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## Submission - Driving efficient solutions to promote consumer interests through Winter 2023

### Introduction

1. The issue of tight supply and the some of the potential mitigations proposed in this document have direct impacts on Orion and our consumers. Orion welcomes the opportunity to respond to the consultation document 'Driving efficient solutions to promote consumer interests through winter 2023'.
2. Orion is a member of a group of market participant companies known as the CEO Forum. The CEO forum has become concerned that the possibility of a disrupted system has risen to unacceptable levels. The CEO forum proposed an off market winter peak ancillary service product to address this loss of reliability and has submitted a joint response to this consultation in support of that product. Orion endorses the submission from the CEO forum.
3. Our submission focusses on providing further information about our use of load management, and the aspects of the consultation proposals that have impacts on our business and consumers.

### Summary of Key Points

4. Orion supports the response from the CEO Forum submission.
5. Our submission focusses on Options E and F as they are of most relevance to our business in that they could have direct costs on our business or impact our consumers by changing how we operate our hot water load management.

#### *Clarifying availability of load management (Option E)*

6. Orion supports the clarification of available load control. Orion currently shares real time information on the amount of load management and availability of additional load management with the System Operator. This has been noted by the 'Investigations into Electricity Supply Interruptions of 9 August 2021' report, which said:

*"We recommend that the Code must be amended so that the SO has real time, and acceptably accurate, awareness of discretionary load available from each EDB by winter*

*2022. We commend the Upper South Island load management programme as a starting point.”*

7. However, we cannot support a mechanism requiring EDBs to use the Dispatch Notification product without further understanding and engagement. We consider that it could create unintended consequences and compliance costs without adding any greater visibility of our operation to the System Operator.
8. We consider that requirements for EDBs to use load management to enhance system reliability should either be incentivised, or a last resort once all market options have been exhausted. Utilising the same resources in different order through this product, is unlikely to improve management of this risk.

*Winter peak ancillary service (Option F)*

9. Orion manages load on its network, and across a group of EDBs in the Upper South Island, in order to limit pass through costs to consumers, reduce the need to increase network capacity, and avoid outages when repairs or maintenance are done. Load management through ripple control of hot water cylinders can also be used to control demand, if available, when directed by the System Operator in an emergency situation as an alternative to shedding consumers.
10. The availability of controllable load in a grid emergency situation is dependent on when and for how long it has already been used, and how much is being used, to control network load. We consider that an off market winter peak ancillary service would provide a signal and incentive to control load to the highest benefit for the system, while also providing the System Operator with advance visibility of available controllable load. It would also provide a mechanism to provide consumers with compensation for the service they provide to support system reliability during winter capacity shortfalls in addition to the benefits they receive from supporting network needs.
11. Orion endorses the response from the CEO Forum submission in support of an off market winter peak ancillary service. We support this as a temporary measure to address the immediate risk in 2023 and allow more time for an enduring solution to be developed.

## Response to Submission

12. We have formed our response to this consultation through a lens of the energy trilemma of security, sustainability and affordability. The options sought to address the issue of tight supply should seek to balance outcomes between improving short term reliability, costs to consumers, and long term confidence in the market to deliver on decarbonisation.
13. The consultation document covers a number of options that relate to market operation and market efficiency. Many of these do not have direct relevance to Orion and our consumers, aside from the wider sense that our operations and consumers are impacted by a lack of resilience if we are called on by the system operator to manage consumers load.
14. Options E and F are of most relevance to our business in that they could have direct costs on our business or impact our consumers by changing how we operate our hot water load management.
15. Our submission is in three parts:
  - a. Information about Orion's load management relevant to the options in this consultation,
  - b. Responses to Options E and F;
  - c. Responses to all consultation document questions.

