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Alpine Energy Limited's submission the Commerce Commission's request for feedback – Expenditure forecasting by electricity distribution businesses and areas of focus for the 2025 default price-quality path reset

Alpine Energy Limited (Alpine Energy) thanks the Commerce Commission and the Ministry for the opportunity to submit to the request for feedback on our expenditure forecasting and areas of focus. Alpine Energy is facing several unique challenges on our network, specifically due to the increased demand and the lack of capacity in areas with growing demand.

Our Asset Management Plan, which will be publicly available on 31 March 2023, will include detailed analysis, by grid exit point, to highlight the challenges and opportunities we will have in supporting our community's growth in the next 10 years. The current peak load on our network is 144MW. Our current forecasts are predicting and uplift of between 60 – 80MW over the next 1 – 5 years.

We have a number of significant changes which have occurred, summarised below:

1. As with the balance of the industry, decarbonisation is a key focus. Our network is unique due to the large percentage of process heat in our region. With three large dairy processing plants and a large number of other food processors in the region, the potential step change in electrification required to convert process heat is substantial, given the size of our network.
2. Economic and regional growth continues to prosper, particularly in the Timaru and Mackenzie regions. This is a significant change when reviewing the previous growth experienced. Timaru is earmarked for expansion with the first major project having been completed this year.
3. With tourism also starting to ramp up post the pandemic, we have seen a significant uplift in road traffic in the past year, increasing the need for more electric vehicle (EV) charging stations across our network, again specifically in the MacKenzie District and Timaru.
4. Following the recent policy changes by government, we received in excess of 100MW of applications for large scale distributed generation connections to our network. These are in various stages of assessment and approval.

5. As with other industries, the shortage of talent, significant increase in material pricing, availability and supply chain constraints have impacted our asset and business planning.

Even though Alpine Energy is a small electricity distribution business (EDB), with a just over 34,000 consumers (or interconnection points (ICPs)) and less than 100 staff, we have large investment decisions ahead of us, which will not only need our resources, but also that of Transpower and the regional and national governments to facilitate their success.

We see our challenges as important opportunities to do what is right for the future of our network and the South Canterbury region. This means we will be investing heavily to ensure that we get the future state planning for our network right. We have strategic projects underway to capture the holistic energy requirements for our region going forward which will allow us to also address the necessary commercial modelling needed to support this growth. We look forward to actively engaging with the you and your team over the coming months and through the upcoming consultation processes.

If the Ministry has any questions or require clarification on any information provided in our submission, please do not hesitate to contact us.

Yours sincerely

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1. Appendix A: Alpine Energy's responses to consultation questions

Question 1
How are EDBs obtaining confidence in establishing the requirements they are forecasting to meet, including but not limited to demand, resilience, and reliability?

Changes in inputs used in forecasting

Historically, Alpine Energy's forecasting was based on only investments with high levels of certainty of proceeding, for new connections, industrial growth, distributed generation etc. This led to a "just-in-time" investment approach which, given a stable regulatory and political environment has served us well. However, in the last 12 - 18 months Alpine Energy has seen an unprecedented increases in new connection requests and applications, not only in relation to decarbonisation and electrification, but also large-scale distributed generation and regional growth plans. Many of the large-scale projects are multi-year and sizable projects (in terms of cost and time) and the consumers are taking longer to commit to firm timeframes. This is increasingly leaving us with uncertainties on the level of investment that will be required on our network to accommodate future demand.

Post-pandemic, the lead times on materials and labour shortages have further complicated matters, forcing us to make decisions on investments earlier than we historically would have to ensure that the required materials are delivered in time and that we have resources locked in to deliver the projects.

Taking all of these facts into consideration, we have therefore identified that we need to reassess the forecasting methodologies and assumptions we have historically applied to ensure that our investment decisions support the regions demand in a cost-effective manner, whilst ensuring that we maintain the rest of our networks appropriately.

To support our forecasts, we have developed internal energy roadmaps of each of our 7 grid exit points. These roadmaps articulate our future state, and models different pathways and scenarios including alternative levels of decarbonisation or distributed generation in our supply area. This ensures that we are identifying possibilities, integrating future development, and anticipating the effects of our strategic decisions, while remaining flexible in this period of significant uncertainty and change.

