unintended consequences.

#### **Q20. Could more coordination between distributors improve the efficiency of distribution?**

- Westpower contends that whilst some further operating efficiencies within EDB's might be obtained by increased coordination, they are probably minimal. Some reflection on Westpower's recently disclosed costs and cost categories suggests that whilst some minor efficiencies might be possible within the System Operations & Network Support (SONS) category, they would be (i) minimal within Westpower's overall cost base, and (ii) offset by likely travel and accommodation costs of sharing an employee from Christchurch or Nelson.
- It is possible that the overall emerging distribution component of the electricity supply chain may become more efficient through adoption of common technical standards and protocols, but Westpower would note that many DER installations may require situation-specific technical and engineering analysis that will offset those efficiency gains.

## **2.6 Efficient pricing**

- No responses required.

## **3. Further comments on DER transition**

### **3.1 General comments**

- Westpower acknowledges the Authority's view that efficient markets are important, with the seeming implication that the market should lead the DER transition. It has been observed, however, that the roll out of EV chargers in those US states preferring competitive third-party approaches has been minimal, in contrast to some very bold EV charger roll out programs in states where regulators have acknowledged the merits of EDB-led approaches. An emerging observation is that EDB's (i) strong balance sheets and (ii) deep knowledge of their own networks seem to play a significant part of this. Chapter 5 of this submission includes a range of published literature which expands on this view.
- Building on the above comment, Westpower's expert advice observes that EDB-led transitions in Germany, California and Oregon are leading to competitive markets for a wide range of flexibility services, including in other EDB's areas. This is noted as (i) forcing EDB's to compete for flexibility revenue, and (ii) weakening the case for revenue regulation as traditional line revenues decline as a percent of total revenue.
- Westpower also notes with concern that groups seeking access to networks (especially the rooftop solar lobbies in many US states) seem to frame EDB's technical standards as "erecting entry barriers", and takes the contrasting view that technical standards are necessary to ensure (i) that the network continues to work effectively, and (ii) to mitigate the cost shifting motive apparent in uncontrolled rooftop solar installation.
- Westpower asserts that the increasing penetration of competitive third-party DER's in other countries is evidence that EDB's do not require further regulation. It is further noted that the Commerce Commission has recognised the likely decline in piped gas volumes as a major reason for simply rolling over the starting prices for the Gas DPP3, and Westpower would encourage the Authority to recognise the likely parallels of declining nett kWh revenue as weakening the case for EDB regulation.
- Westpower believes that EDB's are best placed to compile technical standards that are workable, are based on established technologies, have good vendor support, and which limit the ability of DER participants to shift costs.
- Westpower believes that Trust-owned EDB's in particular are best placed to minimise the cost shifting that may occur by self-interested DER owners and operators, noting how this self-interest became apparent as the rooftop solar lobby in many US states objected to the increasing of fixed monthly tariffs and the corresponding reduction of variable kWh tariffs (essentially expecting to capture the benefits of solar whilst passing the costs to non-solar customers).
- Westpower's view is consistent with the Council of European Energy Regulators recommendation that EDB's act as neutral facilitators.
- Market-led DSO transitions may include insufficient restraint of some DER's self-interest, emphasising the importance of the rules being influenced by less-interested participants. History

records many instances of early movers dominating industries through *inter alia* establishing technical standards skewed towards their own interests.

- Westpower would challenge the Authority’s assumption that EDB’s will only use DER’s to create distribution benefits, (i) noting expert advice that observes that wider benefits are occurring in Germany, California and Oregon under EDB-led transitions, and (ii) overlooks the self-interest of private DER owners that is arguably just as strong as Trust-owned EDB’s.
- There is strong potential for some DER participants to shift costs e.g. some US states where the rooftop solar lobby has successfully pushed back against the rebalancing of fixed and variable tariffs to obtain (i) lower monthly connection costs, and (ii) higher avoided energy costs. This has parallels to a previous era in which a Victorian customer with air con created about \$1,000 per year of costs for the EDB but only pays about \$300 per year in additional (kWh) electricity costs. That customer is therefore subsidised about \$700 per year by those customers without air conditioners.

### **3.2 Responses to assertions and inferences**

Westpower does note with concern several of the Authority’s assertions and inferences in the discussion paper, and responds as follows...

<b>Ref.</b>	<b>EA statement</b>	<b>Inference</b>	<b>Westpower’s response</b>
2.11	“DER can also improve security as it can decrease reliance on the centralised system”		Westpower totally agrees, noting that Amethyst, Wahapo and Fox Glacier hydro stations’ combined 11.5 MW provides additional security of supply to the Hokitika market segment.
2.13	“adopting a market-based approach to getting network support (like flexibility) will deliver significant long-term benefits for customers”	That EDB’s require further incentives to deliver long-term benefits.	The historical use of ripple control of hot water cylinders and extensive hydro development shows that EDB’s are indeed capable of delivering long-term flex benefits.
2.13	“allows distributors to avoid the lock-in costs of infrastructure”	That EDB’s have only seen the direct distribution benefits of DER’s.	
2.14	“more participation is also likely to bring reliability challenges and costs, such as those arising from managing two-way power flows on the distribution network”		Westpower totally agrees with this, and would urge the Authority to ensure that whatever model emerges allows full recovery of those costs. This is consistent with the “causer pays” principle, and avoids DER owners receiving subsidies from non-DER customers.
2.15	“Reliability and security of supply will need to be managed as distribution networks adapt to new power flow patterns”		
2.17, 4.2	“distributors need greater visibility of their low voltage networks to manage reliability and make efficient investment decisions”		Westpower accepts that historically LV visibility was minimal, but technology is now readily available to address this and EDB’s need to be encouraged to adopt it.
4.6	“However, access to real-time (or even half-hourly) data is expensive and not widely available...”	That the data is somehow not available or hard to access.	Westpower asserts that the retailers have no compelling drivers and therefore have little interest in making data available (notwithstanding the limited use of half-hourly data, and the EPR recommendation