## Part One: Information about Load Management

### Load Management at Orion

16. Orion uses load management to reduce peak demand, primarily in winter, as a means to reduce pass through costs to consumers, reduce the need to increase our network's capacity to handle short periods of very high loading, and to avoid outages when repairs or maintenance is done. For some EDBs load management is also important in summer, for summer peaking areas. Load management can also be used to control demand, if available, when directed by the System Operator in a grid emergency situation as an alternative to switching of electricity to consumers.
17. Our network capacity is determined by the ability to distribute electricity during periods of peak demand on our network within the constraints of the infrastructure on the network. Increased or fluctuating peak demand necessitates investment in additional capacity through upgrade of infrastructure on the network. Load management can defer or remove the need to make costly new investment on the network which in turns reduces costs to consumers.
18. To achieve this Orion sets a network limit under which we aim to limit total network load. When the total network demand is forecast to hit the network limit we manage load by using ripple control of hot water cylinders and control periods with major consumers over 2 hours during the period in conjunction with hot water. This occurs primarily in winter. On most days only a brief use of load management is required and the amount of load control is

below its actual capacity. On the coldest days each year we generally are controlling load at 100% of capacity, and for our set limits of 4 hours for each 8 hour period.<sup>12</sup>

19. The key driver for load management on the Orion network is network peak demand. This is likely to be highly correlated with system peak demand and prices on the energy market, which means that at periods of peak demand or tight supply, Orion will often be using 100% of its load management capacity. This is not always the case however. For example;
  - a. if Orion has already used 100% of its capacity to shed load before the system peak, Orion may not be fully using its load management, but may not have additional capacity to shed load.<sup>3</sup> Or,
  - b. if Orion doesn't need to use 100% of capacity to keep network load below the network limit (for example if tight supply is caused by supply outage rather than high system demand), there may be additional load management available to be used.
20. There are instances when load can be specifically managed to align with a system peak, if the signal is clear enough. During August 9 2021<sup>4</sup> Orion was managing load consistently throughout the day to minimise the impact of network loading. However, in the lead up to the system peak Orion backed off its load management in order to retain capacity for the system peak, and was able to temporarily deliver around 35 MW of demand reduction in its network, and around 80 MW of demand reduction in the Upper South Island between 7pm and 9pm that evening. The daily load management profiles of this event are shown in our Appendix.
21. Orion and its consumers were not compensated for this service as it was in response to a GEN notice. While we understand that these protections are needed, they should be a last resort solution and market based solutions (including the proposed off-market ancillary service, option F) should be preferred options in the hierarchy of controls.

## Upper South Island Load Management

22. Orion also manages load on behalf of the Upper South Island region EDB group consisting of Orion, Alpine Energy, Network Tasman, Marlborough Lines, MainPower, Buller Electricity, Westpower and Electricity Ashburton. By managing loading on the grid at peak times, the Upper South Island Load Management (USILM) Project has led to a reduction in transmission charges and the deferment of investment in additional transmission capacity.
23. While the USI group maintain a network limit to restrain the impacts of significant fluctuations in peak demand on their networks, there is more often spare capacity in the USI load management. Load management is used in much the same way as for Orion. Typically on cold winter days load is shed during morning and evening peaks. A typical day is shown in our Appendix.<sup>5</sup>

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<sup>1</sup> Our target service level is that no cylinder is off for more than 4 hours in an 8 hour period. This is so that consumers are not unduly impacted by load management. We cycle between consumers when not using 100% shedding in order to minimise impacts on consumers.

<sup>2</sup> Appendix – examples of load management

<sup>3</sup> Continuing to use load management in this situation would negatively impact service levels to consumers, which could undermine public acceptance of load management.

