

BENCHMARKING
CHANGES *business*

CASE STORIES
from the
PACIFIC POWER
UTILITIES



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INTRODUCTION

from the PPA Secretariat

The performance of power utilities in the Pacific varies considerably. While power is readily available in some of the Pacific Island Countries and Territories (PICTs), in others the percentage of the population with access to the electricity grid remains low. Many utilities experience significant power losses and all have high costs for operations and maintenance, with flow-on effects to consumers, business and the economy as a whole.

Since 2011 the Pacific Power Association (PPA), the Pacific Region Infrastructure Facility (PRIF) and the Secretariat of the Pacific Community (SPC) have been working in partnership to support performance benchmarking exercises in the power utilities. This involves 25 electric power utilities in 20 PICTs. The PPA leads the implementation of the benchmarking work; PRIF provides technical assistance for capacity building in the utilities and analysing the data; and SPC makes the data available to stakeholders and the community through the Pacific Regional Data Repository (PRDR), the Country Energy Profiles it publishes, and other avenues.

Benchmarking is proving to be a useful tool for utilities. It is helping them monitor and compare their performance (within the utilities over time and also between utilities) and it is driving business improvements through evidence-based decision-making and increased efficiency. This booklet contains a short description of the benchmarking project undertaken by PPA and PRIF, followed by short case stories and reflections from utility staff about the benefits of benchmarking and how they are using it to improve service delivery to their communities. It is a supplement to the Benchmarking Reports which contain the data collected in each round of benchmarking, but it provides a 'view from the coalface' about the changes benchmarking is achieving – both in the 'mind-set' of utility staff and in the results they are achieving in delivering power more reliably to more people across the Pacific.

Andrew Daka
Executive Director
Pacific Power Association
November 2014



Benchmarking is a process of comparing performance against industry metrics or results in other organisations or companies, then identifying and understanding the processes and practices of better performers in order to develop strategies for improvement in one's own organisation.

PPA and PRIF

the benchmarking initiative

The PPA and PRIF benchmarking initiative commenced in 2011 and will be completed in 2015. It is designed to help Pacific power utilities improve their performance and provide better service delivery to their communities. Specific objectives are to:

- ❖ increase understanding of performance gaps in power generation, transmission and distribution in individual countries and across the Pacific
- ❖ support improved decision-making within power utilities, and
- ❖ improve efficiency and other aspects of performance in participating power utilities.

The PPA Secretariat plans the project, advises utilities about the schedule for data collection, quality checks the data that is received, and ensures the utilities are aware of progress and issues. PRIF has provided technical support, data analysis and capacity building, including making visits to some utilities to work with staff and providing a benchmarking workshop at the annual PPA Conference. The data is released publicly through the SPC and PPA.

In the benchmarking process, data is collected on more than 50 indicators covering areas such as power generation, transmission, distribution, interruptions to service, governance, financial management, human resources and safety.

Over the last couple of years, a transition process has been instigated whereby the PPA Secretariat has taken increasing leadership in the project as PRIF support decreases. Ultimately, PPA will organise the project itself, raising funds to cover aspects of the work that cannot be undertaken in-house.

The case stories that follow highlight the progress being made by utilities and their determination to use the benchmarking work to improve performance, regardless of the size of the utility, its customer base or initial performance rating.

INTEGRATING BENCHMARKING *into operations*

“ In my view, every organisation needs to quantify its performance. Otherwise, you are operating blind day-to-day. The benchmarking Key Performance Indicators (KPIs) have been very useful and we use them for both internal and external benchmarking.

With internal benchmarking, an example is system losses which has an agreed benchmark of 10%. Any result over that means your power system needs to be strengthened.

With external benchmarking against other utilities, it is not as easy as there are many factors to take into account. We do not benchmark against Japan, for example, because their SAIDI score is around one minute and we cannot achieve that. However, we choose other utilities within PPA that are of similar size or similar in other ways, and we compare our results with them.

We have also incorporated benchmarking into our performance bonuses for all staff regardless of their position. To do this, we have developed a scorecard system that has KPIs at all levels, cascading from corporate-level KPIs down to the ‘shopfloor’. We split the KPIs into four quadrants: demand and supply (e.g. customer service); operations (e.g. SAIDI¹ and SAIFI²); human resources and innovation; and financial results.

