

Advice to the Minister for Energy regarding the Energy Security Monitor and Assessor's Review of the Prudent Storage Level and High Reliability Level Profiles

Introduction

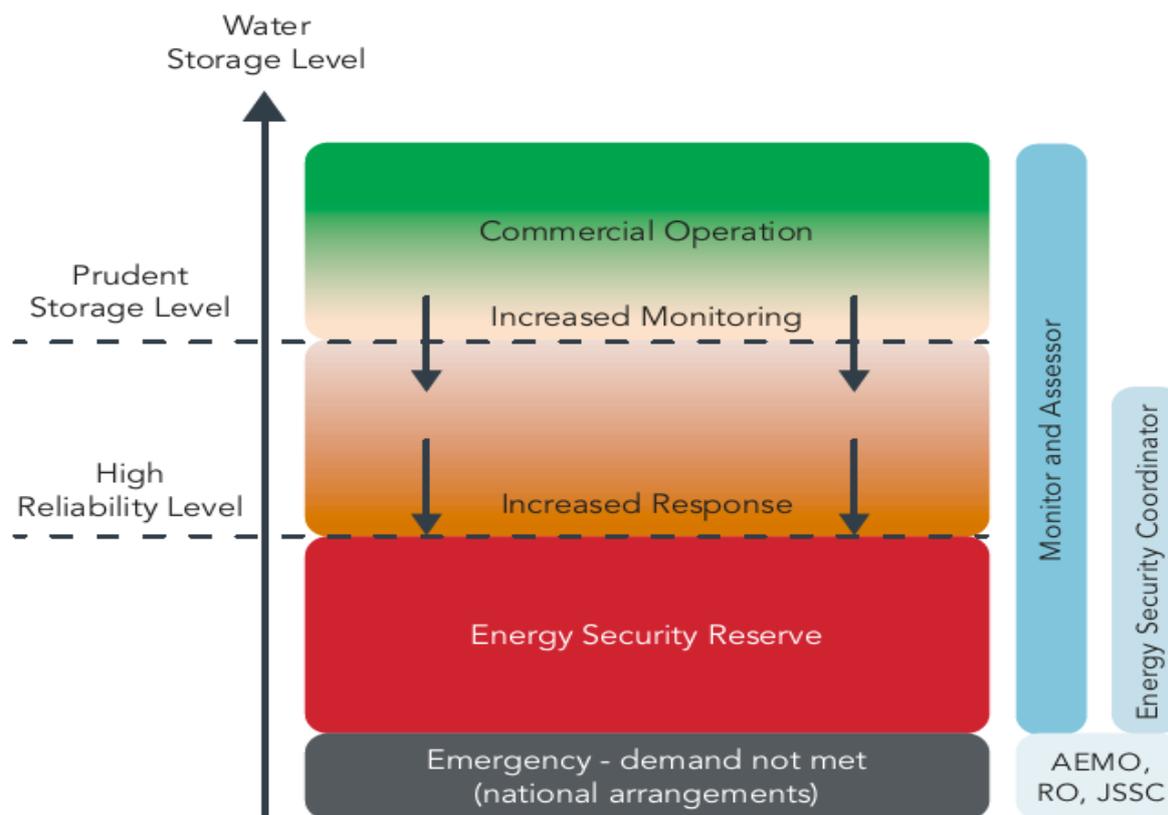
This attachment sets out the details of the review by the Energy Security Monitor and Assessor of the Prudent Storage Level (PSL) and High Reliability Level (HRL) profiles as established in the *Energy Coordination and Planning Act 1995*. The review was triggered by the commencement of the Cattle Hill and Granville Harbour windfarms and the recent reduction in gas-fired generation in Tasmania.

Background

During 2015-16, Tasmania experienced two concurrent, low probability events - the failure of the Basslink Interconnector and record low rainfall during spring. These events resulted in Hydro Tasmania's water storages falling to historically low levels. Among other things, the Tasmanian Government established the Tasmanian Energy Security Taskforce to advise the Government on how it can better prepare for, and mitigate against, the risk of future energy security events.

The Taskforce's Final Report was released in 2017. The Report contained a range of recommendations including, among other things, defining a framework for assessing and managing Tasmania's energy security (see Figure 1).

