12 November, 2014

Lord Dalgety
Electricity Commission
Tu’atūkila’ilo
Nuku’alofa

Dear Lord Dalgety


In accordance with the reporting requirements of the Electricity Concession Contract and in response to your request for additional information as specified in the suggested MOU dated May, 2012, TPL submits the following reports for the month of October, 2014.

1. System Loss Report
2. Fuel Efficiency Report
3. Reliability Measures Report
4. Monthly Outage Events Report

The above report items are described in detail below.

1. System Loss Report

The following graphs illustrate the 12 months Moving Average (smoothed) Systems Losses for all four islands for the years 2012/13 and 2013/14. The 12 months moving average losses are used because of the variability of monthly Real Time Systems Losses due to the impact of the number of days and fall of the weekends in respect to meter reading cycle. In addition, system loss report is always one month late as last month consumption data (i.e. meter readings) will only be read this month and available to report next month. Hence October EC Report contains only September system loss data.
For the month of September, 2014, all island moving average system losses have slightly decreased from 11.99% (August, 2014) to 11.84% (September, 2014) well achieving the regulatory target of 13%.

The individual island group’s system losses are shown below.

The graph above shows that Tongatapu systems losses have decreased from 11.86% (August) to 11.72% (September).
Vava’u losses have been steady since March to July, 2014 but increased to 13% in August and reduced to 12.95% in September, 2014.

Ha’apai system losses have always been below target until January, 2014. Since January, system losses have increased due to Cyclone Ian effect.
Eua systems losses are trending downwards, and fell below 13% target in May but increased again in June to September.

2. Fuel Efficiency Report

It is important to note that fuel efficiencies calculated here include both diesel and solar generation. Hence the following fuel efficiencies are somewhat higher than than the diesel only generation. Targets in the Concession Contract have been stipulated for diesel generation only.

Tongatapu fuel efficiency ratios have been erratic, but most of the time above the target.
Vava’u fuel efficiency ratios have been well above the target due to the two new 600KW generators commissioned in May, 2010 and the introduction of Vava’u solar farm which was commissioned in November 2013.

Mostly, fuel efficiency ratios have been under achieved in Haapai but increased to higher figures in last few months.
Mostly, fuel efficiency ratios have been under achieved in Eua.

Overall, all island fuel efficiency ratios have been above weighted average target of 4.17 KWh/L.
3. Reliability Measures (Tongatapu)

SAIDI minutes (measuring average total duration of interruption per connected customer) for the month of October, 2014 have decreased significantly from 167.93 (September, 2014) to 83.2 (October, 2014) minutes (see the table above). Some of the major HV faults contributed to the SAIDI minutes for the month of October are described below.

<table>
<thead>
<tr>
<th>Report Date</th>
<th>Date Completed</th>
<th>No of Customers Off</th>
<th>Fault Description</th>
<th>Repair Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>18/10/2014</td>
<td>18/10/2014</td>
<td>15,432</td>
<td>Power off to whole of Tongatapu</td>
<td>Whole island power OFF at 07:35; power ON at 08:41</td>
</tr>
<tr>
<td>11/10/2014</td>
<td>11/10/2014</td>
<td>250</td>
<td>Planned to shut down part of hihifo</td>
<td>Planned to shut down part of hihifo from FATAI, NUKUNUKU, MATAHAU, HOLOIPEPE at 10:00 AM</td>
</tr>
<tr>
<td>17/10/2014</td>
<td>17/10/2014</td>
<td>200</td>
<td>Shut down</td>
<td>10:37</td>
</tr>
<tr>
<td>03/10/2014</td>
<td>03/10/2014</td>
<td>200</td>
<td>Shut down part hihifo</td>
<td>Accident due to two children crossing the road in front of his vehicle so he turned and crashed into the pole. Shut down area of FATAI, NUKUNUKU, LAKIFA AND MATAHAU</td>
</tr>
<tr>
<td>03/10/2014</td>
<td>03/10/2014</td>
<td>200</td>
<td>Broken pole</td>
<td>Shut down the power at 19:20</td>
</tr>
<tr>
<td>16/10/2014</td>
<td>16/10/2014</td>
<td>173</td>
<td>Planned to shut down part of nukuakafa include marufanga to popua and also SIC</td>
<td></td>
</tr>
<tr>
<td>25/10/2014</td>
<td>25/10/2014</td>
<td>150</td>
<td>Planned shut down</td>
<td>Te’i’iku to Ha’atafu shut down the power (from 1000 and than switch back on 1030)</td>
</tr>
<tr>
<td>17/10/2014</td>
<td>17/10/2014</td>
<td>150</td>
<td>Conductor broken</td>
<td>Tokomololo lomaiviti laheka kahoa</td>
</tr>
<tr>
<td>22/10/2014</td>
<td>22/10/2014</td>
<td>150</td>
<td>Shut down</td>
<td>Emergency power shut down at Fu’ura’reta Air Port to replace broken DDO fuse holder on H.V. power pole H00982. [by K. Fave]</td>
</tr>
<tr>
<td>25/10/2014</td>
<td>25/10/2014</td>
<td>100</td>
<td>Planned to shutdown</td>
<td>Nukuakafa and Matahau (they shut down the power at 1000 and than switch back the power to this area at 1300)</td>
</tr>
<tr>
<td>22/10/2014</td>
<td>22/10/2014</td>
<td>81</td>
<td>Shut down</td>
<td>Tokomololo lomaiviti laheka kahoa</td>
</tr>
<tr>
<td>02/10/2014</td>
<td>02/10/2014</td>
<td>50</td>
<td>Shut down</td>
<td>Planned to shut down part of pea and tokomololo</td>
</tr>
</tbody>
</table>

Cumulative SAIDI YTD is showing below. The annual target is 5% less than the last year’s value.
CAIDI minutes (measuring average total duration of interruption per interrupted customer) for the month of October 2014 have also decreased from 95.58 minutes (September, 2014) to 74.58 minutes (October, 2013).

Cumulative CAIDI YTD is showing below. The annual target is 5% less than the last year’s value.

SAIFI (measuring average number of interruptions per customer) has also decreased from 1.76 (September, 2014) to 1.12 (October, 2014).
Cumulative SAIFI YTD is showing below. The annual target is 5% less than the last year’s value.

4. Reliability Measures (Outer Islands)

Since July 2014, TPL collects outage data to calculate the reliability measures all three outer islands. The accumulated measures are shown below graphically.

The above graph shows the accumulated SAIDI for all three islands since July, 2014. It can be said that Vavau has the highest and Ha’apai has the lowest SAIDI figures. The SAIDI figures include both planned and unplanned outages. Planned SAIDI figures were found very high compared with the unplanned SAIDI figures.
Accumulated CAIDI figures are equally high for both Va’vau and Eua. Again, planned CAIDI figures were found very high for all three islands compared with the unplanned CAIDI figures.

Cumulative SAIFI figures were found significantly high for Vavau compared with Eua and Ha’apai.
There were total of 518 planned & unplanned fault events for the month of October, 2014 affecting 17,528 customers (it is possible that the same customer would have been affected by outages more than once). As per the table above, the number of fault events has significantly decreased from 641 in September, 2014 to 518 events in October, 2014. Number of faults in all categories has decreased from the last month. Most of the customer services faults included fuses at the service line tap off point for a premise.

Should you have any queries with the information provided, please do not hesitate to contact me.

Yours Faithfully,
Ajith Fernando
Risk & Compliance Manager
Tonga Power Limited