<sup>4</sup> Appendix – examples of load management

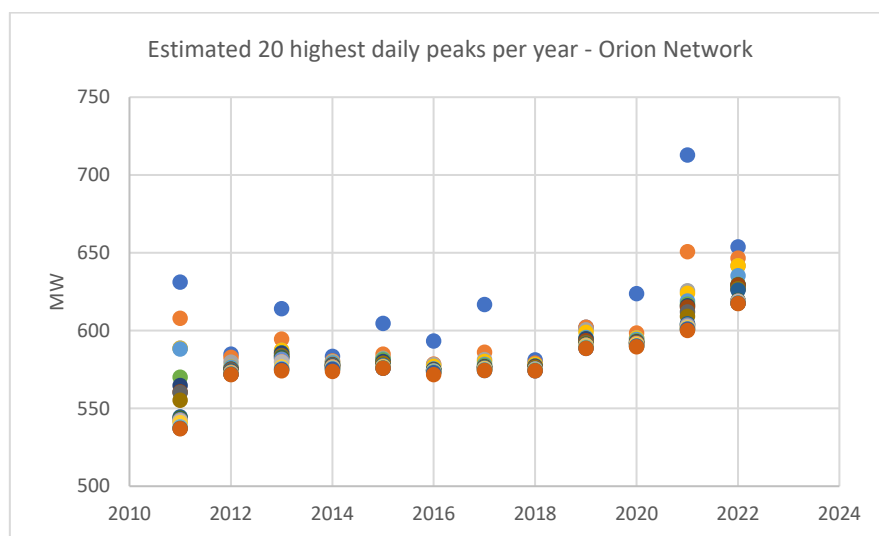
<sup>5</sup> Appendix – examples of load management

## Information Sharing

24. Orion has fully transparent sharing of load management information with the System Operator for its own network and for the Upper South Island load management group. Both “available to shed” and “amount to be restored” are provided to the SO via their SCADA system.
25. Orion also provides a public facing view of its load management activity via the load management dashboard Orion Online Services ([oriongroup.co.nz](http://oriongroup.co.nz)). This provides the public with information on the total network load, the network limit, the amount of available load being shed, and an estimate of the uncontrolled load. Historic data, including service levels, can also be downloaded from this site.

## Peak Demand on the Orion Network

26. Orion is experiencing growth in peak demand on its network. This is in line both with forecasts of increased demand from electrification of fossil fuel industries, and with the observations of the System Operators view of peak demand.
27. Orion has increased its network load limit over the past 5 years. This is partly as a result of higher peak network, but also by lifting the limit it has a direct impact on the observed peak demand on our network.



## Part Two: Responses to Options E and F

### Clarify Availability of Load Management (Option E)

28. Orion supports the principle of clarifying availability of demand control, however, we have some concerns with the mechanism proposed.
29. Orion provide the System Operator with real time visibility of MW of controllable hot water load for the Upper South Island – both “available to shed” and “amount to be restored”. This data is available in their SCADA system. This information is more difficult to provide in advance as the load control available is dynamic and dependent on demand, the amount used, and the time it is needed for. The option to require EDBs to use the dispatch notification product could add compliance costs without appreciably increasing the level of information provided from Orion and the Upper South Island to the System Operator.

30. We support improved visibility of other resources as recommended by the Investigations into Electricity Supply Interruptions of 9 August 2021 report, which said:

*“We recommend that the Code must be amended so that the SO has real time, and acceptably accurate, awareness of discretionary load available from each EDB by winter 2022. We commend the Upper South Island load management programme as a starting point.”*

However, going beyond existing USI functionality for winter 2023 (as proposed) would be challenging for Orion, let alone other EDBs. Adding onerous information requirements (such as forecast dispatchable demand) without adequate time to ensure quality of data could introduce more risk, as the SO and other market participants could be making decisions with inaccurate data.

31. We are also concerned that the mechanism suggested could have unintended consequences. The dispatch notification product could result in non-market solutions being dispatched before market solutions. This unfairly shifts risk and responsibility from the market participants to EDBs and aggregators without compensation for providing this capability. As there is no economic driver for EDBs to make bids to the SO, and no price guidance it could distort the market by requiring EDBs to bid in load management instead of providing incentives for market participants to generate. We consider that requirements for EDBs to use load management to prevent issues should either be incentivised or a last resort once all market options have been exhausted. Utilising the same resources in different order through this product, is unlikely to improve management of this risk.
32. While we encourage the initiative to look for quick wins in this area **Orion cannot support the option to require EDBs to use the dispatch notification product without further understanding and engagement.**

