Orion

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Electricity Authority
Wellington
by email: submissions@ea.govt.nz

SUBMISSION ON REAL TIME PRICING CONSULTATION PAPER

Introduction

1 Orion New Zealand Limited (**Orion**) welcomes the opportunity to comment on the "Remaining elements of real-time pricing consultation paper" (the **paper**) released by the Authority in March 2019.

2 In summary:

2.1 Some important details of the RTP approach remain unclear,

2.2 The processes by which the supporting demand forecasts will be produced, maintained and interpreted will be particularly important.

3 The remainder of our submission is in two parts:

3.1 Reflections on our previous comments,

3.2 General comments on the paper.

Reflections on our previous comments

4 It appears to us that few if any of our comments on the August 2017 paper have been considered or responded to in this paper. We discuss some of these under the following headings.

The end-to-end process and short-termism

5 It remains unclear to us when precisely final prices are to be produced, and how much before real time they will be known or what determines how long a particular set of RTPs will persist. We suspect the combination of these things will significantly reduce the chances that the prices are in fact more actionable. We remain concerned that a solely short term dispatch focus is missing a potential opportunity to re-think how consistent this is with optimisation over a longer time frame.

Demand forecasting

6 Central to the process will be the various demand forecasts used by the system operator (SO), and the extent to which they are different. This is not directly part of the RTP project, but we

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note the reference to bottom-up short term forecasts based on ION metering. We submit that, in an environment of increased demand response, it is not the current metered quantity – however accurately measured - that is so important. Rather, it is how much demand response is 'included' (perhaps more accurately 'reflected') in the current metered demands. Is the system to be dispatched to meet a forecast based on metered demand, or a forecast based on what the demand would be were demand response added back. This is not a trivial exercise and it has not been explained how the SO is going to do it. We can safely say that if demand response is zero, everything should be fine. But the RTP project is founded – from a cost-benefit perspective at least - almost entirely on materially increased demand response, so how this is modelled and managed becomes critical.

7 Related to our point below about distributor switching between GXPs, it is conceivable that this could create some issues for the SO in understanding what it is looking at. It may be more sensible to view parts of the grid where switching between GXPs is possible in the same way that "blocks" of generation are treated: it is the aggregate that is important rather than the components.

Distributor involvement in dispatch and existing load management

8 Distributors are involved in or influence the wholesale market in two key ways:

8.1 They are agents of the SO with respect to load shedding (if this is required), and

8.2 They - occasionally at present - influence wholesale market outcomes via load management.

9 Regarding load shedding we are not sure how this will work in real time. It appears that the 'dispatch' of load shedding instructions will come out of a pricing run that produces a scarcity price, but what is being 'dispatched' here is not an offer or a bid, but a distributor's (or multiple distributors') ability to turn load off in real time. These are not the same things. We note:

9.1 There may well be demand / generation response that has also been dispatched (or responds without instruction) but its operation is confounded by the distributor actions – for example if it happens to be on the same feeder. This could lead to undershooting of the required response.

9.2 Where demand / generation response is not connected to the shed feeder, there could be overshooting.

9.3 In energy shortage situations and grid constraint situations there is likely to be some notice that the situations are emerging. This may not happen under RTP. Aside from operational matters, this will mean there is much less opportunity for customers to prepare for an outage. This will in general increase (worsen) the economic impact.

9.4 The 'lumps' of load available to distributors to shed may not match up very well with the amounts required by dispatch, and are not always even known in real time. How will the SO know what to ask for, and of whom? How will it monitor what actually happened? If the scarcity pricing situation continues, should the distributor move to rolling outages?

10 Regarding distributor load management, and as explained in previous submissions, this – at least in Orion's case and in the upper South Island – involves managing load to a limit – a maximum aggregate demand across the region. When this management is active, pretty much any other form of demand response is effectively, and automatically, negated: if some load is turned off, a similar amount of other load will be turned on and vice versa. Probably the main way that this impacts on RTP is via load forecasting, as load management primarily changes the shape of profile across the day. A forecast based on a typical day profile is likely to be very inaccurate.

11 We note the depiction of distribution networks as 'clouds' in the paper (Figure 1). This is fine in context, but there needs to be fuller acknowledgment that distribution networks have their own constraints and operational imperatives. The actions of wholesale market participants and demand response players may from time to time push those constraints to the point where offsetting action is required by distributors. This will change wholesale market outcomes.

12 Going forward, distributors may themselves have many more arrangements in place to procure further demand response as the number of DERs deployed increases. This certainly seems to be anticipated by recent reports by IPAG and ENA's STWG. The coordination of the needs that any given demand response is being applied to meet will be very important in those cases.