Our energy roadmap scenario analysis supports us in structuring an assumption process in which we generate several hypotheses and choose one or more alternatives from an extensive set of possibilities. Our scenario analysis enables us to prioritise short-term, feedback-based learning above long-term projections of change and its consequences. We have developed several scenarios by meticulously identifying the likely change drivers influencing our customers' decisions. These scenarios depict potential worlds where consumers are forced to make various development decisions. The scenarios test our assumptions, help us make better decisions, and highlight our strategic options as we embrace change in our network.

Our energy roadmap outlines our long-term planning options based on three potential future scenarios:

Speculative	The decisions of our consumers are influenced by an economically favourable era in which productive investments are encouraged, promoted, and incentivised. Consumers gain a clear advantage from expanding their business and/or altering the technologies they use. For example, industrial users perceive a clear economic benefit in shifting their process heat away from a carbon source and towards electricity.
Possible	The decisions of our consumers are influenced by a financially sound era in which productive investments may benefit them. Consumers are being required to shift technologies even though the benefits of such expenditures are not readily apparent. For example, industrial consumers believe that switching from a carbon source to electricity will cost them money but will also face regulatory penalties if they do not.
Prudent	Consumers have already decided to change and have demonstrated their commitment by investing in their infrastructure. For example, an industrial consumer has already applied for an increase in capacity as they plan to shift their process heat away from a carbon source towards electricity.

Based on the roadmap analysis, the forecasts will no longer only take into account projects with a high likelihood of proceeding but will also take into account ant projects which are possible to occur, based on studies elsewhere in New Zealand.

We further know that we will need increased business and systems operations and network support. The increases in these forecast costs are supported by a detailed business strategy.

Key inputs in resilience-related investment forecasting

Alpine Energy has some way to go in fully understanding and assessing the impacts of natural disasters and climate change across our network. Our resilience-based investment decisions are still mainly driven by the condition-based monitoring. We recognise that we are immature in our forecasting assumptions in this area. Our forecasting assumptions for resilience-related investment will therefore change and be refined in the next 12 months and we expect to provide additional detail on this in our 2024 AMP.

Forms of external assurance over our forecasts

We have commissioned a project with an external consultant to provide us with a full Energy Roadmap and Strategic Asset Planning report in the next 6 months. The project's objectives are to:

1. Capture of the holistic impact of decarbonisation, planned regional growth from commerce, developers, district plans, infrastructure, regional development policies and transport electrification (i.e., looking wider than just the information we have available to us).
2. Long term advanced network modelling, considering diversification of solutions along the value chain.
3. Firm the commercial modelling for Alpine Energy with value growth and reliable supply for region.

4. Deliver resultant roadmap to achieving objectives in our strategy and securing long term, reliable distribution for South Canterbury, facilitating future growth.

We believe this roadmap will increase the accuracy of our forecasting significantly.

This year, we have completed an independent review of our asset management maturity. The shift from previous self-assessments to an independent process reflects the effort made to continuously improve our asset management practice and objective to align to ISO 55001. The continuous improvement of our asset management practices will further bolster our confidence in our forecasting.

Our Board of Directors also scrutinises and challenges our forecast expenditure on annual and an as-need basis.

Question 2
Are there specific events or metrics that can be forecast and then observed that indicate that a step change in expenditure is required or an alternate scenario is playing out?

The events that will trigger step-changes in expenditures are highly dependent on a number of factors, including but not limited to:

- The specific circumstances at each of the 7 GXPs, i.e., age of the assets, size, capacity, constraints etc.
- The decisions that heat processing customers will make as part of their decarbonisation strategies.
- The decisions other large industrial users will make around transport electrification.
- The economic growth forecasts for the region.

As described in question 1, we have we have developed internal energy roadmaps of each of our 7 grid exit points based on the information we currently have available to us. These are live documents that will evolve and develop over time as we gain more certainty on the trigger points that will lead to step changes in expenditure.

