Waitaki Catchment Water Allocation Board

Submission on Water Allocation

from

Network Waitaki Ltd.

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for Network Waitaki Ltd.

Introduction

Network Waitaki is the electricity lines company servicing the Waitaki District from Shag Point in the south, to the mouth of the Waitaki River, and to Lake Ohau, including the Hakataramea Valley.

It is a 100% consumer trust owned company, headquartered in Oamaru. Network Waitaki has been the sole provider of the local power supply infrastructure in this area for the past 85 years.

We represent the interests of the 12,000 electricity consumers in North Otago and its outlying areas.

We make this submission in order to ensure that the interests of local power consumers are represented to the Water Allocation Board for inclusion in the formulation of the draft Allocation Plan.

Summary

Network Waitaki believes that distributed hydro generation is a more efficient form of generation in terms of economic wealth creation than the existing large scale centralized grid connected model. Economic analysis to date does not appear to take into account the differences between grid connected generation and distributed generation.

It believes management of local resources should target multi-use of water from the Waitaki River in a more balanced way to maximize growth in the local economy. Such multi-use of Waitaki water for distributed hydro generation and irrigation has untapped potential to ultimately expand the national economy. That is, targeting higher wealth creating growth opportunities in the local economy ahead of lower

value national interests will deliver an overall more efficient economic outcome in the long term.

Irrigation is the primary opportunity for economic growth in this region and we want an equal level of access to water resources that our competing regions enjoy.

An allocation of 100cumecs of water for distributed hydro generation would provide energy self-sufficiency to our region.

Distributed generation is highly compatible with gravity based irrigation schemes. It can share some of the irrigation water allocation (approximately 40%) and adds value (or reduces cost hurdles) to irrigation development. Network Waitaki supports existing irrigation proposals whether gravity based or not, as it believes they can accommodate future distributed generation initiatives.

In the spirit of the Resource Management Act, this community seeks the opportunity to manage its own resources to build its own future.

Background

Historical Background

North Otago and the Waitaki District has always suffered from droughts. Statistically these droughts have occurred on average every second year. Actual drought cycles tend to be longer and deeper. Even during average years rainfall is marginal.

In addition to large scale national orientated hydro development, the region has been a pioneer in the development of rural water schemes (domestic and stock water supply) and irrigation initiatives. Both these initiatives illustrate on-going co-operation between territorial local authorities, including Network Waitaki, and farmers.

For the local community, state owned hydro development has been a mixed blessing. Servicing the high labour demand of these projects has at best delivered a minimal socio-economic and employment benefit, and at worst, a boom and bust distraction to the local economy. The empty villages, left behind after projects have been completed and the workforce de-mobilised, have in fact been a long term drain on the remaining community.

From this perspective, not only has the communities water resources been taken for the national benefit at our cost, but we have had to carry the on-going cost of these projects without compensation. This negative economic impact has not been accounted for to date.

Accordingly the community looks to every opportunity it might be able to create from local resources. The close proximity of Mt Cook and the Central Otago Lakes District places the Waitaki District in a prime position for realizing fast growth opportunities in the tourism and viticulture industries. This will require the sensitive development of water resources across multiple uses including other key infrastructures, such as the local power supply.

Use of Water for Distributed Energy Supply

The economic growth potential for this District, more than most, is linked to its ability to access and utilize its local water resources. It needs water to release the economic potential of its farmlands and to produce the electricity that fuels the downstream economic activity centred a round processing that primary production.

The same volume of water placed on the fertile soils of North Otago produces a substantially larger lift in production than in other regions that have irrigation. It is an anomaly that, with such an abundance of water resource, our district is so under developed in terms of irrigation.

With such a large water resource and quality soils at hand, a well established farming community like the Waitaki District should be a regional leader in terms of economic strength. Agricultural economists tell us, that while irrigation doubles land productivity in other regions, for North Otago the gain is nearly three fold.

This District has been historically deprived of achieving this position of competitive advantage and economic prosperity as result of the water resource being captured for national benefit ahead of local benefit.

The current resource management of our land and water resources falls well short of the optimum. Existing use does not provide an economically rational framework on which to build the Water Allocation Plan. The water allocation process provides an opportunity to address this issue.