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Hasmukh Patel
Chief Executive Officer (CEO)
Fiji Electricity Authority




¹ SAIDI = System Average Interruption Duration Index

² SAIFI = System Average Interruption Frequency Index


The evaluation of performance is done independently. The bonus for the CEO depends on the achievement of the corporate KPIs; bonuses for the General Managers are based on both the corporate KPIs and also the KPIs for their own divisions; other staff receive bonuses based on corporate results, division results and also personal performance. As a result, everyone has a stake in achieving our KPIs and staff feedback about the process is positive. We monitor the data monthly and adjust aspects of operation accordingly.

With the benchmarking exercise, I think PPA has taken the first step and it is an important step. Utilities now understand the value of benchmarking, they understand the need for accuracy, and they are starting to share information more openly – but that is not the end of the story. We now need to start exploring more about how to fully integrate the benchmarking work into utility business operations. ”



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LEARNING

from the region's high performers

“Te Aponga Uira O Tumu-Te-Varovaro (TAU) is a state-owned enterprise (SOE) that generates, distributes and retails electricity to about 1,000 commercial customers and 4,500 domestic customers.

We have been doing benchmarking internally since the 1990s when we became a SOE, so we were very supportive of the idea when the PPA decided to instigate benchmarking across all the utilities. We can now compare our targets and performance with the other utilities and use that as an external control. We generally compare our results with Guam, Fiji and American Samoa, viewing them as ‘mark-setters’. We talk with them about their operations and processes so we understand what is behind their success. It helps us to ensure we are tracking in the right direction.

One of the key challenges we have is the ongoing training for our staff in data collection and analysis. We are a small utility and cannot afford a dedicated person, so it is not realistic to have just one Benchmarking Liaison Officer. Instead, the role is shared and we offer opportunity to both male and female staff to participate. Over time, I would like to train both engineers and non-engineers and have a situation where all staff understand how important this is.

Reflecting on the last few rounds of benchmarking, I conclude by noting that we greatly appreciate the involvement of PRIF as it has added expertise and credibility to the exercise. The benchmarking reports and annual workshops are at a professional standard, and have assisted and inspired our organisations and staff. ”



It helps us to ensure we are tracking in the right direction.



Apii Timoti
Chief Executive Officer
TAU, Cook Islands

CONSISTENT MONITORING *and adjustment leads to continuous improvement*

“ Benchmarking is important to us at TAU and we consistently adjust and monitor our targets. After fixing one challenge, of course, there is always another one. For example, we needed to improve data accuracy and, after that, we needed to work on improving our analysis of the data. However, we are committed to continuous improvement and we intend to keep improving.

Some things we have introduced as a result of these benchmarking exercises include:

- ❖ periodic Polarisation Index testing on underground 11kV cables to monitor cable conditions (SAIFI management)
- ❖ installation of fault indicators which facilitates the speedy identification of fault sections on UG 11kV cable network (SAIDI management)
- ❖ eliminating planned outages by carrying out ‘live’ work when the equipment is to be replaced (SAIDI management)
- ❖ routine monitoring and replacement of ageing meters (loss management)
- ❖ routine replacement of underutilised transformers (loss management)
- ❖ automating our data entry to address issues of data integrity, and
- ❖ reviewing demand-side management and publishing tips for consumers on energy efficiency (we call it “Switch On”).

Tureheni File
*Engineering Officer
TAU, Cook Islands*



I find one of the main challenges is motivating people and keeping them interested in benchmarking. It is not always clear whether utility staff understand how important this is in helping us achieve the best results we can, so the communication and promotion of benchmarking is an important part of my role as a Benchmarking Liaison Officer. ”

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MAKING A DIFFERENCE *to blackouts*

“ After we attended the Benchmarking Workshop in Vanuatu in 2012, the first thing we looked at was power outages. We knew we had a problem with how long it was taking us to get the power back on after blackouts and the workshop gave us a push to improve the situation. Obviously, the end-user wants power back on as soon as possible.

Before our involvement in benchmarking, data was not readily available and we did not know how we compared with other utilities.

Our data on power outages comes from four Divisions and we were not getting information when we needed it. The process of collecting and compiling the data was relatively slow. We realised that all the staff who are involved had to understand why this data is important and what their designated responsibilities are. It was especially important to agree that they update and store the data for easier retrieval when it is needed, including when we are organising data for the benchmarking exercises.

Currently it takes two hours on average to restore power after a black-out. Sometimes, if the trucks are broken down, we have to ride bikes back and forth along the island road to check where the problem is along the power line, starting one engine at a time at the power station and loading the feeder lines in sections.