Ref.	EA statement	Inference	Westpower's response
			that EDB's have access to smart meter data on reasonable terms).
4.17	"Flexibility traders do not have access to the congestion data unless the distributor provides it to them..."	That EDB's need further encouragement to share congestion data.	Real-time congestion data is not readily available from the current level of LV sensing and telemetry, however Westpower's PowerPilot roll-out will improve real-time visibility of congestion and constraints. That data will then be available to flex traders.
4.18	"Flexibility traders also face an uneven playing field where distributors do have congestion data and they do not..."		
4.19	"Distributors must invest in networks to ensure reliability..."	That EDB's need to focus more on investing in reliability.	EDB's are making significant investment in reliability whilst also balancing that against investment costs, increasing storms due to climate change, and interference from trees.  The discussion paper notes "slightly more interruptions per customer" at 3.10, to which Westpower contends that the increase in SAIDI would be much greater if investment wasn't occurring.
	"...but may be unsure where investment is needed"		EDB's know exactly where reliability investment is required.
4.20	"...meeting obligations to provide data requires significant manual effort"	Retailers face challenges providing data because it requires significant manual effort.	The need for "significant manual effort" has never stopped obligations being imposed on EDB's.
4.21	"The savings come from network investments that could be avoided if more information on power flows was available".	That avoiding investment is as simple as making more power flow information available.	Avoiding network investment requires suitable non-network solutions to be (i) available, and (ii) the least cost solution. Making more power flow information available is only a small part, which Westpower will happily do.
4.22	"Improved access to consumption data will enable consumers to make more informed investment decisions about DER technology"	That sufficient data is being captured, but is not being made available to customers.	As noted above, Westpower asserts that data will need to be more comprehensive than simple consumption data, and (i) capture voltage, phase balance, harmonics etc, (ii) be real-time, and (iii) be available in real-time. It is not simply a withholding of that data from customers.
4.23	"The uneven playing field from flexibility traders not having access to congestion data will impact competition in contestable markets"	That EDB's already have that congestion data, but need further encouragement to share it.	Real-time congestion data is not readily available from the current level of LV sensing and telemetry, however Westpower's PowerPilot roll-out will improve real-time visibility of congestion and constraints. That data will then be available to flex traders.
		That specific parties might be benefiting from flex traders not having access to congestion data.	The issue is that congestion data is not (yet) available, not that it is being withheld from some participants.
4.32	"For 1.4 million ICP's (65% of the total), half-hour data is ignored in central reconciliation and settlement processes"		Westpower respectfully suggests that the data that is already available be used before other interventions are considered.

Ref.	EA statement	Inference	Westpower's response
5.3	"consumers confidence that they can consume higher quantities of renewable electricity..."		This would seem contrary to EECA's objective of promoting conservation.
5.4	"Standards may also narrow the choice of appliances that consumers have..."	That customer choice is more important than the whole network maintaining a reliable supply.	Westpower is nervous that the critical issue of device and data compatibility (of which technical standards are a core component) are being relegated by consumers' rights and choices.
5.16, 5.41	"The use of V2G to provide EV battery discharge ... would bring a V2G installation into the definition of distributed generation under Part 6..."		This could result in many new distributed generation installations, which would require a significant streamlining of the DG connection process.  Westpower would suggest creating a separate class for V2G that has a slimmed down application and connection process, given that <i>inter alia</i> EV's and chargers are heavily standardised.
5.32	"On the other hand, local differences between network areas work against national consistency..."	That national consistency is more important than correct localised operation.	Westpower asserts that this view is deeply flawed ... if DERM doesn't work locally then it cannot be considered to be working nationally, making national consistency pointless.
5.44	"scenario 1. Distributors seek to minimise capital expenditure..."	Infers that all DER's will be beneficial to the network, to customers and to society at large.	This overlooks the critical issue of self-interested DER owners who will seek to export kWh or provide services because they have identified a market opportunity to capture revenue (e.g. the rooftop solar industry in many US states) regardless of the societal benefits.
5.54	"However, the level of response that will occur from price signals is unknown..."	That the price inelasticity of electricity is unknown, when in fact a wide range of literature suggests it is known to be highly inelastic.	Westpower notes the inability of many customers to respond to price signals (e.g. bathing and feeding kids on a cold, wet evening) will simply result in transfers of unearned wealth which would be inconsistent with both the Authority's and the Commerce Commission's objectives.
6.2	"However, as technology has evolved, using flexibility services can now be a more efficient solution in some cases..."	That the potential for DER's to drive down costs, improve reliability and reduce emissions is widespread.	Westpower believes this overstates the potential for DER's to drive down costs and improve reliability, reiterating the previous point that incorrect market settings will incentivise DER owners to chase revenue regardless of how beneficial their services are.
6.3	"Third parties should also be able to connect to the network and be confident that they will be treated equally..."	That third parties are somehow not being treated equally.	Westpower notes (i) that Part 6 forces EDB's to treat DER's equally, and (ii) that Westpower has an established process for working with DER owners.
6.4	"if distributors do decide to invest in DER, they may be more likely to favour in-house investment..."	That in-house investment is somehow less efficient than an externally procured solution.	EDB's have well established external purchasing policies.  There are some opportunities where in-house investment and development is

Ref.	EA statement	Inference	Westpower's response
			simply cheaper e.g. Westpower's in-house development of the PowerPilot.
	"Flexibility traders are not able to compete on an even playing field..."	That inefficient DER investment by EDB's will be the only barrier to entry.	This overlooks the possibility that a dominant third-party DER operator could also skew the playing field.
	"DER controlled by a distributor is also likely to get locked in as a distribution alternative..."	That EDB's only see the direct distribution benefits of DER's.	The historical use of ripple control of hot water cylinders and extensive hydro development shows that EDB's are indeed capable of delivering long-term flex benefits.
		That third-party operated DER's won't be primarily operated with self-interest in mind.	The emerging picture in both the US and Australia is that roof-top solar operators are showing a high-degree of self-interest by (i) injecting into constrained networks simply to capture a feed-in tariff, and (ii) objecting to tariff rebalancing that would require them to share their benefits with the EDB.
6.9	"Many distributors seem to consider the use of flexibility services as difficult and that traditional resources are adequate for network management..."	EDB's simply default to network solutions with no consideration of DER's.	Westpower rejects this inference, and notes that (i) it has willingly considered DER's where they make technical and commercial sense, and (ii) that other EDB's such as Vector are also willingly adopting DER's.
6.10	"... the slow progress to date may be evidence that further action is needed"	That EDB's are being deliberately slow, and that is the sole reason for the lack of progress.	Westpower asserts that the slow progress is more complex than the Authority's simple remark suggests, noting the following... <ul style="list-style-type: none"> <li>• Not every network issue can be fixed with a non-network solution.</li> <li>• The expectation of competitive third-party sourcing of non-network solutions actually requires a willing DER owner to step up.</li> <li>• Trial periods to develop concepts, build, install and gather operational data all take time.</li> </ul>
6.11	"Submissions included suggestions that distributors may prefer CapEx to OpEx..."	EDB's are perversely preferring Capex on the basis that they can earn a return on that Capex forever after.	Westpower asserts that this is false, noting that (i) Capex solutions are generally more reliable, and (ii) that a Capex solution usually reduces recurring Opex. <p>To further expand this point, Capex solutions tend to reduce supply interruptions, whilst Opex solutions only allow quicker supply restoration after a fault has occurred. Hence Capex solutions obviously provide more benefit to customers.</p>
6.12	"There is also the potential for consumer harm to occur where there is a lack of incentives on distributors' procurement decisions"	EDB's are not adopting least-cost solutions.	Westpower totally rejects this inference, noting its own use of both ripple control of hot water cylinders and embedded hydro to provide lower cost solutions.



