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Submissions
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SUBMISSION ON TPM WORKING PAPER – ACOT

- 1 Orion New Zealand Limited (**Orion**) welcomes the opportunity to comment on the “Transmission pricing methodology: Avoided cost of transmission (ACOT) payments for distributed generation” working paper (the **paper**) released by the Electricity Authority (Authority) in November 2013.

Introduction

- 2 The paper indicates that the Authority will release a new issues and proposals document in the future, and we will reserve our position on that until we have the full picture. In addition a number of other working papers have already been produced and others are in preparation by the Authority. As such, our submission on this current paper is quite brief.
- 3 The Electricity Network Association (ENA) has also prepared a submission on the paper. Orion endorses the ENA submission.

Comments

- 4 We are of the view that the paper is a reasonable summary of the situation, and in particular we endorse the conclusion that the pricing elements of Part 6 of the Code are largely responsible for the current situation, and are in need of review. However it is important to note that:
 - As alluded to in the paper, Part 6 was originally intended to “facilitate” distributed generation (DG), and it appears to have done so, albeit in some cases arguably at the expense of efficiency. At the very least this is a cautionary tale for regulators.

- Having said that, Part 6's approach of basing payments to DG on avoided charges is much simpler than attempting an economic analysis, and in an overall average long term sense may not be such a bad proxy - transactions cost cannot be ignored here, particularly for SSDG. If a purer economic approach is to be introduced, it might be sensible to have some *de minimis* for this, and it might also be that the requirement be on the grid owner to do the analysis for any generation above this: if there is a benefit from larger scale DG, the grid owner pays up; if there isn't a benefit, no one pays up.¹
- At least some of the DG investment that might look doubtful in hindsight is largely sunk. As the paper notes, the Authority will need to be mindful of the possible financial impact on the owners of such investments of any changes to the pricing aspects of Part 6.²
- Care needs to be taken in reviewing the pricing aspects of Part 6 at this time given the Authority's TPM review which has much wider scope, and which may itself change the nature of the costs 'avoided' by distributors.

5 We also have more specific comments as set out below.

Terminology

6 By using the single expression 'ACOT' to apply to the costs and benefits that DG might impose / provide for both transmission *and* distribution there is some scope for confusion. In the case of Orion, the "ACOT methodology summary" in Table 5 mentions that we pay \$115 per kW [per year] based on LRAIC. We appreciate that 'ACOD' is not a pretty acronym, but this amount relates just to distribution. A different value is used as the basis for the transmission component. Moreover, the actual payment we make, once we have received and approved an application for export credits, is somewhat less than LRAIC to reflect the fact that generation is not a perfect substitute for distribution **or** transmission.

Data

7 We are not sure that Table 4 in the paper has appropriately interpreted the quoted sources, at least in the case of Orion. Our disclosed avoided cost of transmission includes costs that we have incurred in providing alternatives to what Transpower would otherwise have built. That amount is mostly not related to DG. Moreover, the installed capacity of DG is not necessarily related to the payment we make, as not all connected DG receives payments. By way of

¹ After all, Transpower is required to consider transmission alternatives as part of the investment approval process.

² We note the separate current review of the operational aspects of Part 6.

clarifying, the table in the appendix shows the results for various aspects of DG on the Orion network for the last four years. In short, we estimate that there is currently around 48MW of DG connected to the Orion network, 46MW of which is “liquid fuel” generation all with individual capacities greater than 100kW. Of this we estimate that about half (22MW) responds to our peak pricing signals. The 23 connections with which we have arrangements to pay export credits have *capacity* of around 16MW, but their *export* during our winter 2013 peak period was much less at around 3MW, the remaining capacity will have been offsetting site load. The actual ACOT payments (transmission part only) we made for this export work out at around \$42 per kW of export. It can be seen that the total amount paid in relation to transmission in the 2010 disclosure year was around \$238k, not the \$458k in Table 4. Moreover, while the capacity of those generators to whom we paid export credits was indeed around 8MW in 2010, that is considerably less than what the total DG capacity was in that year – around 34MW.

- 8 Extended across all distributors this raises the question of what amounts are in fact being paid to DG, and on what basis those amounts are being calculated.

Orion’s approach

- 9 We appreciate that the paper mentions Orion’s approach approvingly (para 9.3, page 33). However, we think it is important to clarify how DG fits into our overall pricing approach, rather than just focussing on export.
- 10 We have peak components of our pricing that reflect our estimates of the LRAIC of new distribution network. These components also reflect a portion of our transmission costs. Together these prices provide a value against which consumers (or retailers or third parties) can invest in load management approaches and technologies, including DG at their connections.³ As just noted, for the larger consumers on our network, we estimate that there is about 20MW of diesel-fuelled DG response to our peak pricing signal. However, much of this serves primarily to significantly reduce measured demand at the connections at peak times, and, thereby, delivery costs. It is only if such generation exceeds site demand that it would attract any export credits (had they been pre-approved) and only for the amount of the export – the amount by which the site generation exceeds the site load. Hence the values in the table in the appendix.
- 11 In other words, the amount of DG that responds to our price signals is materially greater than the amount that receives explicit ACOT payments, the value to the consumers in terms of reduced delivery costs is much greater than the ACOT payments that we make and the effective saving per kW is somewhat higher for load reduction than it is for export.