Further, our proximity to such large hydro-electric generation should be delivering this region the competitive advantage of low cost electricity. It is a paradox that, through the average costing mechanism applied to the core assets of the national transmission grid (which this region doesn't use), we subsidise the inefficient transport of electricity to other economies that are in competition with us. The more those economies grow, the greater the cost penalty on our community.

This is a fundamental injustice which has caused a long standing grievance to the community. This has been aggravated by recent unjustified power price rises. There has been no increase in the cost of water or investment in more generation capacity in the District to justify any electricity price rises.

The existing dominance of water use by state owned generation companies is enabling them to extract a monopoly rent. Their businesses are run on the basis of profit maximizing not delivering maximum national benefit.

If the community had been given access to the water rights or been permitted to own and operate the generation assets of the Waitaki then a more balanced outcome would exist. If locally owned lines companies were permitted to create more competition via distributed generation then not only would the local economy benefit from

substantially lower power prices and more infrastructure investment but profits would also be retained in the community.

Distributed generation would permit the community to readdress this situation because it by-passes the national grid and competes with centralized grid connected generation on a delivered energy basis.

Lower cost, more competitive energy supply, and the decoupling the local economies cost structure from larger economies, are key strategic issues for our future.

It is Network Waitaki's opinion that greater national economic wealth can be created from the application of this water in the local economy than is being achieved via the technically and economically inefficient process of generating and exporting electricity to remote parts of the country.

Allocation of water for irrigation and distributed generation are more economically efficient and create more economic wealth than existing uses. Accordingly Network Waitaki advocates the priority allocation of water to these local uses ahead of existing commercial non-local users.

Submission

Network Waitaki considers that any increase in water allocation for centralized grid connected generation should be tempered with a requirement to consider over all national energy strategy.

New Zealand's power supply already suffers from a dominance of hydro-electricity concentrated on a few river systems. Security of our energy supply is not an issue of a lack of capacity or natural resources from which to generate. The issue is management of the primary fuel resources and the pricing risk that results. Stability of energy pricing is key requirement for investment in economic growth.

Increasing the quantity of large scale grid connected generation on the Waitaki River would create two negative impacts:

1. It increases sensitivity to dry year risk. This will force others to invest in contingent supply provisions increasing the cost of our energy supply.

2. It will trigger substantial transmission system upgrade driving an upwards energy price path. The transmission system is constrained via every route out of the Waitaki. Generating more electricity than is able to be consumed within the area will result in the need to upgrade transmission assets.

The same water resource applied a distributed generation alternative avoids these impacts. When assessing the benefit of large scale centralized generation proposals these indirect costs need to be considered.

Before any more large scale grid connected hydro generation is added a good resource management process would consider the need to "firm" existing generation and

ensure that a sufficiently diverse generation portfolio is developed i.e. there should be limits on the percentage of energy a generation company can produce from one type resource.

Hydro generation can be firmed by increasing water storage or investing in complementary alternatives such as wind generation. Adding run of the river hydro capacity is only firm up to the minimum flow level.

Managing supply risk can also be achieved via increasing diversity on the demand side. Distributed generation increases the demand side response capability by reducing dependence on taking supply from the national grid.

Distributed generation is small scale generation that injects directly into local line company networks. It only uses the transmission grid when it produces more energy than the local power consumers are able to use.

In addition to avoiding the disadvantages of grid connected generation as outlined above, using the same water in a distributed generation scenario would deliver this community the following advantages:

- The ownership and management of those assets would deliver economic benefit directly into the community.
- It would decouple the local energy price path from national drivers such as growth in Auckland driving the need for transmission upgrades.
- The local power supply would be less dependent on the national grid and therefore more secure.
- Transmission and energy costs to District will reduce. The local economy will be more competitive and capital resources are freed for economic growth.
- It would provide a generation asset base on which other forms of generation from local resources could be developed such as wind energy.
- Infrastructure development to support economic growth is enabled. For example, generation can share irrigation assets and resources, adding value and reducing investment hurdles to irrigation proposals.
- Distributed generation offers lower cost alternatives to investment in power lines. The total infrastructure capital investment therefore becomes more efficient.
- Losses due to transmission are avoided.