### Winter Peak Ancillary Service (Option F)

33. **Orion supports the development of a multi-hour off market winter peak ancillary service, not integrated into the market solution, but integrated operationally.** This option has been proposed by the CEO Forum, and we endorse their submission. The detail behind the design of the proposal is in their submission. This is an alternative to option F from the consultation document.
34. This product is in line with the recommendations of the Investigations into Electricity Supply Interruptions of 9 August 2021 report, which said:
- a. We recommend that the EA and the SO design and implement a new product to manage multi-hour shortfalls
  - b. We recommend that a new ancillary service be given serious consideration as the first step in the life-cycle of this new product
35. It is our view that this product should be temporary, to address the immediate concerns about short winter supply while an enduring solution is sought. We consider that there is a need to take a longer term, considered approach to the development a solution to this issue. Orion considers that flexibility has a part to play in the market in the future and is collaborating across the sector to develop a shared understanding of the transition pathway to a market based approach to flexibility.
36. Our submission shows that while Orion has the capacity to manage load, this is employed to meet our own network needs, while supporting needs of Transpower (grid owner) and the USI. These capacity needs are highly but not perfectly correlated with system peaks and tight energy supply. We consider that an off market winter peak ancillary service would provide a

clearer signal of when our load management has its highest value to the system and allow us to consider the system demand alongside our network demands, when these are not perfectly correlated.

37. Where there is spare capacity in the load management system, we consider that an off market winter peak ancillary service could provide a mechanism to compensate our consumers for the service that they are providing (in that their hot water is switched off, while we always aim to minimise disruption we can't guarantee they are not negatively affected).
38. We also consider that an off market winter peak ancillary service could provide a further incentive to provide new sources of flexible capacity.
39. Another matter to consider in the development of this approach is Distributor-Retailer agreements (DDAs). DDAs define the process and priority for exercising the rights to control hot water load. Whereas this ancillary product would sit outside of this agreement. If this approach was investigated further we would ask the EA to clarify whether there was any cross-over between the product and DDAs which need to be considered, and whether it could lead to multiple parties attempting to control the same device.

### Part Three: Response to Individual Questions

Submitter	Orion NZ
Question	Comment
Q1. Do you agree that operational coordination performance has become more challenging for the reasons indicated above? If not, what is your view and why?	Yes.
Q2. Do you agree that the factors in paragraphs 4.10 to 4.63 create information challenges or misaligned incentives, and that these make it hard to achieve optimal commitment actions? If not, what is your view and why?	No view.
Q3. Do you agree that it is prudent to examine options to address information and incentive gaps identified above? If not, what is your view and why?	Yes, but not to the exclusion of other measures.
Q4. Do you agree with the proposed evaluation criteria? If not, what is your view and why? Are there other criteria that the Authority should consider?	No. We consider that criteria should also evaluate whether options will lead to enduring solutions. We also endorse the response from the CEO Forum submission in support of an off market winter peak ancillary service.
Q5. What if any other options should be considered to better manage residual supply risk for Winter 2023?	We endorse the response from the CEO Forum submission in support of an off market winter peak ancillary service. The solution will provide more certainty in 2023 which will provide time to develop a more enduring solution.
Q6. Do you think it would be beneficial to publish the residual offer information used by the system operator when calculating Grid Warning and Emergency Notices? If not, what is your view and why?	No view.
Q7. Do you think it would be beneficial to provide sensitivity case spot price forecasts in forward schedules, as well as central forecasts? If not, what is your view and why?	No view.