Ref.	EA statement	Inference	Westpower's response
6.13	"...then all consumers are paying for the service..."		Westpower notes that many US states are requiring EDB's to exclude EV chargers from the RAB specifically so the cost is not recovered from customers at large.
6.15	"This is unlikely to occur to the fullest extent possible if DER is controlled by a distributor rather than by a flexibility trader"	The inference is that an EDB will use DER's solely to benefit its own business, and that other entities won't be self-interested.	Westpower totally rejects this, noting that (i) its own use of ripple control and embedded hydro creates benefits beyond its own business, and (ii) that a flex trader will only work for the benefit of others if it is incentivised to.  Westpower would point to the literature samples in Section 5 of this submission showing that the rooftop solar industry in some US states has a high degree of self-interest.
6.16	"...who may feel they cannot compete in a market with an uneven playing field"	That (i) the playing field is somehow uneven, and (ii) is presumably tilted in favour of EDB's.	Westpower notes (i) that Part 6 forces EDB's to treat DER's equally, and (ii) that Westpower has an established process for working with DER owners.
6.40	"...distributors should be restricted in their ability to participate in emerging technology markets."		Westpower observes that the EV charger roll-outs in the US that are getting traction are led by EDB's.
7.1, 7.5	"Distributors also have a stronger negotiating position..."		Westpower notes (i) that Part 6 forces EDB's to treat DER's equally, and (ii) that Westpower has an established process for working with DER owners.  Westpower also observes that the regulated fees in Part 6 requires the costs of DER connection to be recovered from all customers at large, which appears inconsistent with the Authority's objective of efficient operation.
7.14	"... some retailers said the cost could be up to \$150,000"	The high cost of negotiating a UoSA is attributed to EDB's .	Westpower observes (i) that UoSA's are complicated, unwieldy and skewed towards retailers' interests, and (ii) that the retailers who have spent \$150,000 have presumably done that with a view to recovering that cost by squeezing EDB's.
7.23	"Would an operating agreement help lower transaction costs and level negotiating positions?"	Q16 implies that the negotiating position is unequal.	The connection terms and fees set out in Part 6 of the Code tilts the negotiating position in favour of DER owners. Westpower reiterates its response to Q6 above.
8.2	"The objective is to ensure that distributors are ready to scale up and adjust to network transformation"	That EDB's are not preparing for transformation.	Westpower has previously emphasised that it is preparing for the energy transformation in many ways, and would add that the Authority's statement overlooks the need for EDB's to fairly recover the costs of scaling up and of transformation.
8.3	"It is possible that some distributors do not have the capability and		The evidence is that a small EDB like Westpower does have the capability to

<b>Ref.</b>	<b>EA statement</b>	<b>Inference</b>	<b>Westpower's response</b>
	infrastructure to integrate increased volumes of DER..."		manage DER, and is actively transforming its network to host DER's.
8.6	"Distributors had the view that technology-driven transformation of electricity supply was in its very early stages..."		A lot of technology has developed since 2019, and in any case some EDB's such as Westpower are proactively managing the energy transformation.
8.13	"He argues that there is no conclusive evidence of significant economies of scale in electricity distribution"		Westpower (i) agrees with George Yarrow's conclusions, and (ii) asserts that the era in which size determined success is gone, and that success will now be determined by technology smarts and nimbleness.
8.14	"The EPR notes that some of the difference may be due to how dispersed consumers are and the terrain"		Westpower concurs that higher costs per customer will be driven by customer density and terrain, and that lesser numbers of customer is only one of many cost drivers.
8.17	"Although these distributors have incentives to keep local customers happy, they may be reluctant to innovate"		Westpower rejects this, and notes that Trust-owned EDB's are driving a lot of technology innovation e.g. Westpower's PowerPilot, Counties re-purposing of spent EV batteries, WEL's investment in Infratec, Unison's solar work, Vector's relationship with AWS, ScanPower's community investments etc.
8.23	"The IEA recommends that the NZ Government extend price-quality path regulation to all distributors where it is cost effective to do so..."		Westpower (i) rejects this, noting that there is no private profit motive for Trust-owned EDB's, and (ii) notes that the enquiry into regulating gas pipelines in 2006 concluded that Wanganui Gas pipes business should not be regulated because the costs would probably exceed the customer benefits.
8.24	"...could help ensure distributors are investing efficiently and in a way that supports the transition."		Westpower asserts that the current information disclosure requirements are (i) sufficient, and (ii) better placed to reveal efficient and inefficient behaviours.
8.25, 8.26	"Another option is to encourage joint venture or contractual arrangements"	That EDB's are not already cooperating.	Westpower rejects this inference, and points to many examples of regional cooperation and joint activities e.g. the USI load management cluster.
9.1	"Efficient distribution prices help support this ambition"	That prices are somehow inefficient.	Westpower observes (i) that most EDB's are improving the efficiency of their pricing by ensuring that prices reflect underlying costs, but are restricted by other expectations such as keeping prices similar across their network and limiting bill shocks, and (ii) that retailers repackaging of fixed and variable charges undermines the cost reflectivity of the EDB's prices.

## 4. Achieving statutory objectives

Westpower notes both the Authority’s statutory objectives and the objectives of other statutory agencies, and considers that an EDB-led approach embodying the following features is the best way to achieve those objectives...

- Visible commitment to decarbonisation, to wider environmental sustainability, and to providing customers with better value for money.
- Transparently signalling DER opportunities to all current and intending participants.
- Maintaining efficient DER connection procedures and systems.
- Commitment to consistent, industry-wide technical standards, operating procedures and market models.
- Public commitment to considering non-network alternatives to network investment.
- Regular customer and stakeholder engagement.