³ They may have this for security of supply reasons as well.

- 12 The proposed TPM would reduce the transmission component of the price signal that DG sees on the Orion network. Other things equal we would expect to see less DG response, with consequent increases in peak demands. This will bring forward transmission investment. (We appreciate that Orion may be unusual with respect to the proportion of DG that supports demand response as opposed to DG whose main purpose is generation.)

DG and transmission investment

- 13 The paper, in the heading for section 8, asks “Do ACOT payments reduce transmission investment?” The question should be “Does DG reduce transmission investment?” We believe that the answer is that it can, and in the upper South Island at least, that it has and does.
- 14 DG is a significant component of the demand response that upper South Island distributors achieve through our coordinated approach to load management, including a back office system funded by Transpower⁴. By limiting coincident peak demand in the region by 20-30MW, we collectively help defer the next upgrade to the transmission assets into the region. This is because the response is consistent year-on-year, effectively making Transpower’s ‘Annual Planning Report’ and ‘USI Needs Analysis’ load projections materially lower than they would otherwise have been.
- 15 This was particularly important in the USI where load growth is uncertain. Coordinated load management (including DG) created a 2 year deferral of transmission investment just before demand growth became flat (as a result of the earthquake, economic downturn and energy efficiency, etc) and therefore created an even greater deferral than 2 years. In a time of flat or slow growth and new emerging technologies, DG and other DSM initiatives create option value by facilitating delayed stepped investment decisions.
- 16 In our view it does not follow that because much DG is individually small it is “likely to have minimal impact on transmission investment decisions” (para 8.15, page 30). It is the aggregate that matters, just as it is the aggregate of individual household load management decisions, when coordinated by upper South Island distributors, that reduces aggregate peak demand by around 100MW.⁵
- 17 It might be argued that demand response could be acquired only at or much closer to the time that new transmission investments are planned. However, this

⁴ The actual demand response is funded by distributors or their contractual arrangements with customers.

⁵ This is from peak period shedding of hot water heating. This is the total available response, and we estimate that coordination of the response across all USI distributors ensures this is maximised and about 20 to 30MW more than it would be if it was not coordinated. In addition, we estimate there is a further 30-40MW of peak reduction on the Orion network by consumers who have elected to heat their hot water only at night.

ignores the fact that much demand response itself requires long term investment, for example by homeowners in installing storage water heaters, service providers in the signalling systems (such as distributor ripple injectors) and by equipment providers in the necessary control systems (such as ripple relays). None of this can be rapidly deployed, and some (such as storage hot water heating) possibly could not be economically deployed at all after the event.

Concluding remarks

- 18 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

A handwritten signature in black ink, appearing to be 'BR', written in a cursive style.

Bruce Rogers
Pricing Manager

Appendix: table of ACOT payments to DG on the Orion network 2010 to 2013**Distributed generation on the Orion network**

	2010	Year ended March		
		2011	2012	2013
All connected DG				
Number	70	86	99	147
Capacity (kW)	34,102	37,405	37,907	47,598
Export (kWh)	2,628,100	3,291,675	6,066,360	4,155,401
Capacity (kW, where >100kW)	33,502	36,452	37,329	46,863
Capacity (kW, where liquid fuel)	33,146	35,981	36,798	46,332
Export credits				
<i>Standard</i>				
Number	15	20	19	21
kW exported	3,090	3,858	2,836	2,676
\$ paid (ACOT)	\$ 114,004	\$ 138,696	\$ 101,086	\$ 100,902
\$ paid per kW export	\$ 37	\$ 36	\$ 36	\$ 38
Capacity (kW)	7,751	14,079	13,539	15,133
<i>Special</i>				
Number	1	1	1	2
kW exported	40	84	183	237
\$ paid (ACOT)	\$ 5,556	\$ 13,671	\$ 16,191	\$ 21,538
\$ paid per kW export	\$ 139	\$ 163	\$ 88	\$ 91
Capacity (kW)	525	525	360	885
Generation credits				
Number of connections	35	32	31	11
kWh generated	357,450	307,554	422,808	110,884
\$ paid (ACOT)	\$ 117,958	\$ 92,266	\$ 126,842	\$ 33,265
Capacity (kW)	14,577	15,388	15,316	9,358
\$ paid per kW capacity	\$ 8.09	\$ 6.00	\$ 8.28	\$ 3.55
Total credits				
\$ paid (ACOT)	\$ 237,518	\$ 244,633	\$ 244,119	\$ 155,706