<p>Q8. Do you agree that cross-industry work on improving the quality of intermittent generation forecasts is unlikely to be available for Winter 2023? If not, what is your view and why?</p>	<p>No view.</p>
<p>Q9. Do you agree that the system operator should procure an external wind forecast and ask participants to review their offers if there are large discrepancies between the forecast and offers? If not, what is your view and why?</p>	<p>No view.</p>
<p>Q10. Do you agree that the availability and use of 'discretionary' demand control (such as ripple control not used for instantaneous reserves) should be clarified? If not, what is your view and why?</p>	<p>Please see our submission Part 2</p>
<p>Q11. Do you agree that work should be undertaken on a new integrated ancillary service for winter 2023 to help manage increased uncertainty in net demand? If not, what is your view and why?</p>	<p>Please see our submission Part 2</p>
<p>Q12. Do you agree that selectively increasing ancillary service cover should be considered as an interim option for Winter 2023? If not, what is your view and why?</p>	<p>No. We endorse the response from the CEO Forum submission in support of an off market winter peak ancillary service.</p>
<p>Q13. If increased cover from an existing ancillary service at times is pursued further as an option for Winter 2023, what are your views on whether to utilise frequency keeping or instantaneous reserve, and why?</p>	<p>No view.</p>
<p>Q14 Do you agree the option of requiring retailers to make compensation payments to consumers affected by forced power cuts should not be explored for Winter 2023? If not, what is your view and why?</p>	<p>Orion supports the compensation of consumers for forced outages in-principle. This is too complex of an issue to address before 2023.</p>
<p>Q15 Do you agree that reviewing the default pricing in the Code to apply in</p>	<p>No view.</p>

energy and reserve shortfalls should not be explored for Winter 2023? If not, what is your view and why?	
Q16 Do you agree that an hours-ahead market should not be explored for possible adoption for Winter 2023? If not, what is your view and why?	No view.
Q17 Do you agree that mechanisms that procure additional resources outside of the spot market should not be explored further for Winter 2023? If not, what is your view and why?	No view.
Q18 Do you agree that options A, B, D, and E appear attractive and should be progressed further? If not, why not?	Yes, but not to the exclusion of other measures. Please see our submission Part 2 for our response to option E.
Q19 Do you agree that options F and G should be assessed further to determine if they are likely to have net benefits? If not, why not?	We recommend proceeding with a multi hour off market winter peak ancillary service that operates along the same lines as frequency keeping i.e. not integrated in the market solution but integrated operationally.
Q20 Do you agree that options C, H, I, J and K should not be progressed further for winter 2023? If not, why not?	Yes.
Q21 What if any other matters should be considered when assessing options to better manage residual supply risk for Winter 2023?	The options should seek to balance costs and benefits to consumers, system resilience, and confidence in the market to handle decarbonisation.  We consider that the off market winter peak ancillary service can address the immediate need for security without adding undue cost to the consumer. This product should be temporary while we seek an enduring approach that properly integrates demand side flexibility, which will be a key part of long term decarbonisation of the system.

## Concluding Remarks

Thank you for the opportunity to provide feedback. I do not consider any part of this feedback as confidential.

If you have any questions or queries or aspects of the submission which you would like to discuss, please email [ivan.luketina@oriongroup.co.nz](mailto:ivan.luketina@oriongroup.co.nz)

Yours sincerely

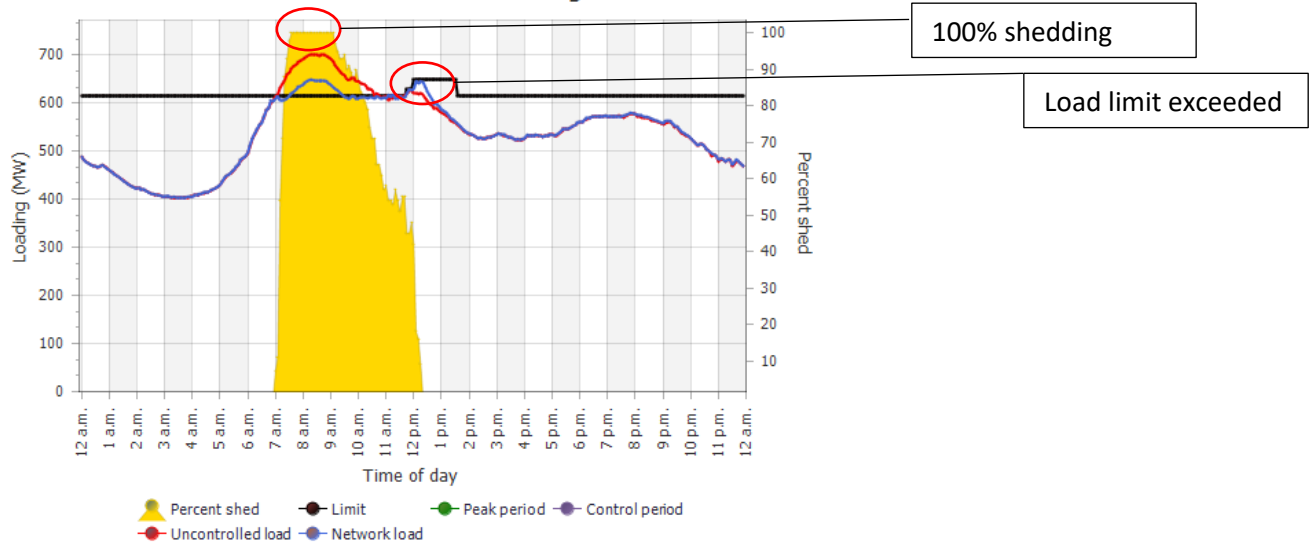
Ivan Luketina  
**Energy and Markets Insight Lead**