Agency	Objective	How well will the following approaches meet those objectives	
		EDB-led	Market-led
Hikina Whakatutuki (MBIE)	Transitioning to a net zero emissions economy by 2050.	<ul style="list-style-type: none"> <li>• EDB’s face stronger pressures to reduce emissions than third-party DER owners.</li> <li>• A neutral platform (which is already embedded into Westpower’s protocols and standards) is more likely to correctly balance the wider societal goal of emission reduction with private profit.</li> </ul>	<ul style="list-style-type: none"> <li>• Many DER owners will be pursuing private profit (as noted in various US states), with little regard for emissions reduction or network reliability.</li> </ul>
Te Mana Hiko (Electricity Authority)	Promote competition.	<ul style="list-style-type: none"> <li>• Trust-owned EDB’s in particular are well-aligned to the success of their community stakeholders, and therefore more likely to develop models that fairly allocate revenues and costs.</li> <li>• Evidence is that EDB’s are offering DER services in other EDB’s areas e.g. EnBW is installing EV chargers in France (which further demonstrates that EDB’s are not simply seeking narrow distribution benefits).</li> </ul>	<ul style="list-style-type: none"> <li>• Includes the risk that market-led participants will act with self-interest rather than wider societal interests. Examples include... <ul style="list-style-type: none"> <li>• Rooftop solar lobbies trying to capture revenue whilst shifting costs.</li> <li>• Tesla adopting a non-standard plug configuration when other manufacturers are trying to standardise.</li> </ul> </li> </ul>

			<ul style="list-style-type: none"> <li>Emerging picture is that market-led roll-outs of EV chargers are stalling, resulting in fewer EV's and hence less incentive to install chargers (whilst bold EDB-led charger roll-outs appear to be rapidly gaining traction).</li> </ul>
	Promote reliable supply.	<ul style="list-style-type: none"> <li>Non-exempt EDB's are subject to reliability targets under the DPP (whilst exempt EDB's face community expectations), so will seek a model that balances DER benefits with network reliability.</li> </ul>	<ul style="list-style-type: none"> <li>Third-party participants have narrower profit motives, and are less likely to correctly balance DER benefits with supply reliability.</li> </ul>
	Promote efficient operation.	<ul style="list-style-type: none"> <li>Platform neutrality is already embedded into Westpower's consideration of protocols, standards and specific technologies.</li> </ul>	<ul style="list-style-type: none"> <li>Self-interested DER owners are less likely to care about efficient industry operation (noting the above examples of Tesla, and the rooftop solar lobbies).</li> </ul>
Te Komihana Tauhokohoko (Commerce Commission)	Make markets work well.	<ul style="list-style-type: none"> <li>A neutral EDB is more likely to lead to effective and efficient market operation than self-interested third-party DER owners.</li> <li>EDB's wider stakeholder considerations are more likely to lead to efficient, non-distorted cost signals to all participants.</li> </ul>	<ul style="list-style-type: none"> <li>Early movers with private profit motives inevitably try to influence an industry's structure and rules in their own favour, which may well lead to market dominance and erection of entry barriers that discourage efficient new entrants.</li> <li>Whilst a limited number of dominant participants may provide the services demanded (i.e. is effective), it may not provide those services at least cost (i.e. is not efficient).</li> </ul>
	Consumers and businesses are confident market participants.	<ul style="list-style-type: none"> <li>EDB owners are more likely to enter a neutral platform arrangement in which they observe equal and transparent treatment of all participants.</li> </ul>	<ul style="list-style-type: none"> <li>Dominance of an industry by a small number of profit-motivated participants may discourage new entrants.</li> </ul>
Te Tari Tiaki Pungao (EECA)	Encourage, promote and support energy efficiency.	<ul style="list-style-type: none"> <li>A neutral platform based around an EDB is more likely to support efficient use of energy.</li> </ul>	<ul style="list-style-type: none"> <li>A market-led approach risks being captured by the private profit motive of DER owners, especially if the revenue model is based on exported kWh (which appears to be what the rooftop solar industry want).</li> </ul>
	Encourage, promote and support energy conservation.	<ul style="list-style-type: none"> <li>Again, a neutral platform based around an EDB is more likely to support energy conservation.</li> </ul>	<ul style="list-style-type: none"> <li>Again, a revenue model based on exported kWh will be inconsistent with energy conservation. Under such a model, DER owners will be incentivised to generate and export as many kWh as possible with no regard for how it is used.</li> </ul>
	Encourage, promote and support the use of renewable sources of energy.	<ul style="list-style-type: none"> <li>Given that most DER's are solar, wind or hydro, an EDB-led approach may not have much advantage over a market-led approach.</li> <li>However Westpower does note a potential divergence between EECA's objective of promoting renewables and the Electricity Authority's move towards technology neutrality.</li> </ul>	
He Pou a Rangi (Climate Change Commission)	Provide independent advice to assist the transition to a low emissions economy.	<ul style="list-style-type: none"> <li>EDB's face stronger pressures to reduce emissions than third-party DER owners.</li> </ul>	<ul style="list-style-type: none"> <li>Many DER owners will be pursuing private profit, with little regard for emissions reduction (or network reliability).</li> </ul>

		<ul style="list-style-type: none"> <li>• A neutral platform (which is already embedded into Westpower’s protocols and standards) is more likely to correctly balance the wider societal goal of emission reduction with private profit.</li> </ul>	
Te Waihanga (Infrastructure Commission)	Improve long-term economic performance and social well-being by lifting infrastructure planning and delivery.	<ul style="list-style-type: none"> <li>• EDB’s are best placed to coordinate the roll-out of DER’s.</li> </ul>	<ul style="list-style-type: none"> <li>• Includes the risk that market-led participants will act with self-interest rather than wider societal interests. Examples include... <ul style="list-style-type: none"> <li>• Rooftop solar lobbies trying to capture revenue whilst shifting costs.</li> <li>• Tesla adopting a non-standard plug configuration when other manufacturers are trying to standardise.</li> </ul> </li> <li>• Emerging picture is that market-led roll-outs of EV chargers are stalling, resulting in fewer EV’s and hence less incentive to install chargers (whilst bold EDB-led charger roll-outs appear to be rapidly gaining traction).</li> </ul>
Te Komihana Whai Hua (Productivity Commission)	Advise on improving productivity to support overall well-being.	<ul style="list-style-type: none"> <li>• A neutral EDB is more likely to lead to effective and efficient market operation, which will in turn better support societal well-being than self-interested third-party DER owners.</li> </ul>	<ul style="list-style-type: none"> <li>• Market-led approaches risk the emergence of self-interested DER owners who will focus on private profit ahead of societal well-being (again, as evidenced by the rooftop solar industry lobbying against tariff rebalancing in the US and against centralised coordination of inverters in Australia).</li> </ul>

## **5. Observations from published literature**

This section reprints published articles from [Pipes & Wires](#) that further illustrate Westpower's observations.