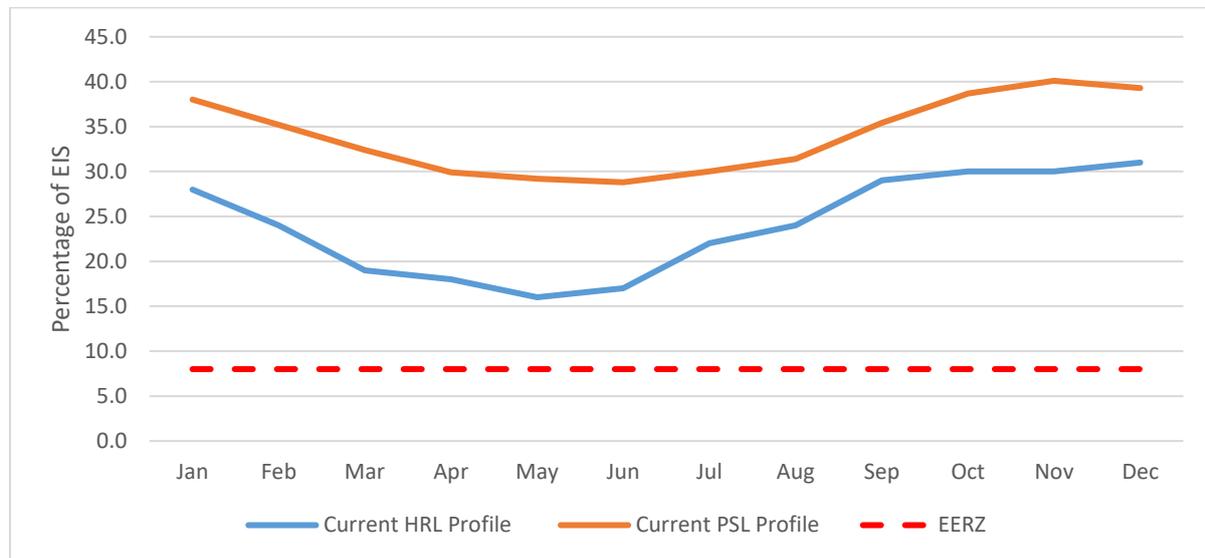
Figure 1: Tasmanian Energy Security Taskforce's Energy Security Risk Response Framework



A key element of the framework is the monthly public reporting of energy in storage (EIS) levels in Tasmania against the PSL and the HRL. The HRL is the threshold to which reserve water is held for energy security purposes, where the reserve is sufficient to withstand a six month Basslink outage coinciding with a very low inflow sequence, and to avoid entering the extreme environmental risk zone (EERZ) for Great Lake, which occurs when EIS is at approximately eight per cent. The PSL is the additional

storage required to ensure that, under normal operating conditions, there is a low likelihood of entering the HRL. Chart 1 sets out the current HRL and PSL profiles.

Chart 1: Current HRL and PSL profiles



Under the *Energy Co-ordination and Planning Act 1995* (the Act), the Energy Security Monitor and Assessor is required to monitor and evaluate the profiles and advise the Minister for Energy whether changes in the levels are required.

As set out in the Taskforce’s Final Report, one of the trigger points for a reassessment of the profiles is the connection of material new generation sources in the Tasmanian region of the National Electricity Market equivalent to two per cent (around 300 GWh) of total EIS.

Due to the commencement of the Cattle Hill and Granville Harbour windfarms, which, together, are expected to generate substantially more than 300 GWh annually, the Monitor and Assessor considers that the Taskforce’s condition for a reassessment has been met.¹ The Monitor and Assessor therefore initiated a review of the profiles.

Review process

As required under the Act, the Monitor and Assessor consulted with Hydro Tasmania at all stages during the review. In particular, the Monitor and Assessor requested that Hydro Tasmania model a number of different scenarios which accounted for the additional wind generation, and also updated other inputs including gas usage, in-flows and demand.

The Office of the Tasmanian Economic Regulator (OTTER) also used the model developed by the Taskforce to prepare separate estimates of the PSL and HRL, to compare against the results of Hydro Tasmania’s modelling.

This approach is consistent with the process adopted by the Taskforce. At that time, Hydro Tasmania and the Taskforce prepared separate HRL and PSL profiles.

The Monitor and Assessor also consulted with the Department of State Growth during its review.

¹ Based on their respective generation licence, the Cattle Hill windfarm is expected to generate 463 GWh per annum while Granville Harbour windfarm is expected to generate 400 GWh per annum.

Assumptions

The key assumptions underlying Hydro Tasmania's and OTTER's modelling are discussed below.