## Appendix

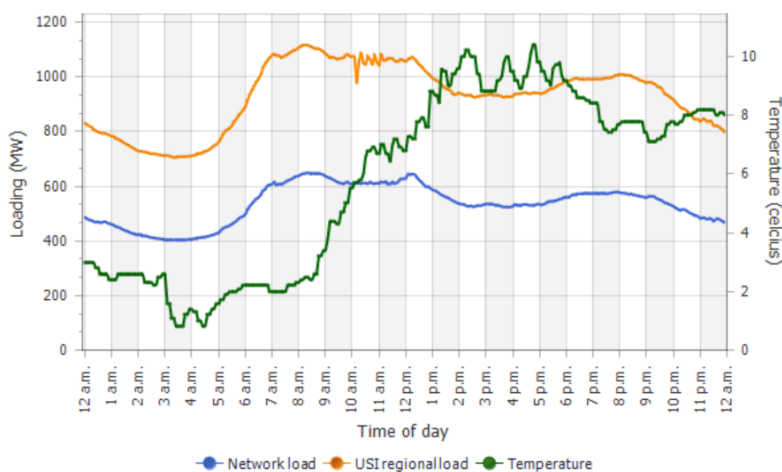
### Examples of Load Management

- On October 6 2022 there was a significant cold snap which saw the morning peak exceed the network load limit. Orion used load management between 7am and 12pm to keep the network load below the network load limit.
- Between 7am and 9am 100% of available load management was in use concurrently.
- By 12pm all available load management resource had been used for its agreed limit of 4 hours, and Orion ceased load management causing demand to exceed the network load limit for a short period of time.
- During this time it is unlikely that any additional load management could have been called on by the System Operator if required.
- Load management was also used in the morning in Upper South Island.

Orion network load and load management



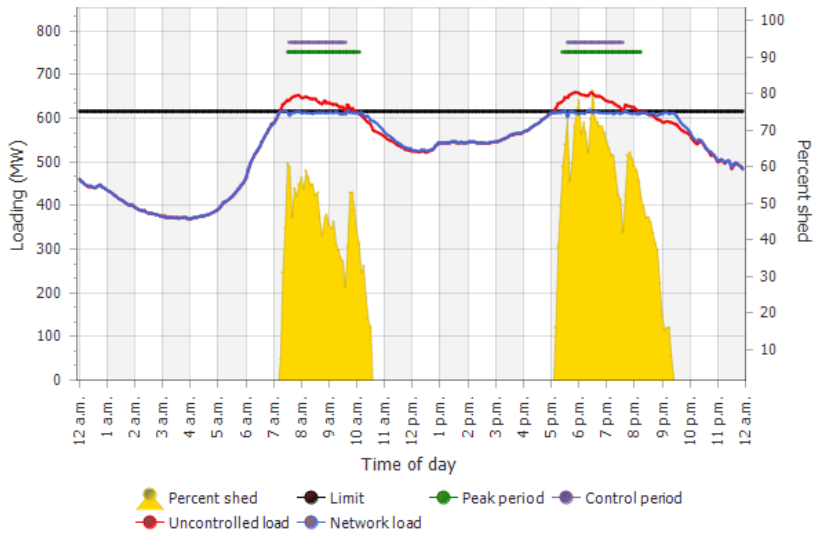
Network load, upper south island region load and temperature