### **5.1 Observations of self-interest**

#### **Aus – centralised control of rooftop solar (PW #205)**

##### **Introduction**

South Australia's 35% penetration of rooftop solar is highlighting a range of access and pricing issues. This article examines two themes within the broad heading of centralised control of rooftop solar.

##### **Curtailing solar to preserve grid stability**

Back in March 2021 the [Australian Energy Market Operator](#) (AEMO) used its new powers to curtail rooftop solar injection to preserve grid stability by instructing transmission grid operator [ElectraNet](#) to maintain at least 400 MW of grid demand. This resulted in the curtailing of about 67 MW of both industrial and domestic solar injection for about one hour by distribution operator [SA Power Networks](#), and has been quite usefully described as "fixing the solar traffic jam".

##### **The solar tax – charging to inject rooftop solar electricity**

Reducing feed-in tariffs for rooftop solar has proved to be a thorny issue, and the logical progression to charging for injecting rooftop solar is certainly no easier ... readers should be very familiar with the gap between the solar lobby expecting free access to distribution networks, and electric companies needing to recover the fair and equitable cost of using their network. The AEMO recently released a [suite of draft rule changes](#) that would *inter alia*...

- Amend the regulatory framework to clarify that distribution services are bi-directional, and include injection into the network.
- Promote incentives to efficiently invest in networks to support solar injection.
- Enabling electric companies to offer two-way prices and pricing structures for energy injection.

##### **The editor comments**

A little thought (actually a lot of thought) reveals the following...

- Expectations of both solar customers and the community at large are high (possibly unrealistic some might say, with some even claiming that unconstrained injection of renewable electricity is a human right) ... inject as much solar as you want when you want and get paid a high price for it.
- That the issue of all connected customers fairly and equitably paying for their use of the distribution network and the transmission grid is gaining increased regulatory recognition.
- That the technically complex issue of grid stability needs to be more clearly communicated to customers and communities, with the key messages being (i) networks were built to move energy in one direction, and (ii) a grid blackout will be way more inconvenient and costly than your solar panel getting switched off.
- Prices have been used to discourage consumption at peak periods for about 130 years, hence reducing the payment for injected solar is simply a logical extension of this approach.

##### **Further reading**

- [Pipes & Wires #204](#) – increasing need for central coordination.

## US – paying for rooftop solar electricity (PW #203)

### Introduction

Shifting of costs from rooftop solar customers to non-solar customers seems to be one of the major issues that regulators are grappling with. This article examines recent thinking from California against a backdrop of other states thinking.

### Where the other states have got to

Other states recent thinking is summarised in the following table...

State	Recent thinking
<a href="#">Alabama</a>	<ul style="list-style-type: none"><li>Alabama Power currently charges \$5/kW to connect rooftop solar to its network, and sought to increase that monthly charge to \$5.42.</li><li>Various groups opposed that tariff, and petitioned the APSC to prohibit the charge.</li><li>Alabama Power sought to have that petition dismissed, and permit the proposed increase.</li><li>The APSC dismissed the petition, and approved the monthly increase.</li></ul>
<a href="#">Utah</a>	<ul style="list-style-type: none"><li>Solar advocates requested that Rocky Mountain Power's feed-in tariff of 9.2 c/kWh be allowed to continue.</li><li>The UPSC settled on 5.969 c/kWh for summer and 5.639 c/kWh for winter.</li><li>Rocky Mountain Power sought a reduction to 1.5 c/kWh.</li></ul>
<a href="#">Kansas</a>	<ul style="list-style-type: none"><li>Eversource sought a monthly access fee of \$3 / kW or a minimum monthly bill of \$35.</li></ul>

The above table shows that electric companies want higher fixed monthly charges and lower feed-in tariffs, whilst the solar lobby wants the opposite.

### California's thinking

California is searching for a successor to its current net energy metering arrangements, primarily as the penetration of rooftop solar increases. Some noteworthy observations include...

- Simply paying rooftop solar customers at the prevailing retail rate overpays them (Edison Electric Institute).
- Successors to many states existing feed-in tariffs are premature because the solar penetration is still low enough for solar benefits to exceed the costs (Solar Energy Industries Association).
- That the benefit-to-cost ratio of rooftop solar starts to decline when solar injection reaches about 5% of maximum demand.
- The FERC concluded in July 2020 that net energy metering is subject to state jurisdiction, reducing the possibility of a national one-size, fits all policy.

California's 22% solar penetration suggests that a substantial overhaul of net metering requirements dating back to 1996 is merited. Pipes & Wires will examine the California's thinking as it progresses.

## **US – rooftop solar feels the squeeze (PW #202)**

### **Introduction**

[Pipes & Wires #201](#) noted the [Alabama Public Service Commission's](#) decision to not only uphold [Alabama Power's](#) solar tariff, but to increase it. This article picks up on that trend by examining the following recent events...

### **Utah reduces solar feed-in tariffs**

The [Utah Public Service Commission](#) recently set the solar feed-in tariffs (export rates) that will apply to [Rocky Mountain Power](#), as follows...

- Solar advocates requested that the existing provisional tariff of \$9.2 cents per kWh be continued (this tariff was established when Utah's net metering program ended in 2017).
- The UPSC settled on 5.969 cents per kWh for summer and \$5.639 cents per kWh for winter.
- Rocky Mountain Power sought a reduction to 1.5 cents per kWh.

The gap between the tariffs sought by the solar industry and by Rocky Mountain Power suggests that thinking is still poles apart.

### **Kansas battles with solar tariffs**

In early November 2020 the [Kansas Corporation Commission](#) considered public views on [Evergy's](#) proposals to charge either...

- A monthly network access fee of \$3 per kW of installed capacity, or
- A minimum monthly bill of \$35.

A couple of points are worth noting...

- Both proposals aim to decouple revenue from kWh consumption (one of the long-standing themes of these articles).
- The key issue with applying a minimum monthly charge to all customers would be the inherent subsidy from non-solar customers to solar customers.