Additional wind

In 2016, annual wind generation was assumed to be 900 GWh. Since then the Cattle Hill and Granville Harbour wind farms have commenced operations and additional wind has been generated from the existing Musselroe and Woolnorth windfarms. Wind generation has been assumed to more than double, from 900 GWh to 1 941 GWh per annum.

Gas generation

In 2016, to calculate the current HRL profile, the Taskforce assumed annual gas generation of 1 752 GWh. However, the actual gas generated has been significantly lower than this in recent years. The Monitor and Assessor has determined that gas capacity and the level of gas generation should be updated based on recent trends. The 2018-19 Annual Energy Security Review stated in the event that there was a change in the mode of operation of the Tamar Valley Power Station, the HRL and PSL profiles would need to be reviewed and possibly amended to reflect the revised gas generation volume. The Monitor and Assessor therefore has set the level of gas generation based on average use during the 2019-20 and 2020-21 water years. In-flows have been lower in the 2019-20 water year and in the 2020-21 water year to date compared with historical in-flows, so it would appear that gas usage during this period has not declined because of higher than normal in-flows.

During the 2019-20 water year, gas generation was approximately 100 GWh. Between November 2020 and March 2021, gas generation was approximately 12.6 GWh, and, for the 2020-21 water year, Hydro Tasmania expects annual gas generation of approximately 33 GWh.

The Monitor and Assessor therefore has set gas generation, based on an average of the 2019-20 and 2020-21 water years, at 67 GWh (ie much lower than the current assumption of 1 752 GWh) which is equivalent to approximately 7.6 MW of capacity operated continuously.²

Other assumptions

The Monitor and Assessor also requested Hydro Tasmania update in-flow and demand inputs. These updated inputs did not have a material impact on the outcome of the modelling.

Model

Using the assumptions and updated inputs discussed above, the Monitor and Assessor requested Hydro Tasmania model revised HRL and PSL profiles. That is, the modelling is based on:

- extra wind generation from Cattle Hill and Granville Harbour;
- 7.6MW of capacity at TVPS operated continuously; and
- updated in-flow and demand inputs.

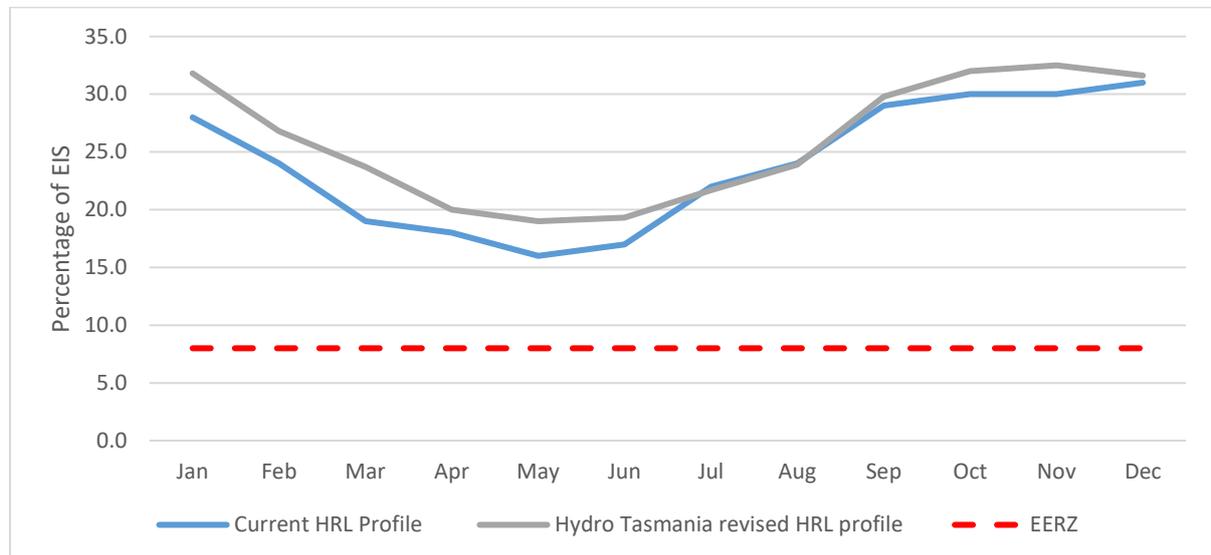
The findings from this modelling are discussed below.

² The Tamar Valley Power Station has much more capacity than this, but use its generators less than continuously.

Findings

For the HRL, Hydro Tasmania's revised profile is slightly higher than the current profile. As shown in Chart 2 below, the difference between these two profiles does fluctuate from month to month, but on average, the revised HRL profile is approximately two percentage points higher.