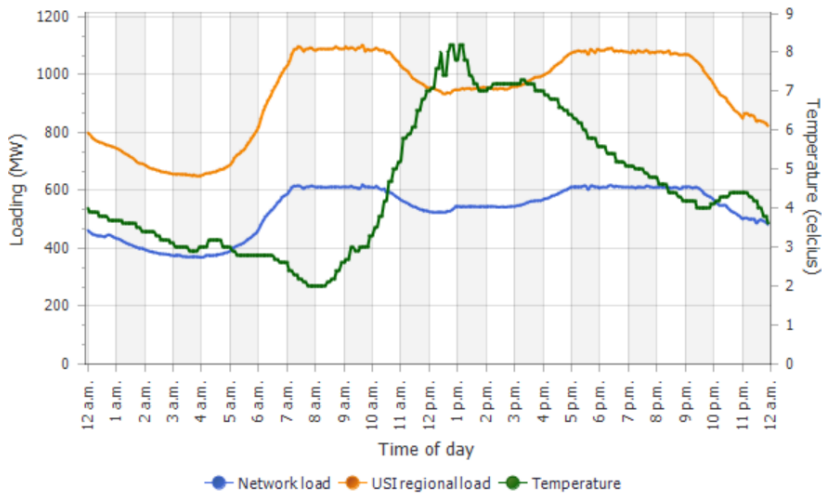
- August 9 2022 was a typical cold winter day requiring load management for morning and evening peaks.
- Between 7am and 10.30am and between 5pm and 9.30pm Orion shed ~50-70% of hot water load available. During this time it is likely that additional load management would have been available to be called upon by the system operator.

- USI load was also flattened during morning and evening peaks.

Orion network load and load management

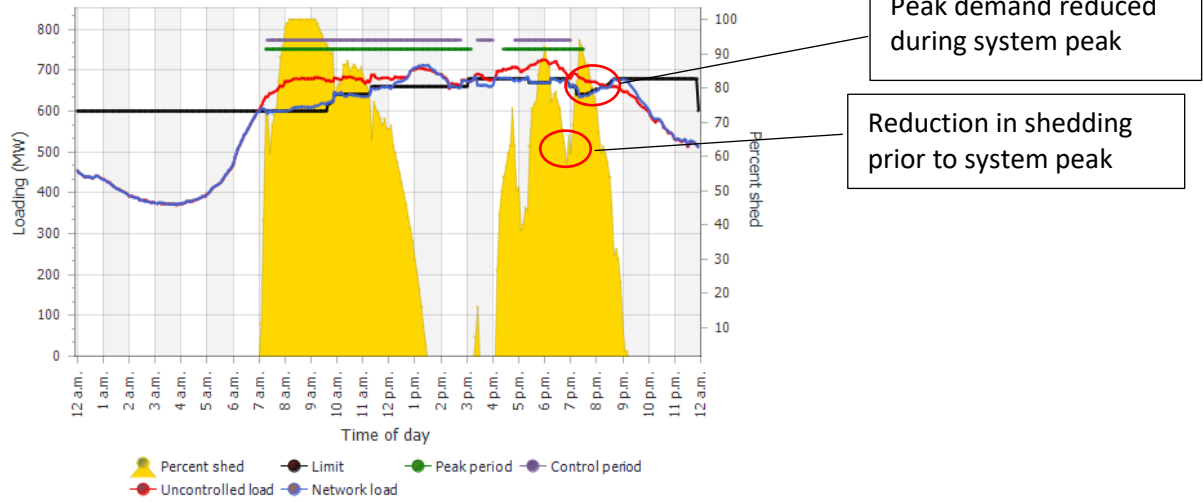


Network load, upper south island region load and temperature



- August 9 2021 was an extreme cold snap with concurrent drop in wind. Load reached record levels on the Orion network and load management couldn't keep load below the network limit for most of the day.

Orion network load and load management



Network load, upper south island region load and temperature