The integration of distributed generation into irrigation schemes has the potential to significantly reduce investment hurdles for irrigators. Network Waitaki has identified that typically around 25% of an irrigation schemes cost can be shared by generation.

Generation can be realized from the following range of opportunities presented by irrigation proposals:

- Generating from the flow in pipes and canals.
- Generating from head developed by the irrigation scheme, at drop structures, storage facilities, etc. Note that gravity based irrigation schemes tend be develop head and increase generation opportunity compared to water remaining in the river bed.
- Utilising excess capacity at times of low irrigation demand.
- Incorporating extra capacity into delivery infrastructure for generation.

Accordingly Network Waitaki advocates prioritizing water allocation to irrigation schemes that are gravity fed and that have viable generation opportunities available.

However, note that Network Waitaki supports existing irrigation projects whether gravity based or not. It further advises that where irrigation projects are not currently gravity fed, investigations have been undertaken to determine the prospects for their assimilation into larger, more wide-spread irrigation development at a later date. Existing schemes may have the primary water delivery infrastructure modified to a gravity alternative.

Comment on Harris Report

Network Waitaki wishes to provide the following feedback with regard the Regional Economic Analysis by Harris Consulting:

- The analysis only considers traditional grid connected generation as distinct from distributed generation. Accordingly it does not account for the non-energy related benefits, the lower transmission investment, lower losses, higher energy value, better security, and lower risks of distributed generation.
- A large component of distributed generation will be integrated with irrigation such that the same water allocation is utilized by more than one value creating application. Both irrigation and generation have a higher value in this scenario than as independent schemes.
- Distributed generation provides opportunities to develop more economically efficient power system infrastructure solutions. Growth, fuelled by irrigation development, will require investment in the regions power supply (paid for by local consumers). An optimized solution coordinating power line investment, distributed generation, and irrigation will deliver significant economic advantage.
- The other multi-use applications of irrigation infrastructure, such as domestic and stock water supply, have also not been considered.

Suggested Water Allocation

Network Waitaki's electrical demand is currently 30MW. The load in adjoining areas sharing the Waitaki River is estimated at another 20MW. Self sufficiency in terms of generating all local electricity demand from local resources therefore requires approximately 50MW of generation capacity.

This is a very small requirement compared the existing Waitaki Hydro Scheme's 1300MW capacity. In fact 50MW is close to the level of inherent losses occurring at all times within the existing scheme.

To generate 50MW from distributed hydro generation would require a water allocation in the order of 100 cumecs. This figure is estimated on the basis of the likely levels of generation head expected to be able to be economically created within the regions geography. The drops into the various valley heads (Waiareka, Kakanui, Waianakurua, etc) are the most likely locations for exploiting this generation head.

Of this allocation approximately 40% can share the water allocated for gravity based irrigation provided the water is taken from the river at level above Kurow. This is a judgment statement based on NWL's corporate knowledge, consisting of many investigations over many years, into irrigation and hydro generation proposals.

Network Waitaki requests that an allocation of 60cumecs taken from below the Waitaki Dam be allocated and shared by all future investors in distributed hydro generation. A further 40cumecs of water primarily allocated for irrigation can be shared by distributed generation on a multi-use basis. In total a 100cumecs of water can be applied to distributed generation providing the region with self-sufficiency in electricity production.

NWL also wishes to acknowledge that there are viable distributed generation opportunities associated with irrigation proposals above the Waitaki Dam. Where an irrigation water allocation can be shared by generation there is no justification to exclude this use. If supplementary water allocation is needed for generation, then an assessment of the value/viability that the generation adds to the irrigation scheme, needs to be traded off with reducing water available to existing grid connected hydro generation. Below the Waitaki Dam there is no conflict with existing generation assets and therefore distributed generation and irrigation compete directly on their merits with grid connected hydro development.

Some provision for load growth is also suggested. Network Waitaki is currently basing its long term network development plans on a 3% p.a. load growth assuming continued irrigation development.

Should the Board's process provide for the opportunity, Network Waitaki wishes to be heard in support of this Submission.

Further Information

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