We have also been engaging openly with other stakeholders including Transpower and EECA to ensure that we are aligned with their future investment plans that may have an impact on our own planning and forecasts.

We have provided details for six of our GXP's below (only Albury is currently forecasted not to need step-change investments), where we believe step changes will be required in the next planning period.

Bells Pond
We have received a DG initial application for 20 MW in the Bells Pond area. We have not received any information of the likely timeframe for the construction, but when generation is realised, it would potentially increase our ability to respond to any demand increase.

It is possible that Oceania Dairy Limited (ODL) would consider decarbonising their operations, which currently comprises 30 MW of fossil fuel heating load. If this is converted to electricity, it will have a substantial impact on our load forecasting and the resultant network augmentation investment required.

The Waihao Downs irrigation scheme currently takes up to 3.2 MW when all the pumps are running. A future stage 2 to this scheme could add another 3 MW to Bells Pond. As yet, we have not received a network application for the additional demand.

The Bells Pond rural area has backup supply from Studholme, but this spare capacity at Studholme will be eroded should Fonterra build a milk dryer at their Studholme dairy factory (currently a resource consent has been approved but we have not received a network application for the additional demand).

We have an agreement to ODL to have a 1 MW backup supply from Studholme for one week in each year, and further investment will be required when ODL wants to increase their security of supply.

Studholme
The demand in this region is summer peaking from strong growth from the Studholme dairy factory, arable/dairy farming, and irrigation loads. EV uptakes can be accommodated through to 2025 on the basis of existing capacity at the GXP and zone substation level. However, upgrades or other emerging technologies may be required on LV reticulation in the Waimate residential area. Fonterra has a resource consent for a second dryer at the Studholme dairy factory, but additional demand has not been applied for or an indicated has not be provided to us. Therefore, this step increase does not feature in our load growth forecast.

However, should additional supply be applied for by Fonterra, or if they make a decision to electrify as part of their decarbonisation strategy for the Studholme factory, a significant investment will be required. We will have to work closely with Transpower should additional investment be required at this GXP due to transformers coming to end of life in the next 2-3 years.

Tekapo
A DG initial application for 10 MW in the Tekapo area has been received but no information of the likely timeframe for the construction is available. We have been approached by the generator regarding detailed design and system stability studies.

There is significant growth underway in the form of subdivisions and commercial developments, such as hotels, in the Tekapo township. The identified growth has triggered investigation into increasing GXP capacity, sub-transmission and zone substations' security of supply levels and capacity. The zone substation transformer capacity was upgraded in 2021.

The increasing demand also led to increased load on the feeders into the township. With no voltage control capability at the Haldon-Lilybank zone substation, network investment will be required when voltage constraints develop.

Temuka
A DG initial application for 26 MW in the Clandeboye area has been received. Currently, we are working on detailed designs and dynamic studies with the generator.

In the Temuka region, peak demand occurs during summer, based on the predominant dairy and irrigation load. The Fonterra Clandeboye load is increasing with plans for more processing capacity. With this increased load on the Temuka GXP, the GXP is no longer able to supply power at the current security of supply and Transpower has been

commissioned for a concept design report to upgrade the Temuka GXP, which will require investment from Alpine as well.

Some load can be supplied by adjacent feeders if required, but the security of supply may be lost with the impact of decarbonization targets of Fonterra. The additional load at the Fonterra Clandeboye dairy factor will further erode the security of supply at the Temuka GXP. Work is continuing with Transpower to fully reinstate the security (N-1).

For the Temuka rural area, there is limited backup from Geraldine, Rangitata, Pleasant Point, and Timaru zone substations. Backup capacity is being eroded due to a steady load growth. A detailed engineering investigation will be undertaken in year 2023/24 to establish options to ensure we will continue to meet our security standards.

Fonterra's decarbonisation strategy and decision for the Clandeboye site will significantly impact our network investment required, not only by us but also by Transpower. If Fonterra decides to electrify, we will have to work closely with Transpower to pan and bring forward the Orari GXP project. This will require a significant step change in the planned network investment.