13 Finally, the attributes of potential new DER-based demand (or generation) response needs to be considered. In particular where this involves storage (batteries, EVs) then it will, as does existing storage in the form of hot water:

13.1 Have a very low SRMC, with this increasing as the duration of 'dispatch' increases, and

13.2 Display the characteristic that the longer it is dispatched the higher the restorable load across multiple DERS, due to reduced diversity.[1]

In summary

14 On all of these topics we suggest that the Authority and the SO spend a good deal of time over the next few years detailing the processes involved, and how the SO will respond under various scenarios. We suggest that a significant number of simulations need to be run, for example of various combinations and levels of bid and unbid demand response.

15 To the extent that distributor load management is a factor, we are happy to work with the Authority and the SO so that they understand this.

16 One area of particular interest to distributors is the nature of the arrangements that will be used when scarcity prices are to be used but it is not a formal public conservation campaign. Will distributors be *required* to switch off customers even if a lower cost response is available to them? What units of load shedding will be called upon?

[1] To explain using the hot water example: when water heating is turned off, not all connections show a reduction in load as they may have already reached the desired temperature and be off anyway. As time passes without supply, the number of fully heated cylinders inevitably reduces, so that when supply is restored the increase in load will be higher than the original decrease.

General comments

Dispatch-lite

17 We support the extension of the dispatch-lite concept to generation. This is because we agree that the location of generation (in front of or behind the meter) does not, of itself, change its impact on the demand that must be met by other generation. Whether inclusion of generation within dispatch-lite will make a difference to its appeal to participants remains to be seen.

18 As far as we can tell the only advantage a dispatch participant gets over a non-dispatch participant is an actual instruction, if dispatched. This is primarily an indication that the price is at or above the level that the participant is willing to reduce demand / increase generation. Alternatively, a participant could simply monitor dispatch prices in real time and make their own decisions outside any Code restrictions or obligations.

19 Of the various features set out in Table 1, we consider that compliance is problematic and needs further specification. Unless the dispatch-lite load or generation is separately metered, it will be very difficult to determine with any precision whether it responded as expected. On the other hand, if it is separately metered, it may be difficult to determine whether it was simply reconnected to another non-dispatchable demand / generation metering point at the same location at the same time (an EV is the obvious example).

20 We doubt that the contemplated monthly assessment is scalable if there are many thousands of participants.

21 We note in passing in relation to para 3.24(a) of the paper that there are some parts of the grid where neither the purchaser nor the system operator will be able to tell in real time what GXP an ICP is connected to (for example Orion regularly[2] switches load between Islington and Bromley). If there is material - bid or unbid - demand response available, it might not be occurring at the GXP the SO / consumer / participant thinks it is.

Reserve shortfalls

22 The proposed approach to handling reserve shortfalls seems reasonable. We believe it is likely to result in higher prices overall – other things equal - but not inappropriately higher. At the workshop on 29 March it was helpfully explained that the New Zealand market's approach of co-optimisation, which we understand is unusual internationally, requires a solution like that proposed. It would be helpful at some stage if the Authority explained why a different approach – not co-optimising – would not be a superior overall approach given its significant influence on RTP design.

23 As we noted at the workshop, the interaction between scarcity energy 'offer' prices and shortfall reserved prices needs to be considered in the final design. This is because the two prices can, in normal (non scarcity) circumstances, interact in ways that make the energy price materially higher than the highest dispatched energy offer. Given the rationale for scarcity

[2] Roughly once a month on average and for several days at a time

prices – effectively a cost of non-supply – we are not sure the normal logic applies in scarcity situations; the cost of non-supply of energy cannot be, or should not be able to be, more than the value of the energy not supplied. Put another way, customers not having reserve when they don't have energy does not make them worse off.

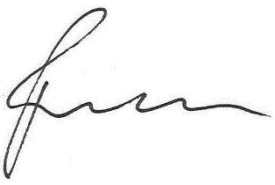
Scarcity pricing values

24 As we noted in our October 2017 submission, there is often considerable resource available at a lower cost than the lowest priced tranche of existing scarcity prices. We do not believe it is reasonable to argue that prices that are higher than they need to be can be efficient.

Concluding remarks

25 Thank you for the opportunity to make this submission. Orion does not consider that any part of this submission is confidential. If you have any questions please contact Bruce Rogers (Pricing Manager), DDI 03 363 9870, email bruce.rogers@oriongroup.co.nz.

Yours sincerely



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