Chart 2: HRL profile - Hydro Tasmania revised profile and current profile



The reason for the marginal increase in the HRL profile is that the additional wind generation is more than offset by the reduction in gas generation. That is, while an additional 1 041 GWh of wind generation has been added, 1 685 GWh of gas generation has been removed from the model.

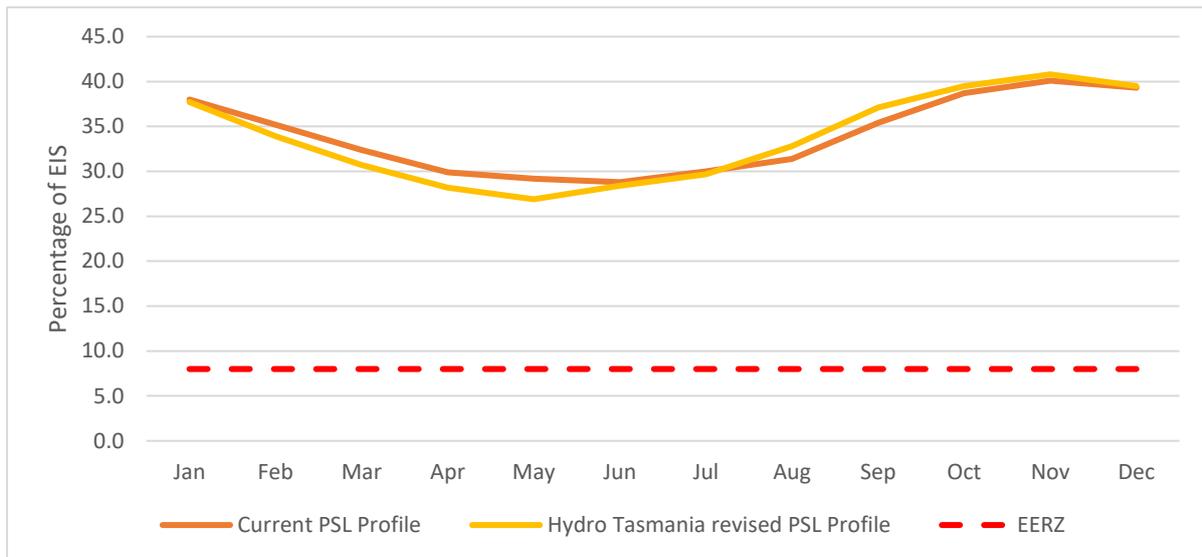
When compared to the Taskforce's model using the same set of assumptions and inputs as set out above, Hydro Tasmania's HRL profile, while similar, is marginally higher, and therefore more conservative, than the revised HRL profile prepared by my Office using the Taskforce's model.

If the Minister decided to change the HRL profile, the Monitor and Assessor recommends using the results from Hydro Tasmania's model. This would be consistent with the approach taken in the Taskforce's Final Report. The Report stated:

"Overall Hydro Tasmania's HRL profile is more conservative than that calculated by the Taskforce. For this reason, as well as for ease of implementation and future reference, the Taskforce recommends that the HRL profile should be initially set based on Hydro Tasmania's more conservative calculation." (page 71)

In relation to the PSL, there is virtually no difference between Hydro Tasmania's revised profile and the current profile (see Chart 3). Hydro Tasmania's profile is 0.3 of a percentage point lower than the current profile on average.

Chart 3: PSL profile - Hydro Tasmania’s revised profile and current profile



When compared to the Taskforce’s model using the same set of assumptions and inputs, Hydro Tasmania’s PSL profile is very similar to the PSL profile produced by the Taskforce’s model. Therefore, if the Minister decided to change the PSL profile, the Monitor and Assessor recommends using the results from Hydro Tasmania’s model.

Next steps

Under Section 3A of the Act, if the Minister for Energy intends to set new PSL and HRL profiles, the Minister is required make an Order that sets out new PSL and HRL profiles.

In the event that the Minister decides to change the profiles, the results from Hydro Tasmania’s modelling on a monthly basis are set out in Table 1 below. These values would set the PSL and HRL profile levels.

Table 1: Revised HRL and PSL profiles

Profile	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
HRL	31.8	26.8	23.7	20.0	19.0	19.3	21.7	23.9	29.8	32.0	32.5	31.6
PSL	37.7	33.9	30.7	28.2	26.9	28.4	29.7	32.8	37.1	39.5	40.8	39.5