Timaru
We have received a DG initial application for 6.5 MW in the Washdyke area. No additional information of the likely timeframe for the construction is available.
There are significant step changes in load mainly in Washdyke area along with the residential subdivisions that are taking place in the western area and port demand increases on the southern side of the port.

The Timaru District Council has adopted an in-fill policy, that is, they are promoting higher density residential in the existing urban areas. This policy could lead to network investment on the low voltage reticulation. Presently only overhead upgrades up to 50 meters in length is permitted under the district plan. We have lodged a submission to the Timaru District Council to have overhead upgrades over 50 metres to be a permitted activity. This has been done through the District Plan review process and the Growth Management Strategy consultation.

With the government's decarbonisation drive on its second round there has been significant load changes, which are driving up the demand forecast for the planning period and bringing forward potentially significant network upgrades to meet the demand. Overall, this drives up demand across the Timaru GXP region, mostly in the industrial area of Washdyke. We are also working closely with the Timaru District Council to understand the future economic growth plans for the Washdyke area specifically. Any plans for additional factories of any sort will result in even more investment required for this area to be able to meet demand whilst ensuring we have security of supply.

The sub-transmission circuits to Pareora zone substation are voltage constrained if total load exceeds 20 MW, or 10 MW in a contingent event (for example, one of the circuits or a Pareora power transformer out of service).

Question 3:
How are EDBs obtaining confidence that their proposed expenditure plan is the most effective and efficient solution for the forecast level of demand, resilience requirements, and reliability levels?

The uncertainties described in question 2 above which are outside of our control, makes it difficult to forecast with 100% accuracy. We believe the approach we are taking to have a detailed roadmap for each GXP and obtaining an independent regional roadmap will provide us with the best information possible to run meticulous scenario analysis for our region to ensure that our forecasts are supported by sound methodologies, external evidence, and supportable assumptions.

We are immature in the consideration of non-network solutions as an alternative to network investments, but we are investing in our internal capabilities to understand and assess the alternative solutions available to not only defer network invest, but to assist our customers in assessing different solutions as part of their own decarbonisation strategies. We have not built in any assumptions around non-network solutions into our current forecasting.

We are also investing heavily in our data analytics capabilities to provide us with data driven insights that will support where and when investment will be most needed, including investment in our low voltage network.

This year, we have completed an independent review of our asset management maturity. The shift from previous self-assessments to an independent process reflects the effort made to continuously improve our asset management practice and objective to align to ISO 55001. The continuous improvement of our asset management practices will further bolster our confidence in our forecasting.

Question 4:
How are EDBs getting confidence that their expenditure plans are deliverable, particularly if they involve a significant increase from historic levels?

The fact that there is a significant skills shortage in New Zealand together with significant uplift in the number and scale of projects forecasted to be delivered in the energy sector across New Zealand over the next few years is not at all lost on us.

We know that to ensure delivery of our forecast projects we will have to change the traditional ways in which we operate. We have been working extremely hard to work on our company culture to attract and retain our highly skilled workforce and become an employer of choice in the South Canterbury region. We have also obtained our accredited employer status from Immigration NZ to widen our pool of future talent.

We have further identified that we have limited contractors operating in our regions to deliver small- and large-scale network projects. This has necessitated the need for us to ensure that we have our project schedules completed and submitted to contractors for pricing months before the start of a new financial year. This helps us to ensure that we have contractors locked in to deliver our projects in advance and provides some certainty that we will have the resources available. We are also investing in a contractor management framework that will enable us to build even stronger relationships with current and future contractors.

In the current year, we established a works programme committee that actively monitors and assesses all the forecast projects, considering the trade-off between asset placement and renewal on the network and delivering new connections work. Using a risk-based approach, the committee prioritises the projects to ensure that we maintain teh reliability of our network (as we will never compromise on safety and reliability) whilst still being able to deliver new connection work. The prioritisation flows into the work programmes that we communicate to our contractors for their planning purposes.

We are also aware of our size and scale, and therefore actively seek out partnerships with others to help us to solve our problems. Including our capacity constraints. We are currently actively looking at how we can engage with our neighbouring networks and Transpower, EECA and our local councils to ensure that we can invest sufficiently in the talent required to deliver what our region needs.