### **Next steps**

Monthly access fees and solar feed-in tariffs are likely to significantly shape the value landscape of the emerging transactive distribution network, so Pipes & Wires will comment further as these stories progress.

## **US – regulator upholds “sun tax” (PW #201)**

### **Introduction**

The idea that fixed monthly charges are a “tax” on solar seems to be one of the well-established themes of the ideological battle between rooftop solar and electric distribution companies. This article notes a recent decision by the Alabama Public Service Commission to not only uphold Alabama Power's solar tariff, but to increase it.



### **Alabama Power's solar tariff**

Alabama Power currently charges an additional \$5 / kW / month to connect rooftop solar to its network, hence a customer with a 5kW panel would pay an additional \$25 per month. This is referred to as a capacity reservation fee, or a firm back-up fee.

### **Challenges to the tariff**

Various groups opposed that tariff, which led to the Southern Environmental Law Center (SELC) petitioning the Alabama Public Service Commission (APSC) back in 2018 to prohibit Alabama Power from charging a solar tariff, claiming that it reduces the benefit of rooftop solar (which it undoubtedly does, and which electric companies have never denied).

Alabama Power in turn asked the APSC to (i) dismiss the petition, and (ii) allow the tariff to be increased to \$5.42 / kW / month, claiming that the existing \$5 / kW / month was insufficient to offset the reduced kWh revenue.

### **The APSC decision**

In a 3 – 0 decision, the APSC not only voted to dismiss the petition, but to allow Alabama Power to increase its solar tariff to \$5.41 / kW / month.

### **The various views on the decision**

The various views on the decision have fallen into a fairly predictable pattern...

- The various solar and environmental have criticized the decision, claiming that it is a regressive step for Alabama, out-of-step with other states policies, and that the APSC along with Alabama Power continue to prevent the transition to cleaner energy.
- Alabama Power in turn reiterates its argument that rooftop solar customers who want the security of grid connection need to pay for that connection.

## **Aus – charging customers to inject solar? (PW #200)**

### **Introduction**

Two key trends that have emerged from the increasing penetration of rooftop solar are...

- Increasing the fixed monthly tariff that rooftop solar customers pay so they contribute more fairly to the fixed costs of the distribution network (the declining kWh argument).
- Ramping down the feed-in tariffs (as the appetite for subsidising solar customers seems to be declining, and electric companies are calculating the true value of injected solar energy).

This article examines recent moves in Australia to charge rooftop solar customers for injecting into the distribution network.

### **Recent moves in Australia**

Most of us are familiar with the argument that reduced nett kWh consumption by rooftop solar customers reduces their contribution to the high fixed costs of owning and operating the distribution network, and shifts some of those costs on to non-solar customers. This shifting of costs has been a major concern to social service agencies, so it is not really surprising that the St Vincent de Paul Society of Victoria and the Australian Council of Social Services with the backing of [SA Power Networks](#) has [proposed a change to the National Electricity Rules](#) that would allow distributors to charge rooftop solar customers for injecting.

## **The regulatory framework**

Initial comments from the submitters suggests that whilst the all-important definition of direct control services clearly contemplates the consumption of electricity by customers and the conveyance of electricity to customers, it is not clear that this definition was intended to also apply to injection of electricity from customers. This in turn makes the application of the pricing principles in Chapter 6.18.5 of the [National Electricity Rules](#) unclear in regard to whether specific tariffs applying only to injection can be compiled.

## **Initial comments**

Initial comments from SA Power Networks suggest the proposed rule change would allow an increase of a rooftop solar customers annual bill by between \$10 and \$30, but that SA Power Networks' allowable annual revenue would not increase. Not surprisingly, rooftops solar customers and the solar lobby are unhappy with this proposal, and are warning of chaos and confusion.

## **The wider issue of grid stability**

Increasing penetration of solar (thought to be about 1,500MW of capacity, and about 12% of South Australia's generation last year) seems likely to cause the following problems...

- Over-voltage on LV feeders, for which SA Power Networks is planning a further 100 voltage monitoring sites for the 2021 year.
- Sudden loss of generation if the attached inverter can't ride through faults.
- Squeezing rotating plant out of the market as the issue becomes minimum demand rather than maximum demand, leading to a loss of frequency keeping capability and system inertia.

This represents a major frontier for DER's, hence Pipes & Wires will comment further as this rule change in particular and the AEMO's wider work in general progresses.

# **US – ruling against rooftop solar demand tariffs (PW #198)**

## **Introduction**

A recent theme of Pipes & Wires has been the diverging views on whether separate tariffs for rooftop solar are fair and, indeed, lawful. This article examines what may prove to be a seminal Court ruling in the US state of Kansas in favour of rooftop solar, and appears to be a leaning against allowing additional tariffs for rooftop solar customers.

## **The core of the argument**

The core of the argument is whether the reduced nett kWh consumption and hence revenue from a rooftop solar customer in a traditional kWh-based tariff structure justifies a demand tariff to ensure that solar customers pay their fair share of the distribution network's costs, viz...

- Rooftop solar advocates claim that including a demand tariff creates an entry barrier (which I don't think electric companies deny), and is therefore unjustified.
- Electric companies claim that the reduced nett kWh consumption by rooftop solar customers mean they are not paying their fair share of the network costs, requiring a subsidy from non-solar customers.

## **Evergy's proposed rooftop solar demand tariff**

Evergy is the merged Westar Energy and Great Plains Energy (Kansas City Power & Light), which supplies about 1,000,000 electric customers in the eastern half of Kansas and in western Missouri.

Back in October 2018 Evergy began charging a solar demand tariff of \$3 per kW during winter, and \$9 per kW during summer on all rooftop solar installed after October 2015 with the agreement of the Kansas Corporation Commission (KCC). In 2019 Evergy agreed to repeal the solar demand charge for all installations up to October 2018.

### **Court ruling on Evergy's proposed tariff**

The approximate sequence of events is...

- October 2018 – Evergy introduces a solar demand tariff on all rooftop solar installed after October 2015.
- April 2019 – Kansas Court Of Appeals upheld Evergy's solar demand tariff.
- July 2019 – Evergy agrees to repeal the solar demand tariff on all rooftop solar installed before October 2018.
- April 2020 – [Kansas Supreme Court rules that Evergy's solar demand tariff is discriminatory](#), and therefore illegal. This decision reverses the previous decisions of the KCC and the Court of Appeals, and remanded Evergy to work with the KCC to develop a non-discriminatory tariff.

### **Key features of the Supreme Court ruling**

Key features of the Supreme Court ruling include...

- That the solar demand tariff is discriminatory, and is clearly different from the time-of-use or minimum bill tariffs quite clearly allowed under Kansas law.
- That electric companies can still alter the tariffs applying to rooftop solar customers, but it must be within a wider non-discriminatory context.
- That the KCC improperly approved Evergy's original tariff application.

Pipes & Wires will continue examining this critical component of renewable energy as significant regulatory decisions and court rulings emerge.

## 5.2 Evidence that EDB-led EV charger roll outs get better traction

### US – recovering the cost of EV chargers (PW #208)

#### Introduction

News recently emerged that Southern California Edison plans to install 38,000 EV chargers. This article looks beyond the engineering scale of this plan to consider the revenue and regulatory models that might emerge.

#### SoCalEd's plans

SoCalEd plans to install 38,000 EV chargers throughout its service territory over the next 5 years, with an added emphasis on installing about 18,000 chargers near multifamily apartments and condominiums. Media comment noted that the roll-out will be funded by SoCalEd's customers.

#### The CPUC's responses

In July 2020 the [California Public Utilities Commission approved \\$442m of funding](#) for the roll-out, noting that the decision was consistent with California's emission reduction policies.

#### The emerging model

Key features of the emerging revenue and regulatory model appear to be...

Parameter	SoCalEd roll-out	Remarks
Revenue	Will allow costs to be recovered from customers at large.	Appears to be at odds with other charger roll-out decisions that have prohibited recovering the costs from customers at large.
Regulatory approval	Appears to have approved spend rather than cost recovery.	Again, this seems unusual in that regulators usually specify how much cost can be recovered through regulated tariffs, rather than what can be spent.
Ownership	Allowed to own chargers.	States show a mixed preference for ownership, with some states preferring competitive third-party ownership, and other states allowing ownership by electric companies.

#### Further reading

- [US – who should own EV chargers?](#)
- [US – recovering the cost of EV charging infrastructure](#)
- [US – clarifying the definitions around EV charging](#)

## **US – recovering the cost of EV charging infrastructure (PW #200)**

### **Introduction**

[Xcel Energy](#) recently announced its plan to provide charging infrastructure for 1,500,000 EV's by 2030 (a 30x increase from current numbers). This article looks for any early clues as to...

- How the cost will be recovered, including from which classes of customers.
- How individual regulators are likely to treat those cost recovery plans.

### **Xcel's plan in brief**

Key features of [Xcel's plans](#) include...

- Providing charging infrastructure for 1,500,000 EV's through Xcel's service territory (Minnesota, Michigan, Wisconsin, North Dakota, South Dakota, Colorado, Texas and New Mexico).
- Saving its electric customers over \$1b in gasoline every year by 2020.
- Providing low, off-peak charging tariffs that are equivalent to no more than \$1 per gallon of gas.

### **Early indications of cost recovery**

Early indications of cost recovery include...

- Minnesota – unlimited off-peak charging for a flat monthly fee.
- Colorado – incentives to charge when the grid is not congested (based on a time-of-use tariff).

Both of these tariffs are well aligned to the core theme of encouraging off-peak charging.

### **Possible regulatory treatment**

It's not clear that any firm regulatory views have emerged, other than some previous recommendations from the [Michigan Public Service Commission](#) that the capital cost of EV chargers (and presumably the associated infrastructure) should be excluded from the rate base, and that residential EV chargers should be treated as regulated assets.

## **US – paying for rooftop solar (PW #195)**

### **Introduction**

Who should pay for rooftop solar and on what basis has been an on-going issue for what seems to be many years. This article examines a proposal from the [New York Department of Public Service](#) (DPS) based on solar capacity.

### **The wider context**

The wider context for the proposal was an agreement back in 2016 between several electric companies and solar providers to migrate away from net metering towards a set of sliding-scale fees. The [New York Public Service Commission](#) (PSC) also intended to start reducing the sole feed-in tariff from 31<sup>st</sup> December 2019.

### **The proposal**

The DPS proposes that the PSC extend the curtailing of mass market net metering from 1<sup>st</sup> January 2020 to 1<sup>st</sup> January 2021, allowing rooftop solar customers a further 12 months to enjoy the full retail rate for solar injection.

From 1<sup>st</sup> January 2021, electric companies would be able to charge rooftop solar customers between \$0.69 and \$1.09 per kW of solar capacity.

## **US – rebalancing fixed charges to reduce solar subsidies (PW #194)**

### **Introduction**

Exactly how much non-solar customers are subsidising customers with solar is an ongoing debate. This article briefly examines an apparently big increase that [San Diego Gas & Electric](#) (SDG&E) recently proposed.

### **The proposed tariff increase**

The proposed tariff increase will see an increase in SDG&E's minimum monthly charge from about \$10 to about \$38. The underlying principle is a migration from variable (kWh) charges to a fixed daily charge, principally to ensure fairer recovery of the high fixed costs (readers should be very familiar with this argument).

### **The various views**

Various views include...

- The [California Solar & Storage Association](#) claims that the existing tiered tariffs will save solar customers more than the move to TOU metering associated with the tariff rebalancing (required by the [California Public Utilities Commission](#)).
- PV Magazine is understandably dismissive of SDG&E's approach, and claims that the argument of cost shifting lacks factual evidence.
- The California Public Utilities Commission acknowledges its requirement for electric companies to adopt TOU metering, and notes that timing will be critical to integrating renewables (suggesting a big role for batteries).
- Lawrence Berkeley National Laboratories [claim that cost shifting could be negligible](#) under some specific combinations of value of solar and cost to supply (it would seem that it is the value of solar that is heavily disputed).

### **Next steps**

The CPUC is expected to decide on the proposal around March or April 2020.

The DPS rejected a proposal from a group of electric companies to replace net metering with a customer demand tariff.

### **The editor comments**

This proposal suggests that the battle lines can be drawn closer (perhaps much closer) than what might be implied by other states, suggests that we might be getting closer to an agreed solar tariff that reasonably encourages solar whilst also allowing the electric company to fairly recover its costs.

## **5.3 Emerging rules on DER ownership**

### **US – regulator rejects battery ownership proposals (PW #207)**

#### **Introduction**

Whether electric companies should own or operate batteries is one of the battle lines of the emerging world, with what seemed to be an even mix of regulatory decisions for and against. This article examines a recent decision by the [New York Public Service Commission](#) that *inter alia* rejected a request for utility-owned batteries.

#### **The context for the decision**

The [Energy Storage Order 2018](#) required electric companies to competitively acquire the dispatch rights for bulk energy storage that would be operational by 31<sup>st</sup> December 2022. Implicit within the Order was the firm view that battery storage should be developed and owned by third parties.

The initial targets for 31<sup>st</sup> December 2022 included 300 MW of storage for [Consolidated Edison](#), and 10 MW each for the other investor-owned electric companies in New York state.

#### **The Joint Utilities Group petition**

Initial market solicitations during 2019 and 2020 did not result in sufficient third party offers, prompting the [Joint Utilities Group](#) to claim that the [Energy Storage Order 2018](#) needed to be amended to achieve the goal of 3,000 MW of battery storage by 2030. Hence the electric companies petitioned for the following...

- An extension to the 31<sup>st</sup> December 2020 deadline out to 2025.
- Extending the duration of the dispatch rights contract from 7 years to 10 years.
- Ownership of batteries by the electric companies for a limited period, followed by a competitive sale process to third party operators in which the electric company would retain ownership for 2 further years if minimum sale prices were not met.

#### **Key features of the NYPSC's decision**

Key features of the NYPSC's decision include...

- Approving the requested time extension.
- Approving the requested duration of dispatch rights.
- Declining the ownership proposal, on the basis that it could inhibit the development of a competitive storage market and that the evolving NYISO rules would increase the certainty of emerging revenue streams.

#### **Further reading**

- [Pipes & Wires #186](#) – simplifying market access for battery storage ([FERC Order #841](#)).

## **US – regulatory treatment of batteries in the Aloha state (PW #206)**

### **Introduction**

Most of us are well aware of at least some regulatory unease about electric companies (or lines companies) owning and operating batteries. This article examines a recent regulatory decision in Hawaii around a power purchase agreement with a battery operator.

### **A bit about HECO**

The Hawaiian Electric Company (HECO) was established in 1891, and rapidly expanded including by acquiring other electric companies such as the Maui Electric Company. HECO currently supplies about 463,000 customers from a firm generation capacity of about 2,300 MW. Annual generation is about 8,800 GWh, of which about 26% is from renewable sources.

A key theme for HECO is the retirement of oil-fired and coal-fired generation as part of its [journey to 100% renewable energy by 2045](#). Those retirements are being increasingly scrutinized by the Hawaii Public Utilities Commission (HPUC).

### **The proposed Kapolei project**

The [Kapolei Energy Storage](#) being developed by Power Plus is located on the island of Oahu, and will provide 185 MW - 565 MWh of batteries to provide demand shifting and frequency response under a power purchase agreement with HECO.

### **The HPUC's decision**

The [HPUC recently approved HECO's power purchase agreement](#) with Power Plus primarily because it would assist grid reliability after the retirement of the 180MW coal-fired West Oahu station in 2022 that currently supplies about 15% of Oahu's electricity. That approval, however, came with a suite of conditions that included...

- Requiring HECO to forego specified performance incentives for future renewable energy projects.
- Given increased support to community-based renewable energy projects.
- Removing a specified cohort of fossil-fired generators from the rate base, meaning that costs would be carried by shareholders rather than customers.
- Requiring HECO to account specifically for the percentage of stored energy derived from fossil fuels.

In reaching its conclusion, the HPUC identified the following concerns...

- That HECO's reserve capacity margin would decline as West Oahu is closed and new renewable projects are delayed.
- That the Kapolei battery would be charged with fossil-generated electricity (Editors' note – this overlooks the issue of battery storage allowing more efficient operation of all of HECO's thermal plant).

HECO in turn expressed concern that the imposed conditions could actually impede Kapolei's development.



## **Aus – ring-fencing batteries (PW #206)**

### **Introduction**

[Pipes & Wires #205](#) examined the AER’s work stream on ring-fencing batteries. This article examines the AER’s [Draft Guideline v3](#) that was released in May 2021.

### **Recapping the AER’s objectives for ring-fencing**

The AER has published various guidelines on ring-fencing assets, which have the [following objectives](#)...

- Require accounting and functional separation of Direct Control Services (a subset of Standard Control Services) from the provision of other services.
- Promote competition in the delivery of electricity services.
- Limit the ability of electric distribution companies to cross-subsidise other services from its Distribution Services.
- Prevent electric distribution companies conferring a competitive advantage on related entities.

### **Key features of the v3 Draft**

The AER’s draft positions include...

- Allowing distributors to provide generation services under an exemption framework that will include *inter alia* a generation revenue cap.
- Distributors will be *prima facie* prohibited from using batteries to provide contestable services to either themselves or to other parties, but can apply for a waiver to supply excess battery capacity to a third party where the distributor believes that the benefits outweigh the detriment.
- Restrictions on a distributor sharing its staff with an affiliate that provides contestable services to ensure that the affiliate is not provided with an unfair advantage.

As usual, Pipes & Wires has paraphrased the Draft, so affected parties should examine the AER’s full publication.

### **Next steps**

The AER expects to publish its Final Guideline and explanatory statement around September or October 2021.

## **US – who should own EV chargers? (PW #203)**

### **Introduction**

Over the last couple of years ago Pipes & Wires examined some thorny issues around EV chargers, and in particular whether electric companies should be allowed to own chargers. This article re-visits that issue, prompted in part by an [article in the Wall Street Journal](#).

### **The key issues**

The key issues that Pipes & wires has examined include...

- Whether electric distribution companies should be allowed to own public EV chargers, as distinct from only allowing third-party operators (reflecting regulators preference for free markets).

- Whether the capital cost of public EV chargers should be included in an electric company's rate base (regulatory asset value), allowing recovering of that capital cost from all customers rather than from just EV drivers.
- Whether the tariffs of all EV chargers would be regulated, or only just the tariffs of those chargers owned by electric companies.
- Whether individual state regulators actually have jurisdiction over EV chargers.
- Whether EV chargers are selling electricity or just selling a charging service.
- The wider chicken-and-egg conundrum of slowing EV uptake because of the limited numbers of public chargers.

Readers might recall that this led to a bit of an impasse between electric companies who were willing to install and operate public chargers on a regulated basis, and charging companies and regulators who preferred a free market model.

### **Emerging thinking**

It appears that many states are now warming to electric companies rolling out public chargers, presumably because that is the most likely way to increase EV uptake. Pipes & Wires will re-visit this theme as news emerges.