Our aim is to continue improving and to ensure good power supply to Tarawa. ”

Kiriati Birita

*Power Engineering Manager
Public Utilities Board, Kiribati*

Before our involvement in benchmarking, data was not readily available and we did not know how we compared with other utilities.



ADDRESSING SYSTEM LOSSES

and reliability scores

“ I am an electrical engineer and I have worked at the Electric Power Corporation (EPC) in Samoa for the last six years, having studied at Sydney University in Australia. We are using the benchmarking KPIs to understand where we are positioned from a performance perspective. We can then set targets for where we want to be and we carry this through into the company’s Corporate Plan and budget process. It is also a requirement of a loan to the Government for the power sector that we have an external regulator and he uses the KPIs in monthly reporting.

At 18%, our system losses were a significant issue in 2013. We discussed this with some of the other utilities after reviewing the benchmarking figures to see which utilities were ahead of us. We then targeted this indicator in our Corporate Plan and assigned a budget to conduct a door-to-door survey of all the meters. We found errors in the multiplying factors on the billing system, faulty meters and some meter wiring faults that resulted in some customers only paying half what they should be paying. System losses are now at 12% (including technical losses), so this gives us proof that the benchmarking indicators can make a difference to the corporation.

As another example, our reliability index scores were also high. Some of the feeders were long and this was impacting on the number of customers affected by interruptions. With the introduction of our new substation, we have now been able to shorten the lengths of our feeders (for example, one long feeder has been broken up into three shorter feeders) and the index has dropped. ”

We are using the benchmarking KPIs to understand where we are positioned from a performance perspective.



Nuulopa Pereira
Power System Planner
EPC, Samoa

WAKEUP CALL

was an opportunity

“ Back in the 2010/2011 benchmarking exercise, we were one of the worst performers and we needed to take action. It shows the value of benchmarking as this was a wakeup call that has proved to be a great opportunity for us.

Our system losses were high - sitting at 18.6% - and our regulator had set a target of 13% - so anything higher than this in losses had to be carried by the business from its profits. We developed a way forward and worked this into an implementation plan. We changed insulators on the high-voltage system (i.e. the 11kV and 6.6kV lines). We put connectors on the low voltage systems and we put fuses into the houses. We also changed all the 21,000 house meters to modern meters, using performance contracts with the contractors to ensure rapid replacement of all meters.

As a result of these measures, our average total system losses are now down to 11.6% (as a 12 month average, including generation parasitic losses) and we are saving money as a result. The work also improved customer service, through upgrades of service connections.

Another issue was the number of faults on the lines. Our SAIDI and SAIFI figures were the highest in the region and we realised we were not recording them properly. By correcting the errors, we reduced the outage figures by 20%. We then set ourselves a 5% per annum improvement target. The lines-staff and data operators have all been given training and are, therefore, more aware of our expectations and realise that every fault and every outage counts.

We now have two people working all the time to address faults and there are staff dedicated to receiving calls from the public. We have also made it part of the pay system for lines-staff so they get an hourly rate and then a bonus based on their responsiveness.

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Ian Skelton
*Network Investment Manager
Tonga Power Limited*

The quality has improved so much that the public have started commenting on the prompt response to fault calls and, as soon as the power goes off, we hear from our customers – so customer complaints are now the benchmark of how well we are performing.

Benchmarking has been powerful for us, not just in reporting to our regulator, but as an inspiration for our staff. We are all involved in our improvement – whether you are on the Board, whether you are the CEO, the lines-staff, or the financial staff - no matter who you are. We talk about it and we care about it. Benchmarking has been a critical part of our business improvement work and we can hardly wait to see the results next year. We started ‘on the back foot’ but we want to be a best performer! ”



Back in the 2010/2011 benchmarking exercise, we were one of the worst performers and we needed to take action.

It shows the value of benchmarking as this was a wakeup call that has proved to be a great opportunity for us.



SYSTEMATICALLY CHECKING

both supply & demand

“ One of the areas in which the benchmarking exercise has assisted the Solomon Islands Electricity Authority (SIEA) is in managing our distribution losses. We realised by looking at our data and comparing it with data from other utilities that our losses were very high and we needed to reduce them for sustainability purposes. The first step was for us to identify how much of the problem was due to technical losses and how much was due to non-technical losses. Only then could we develop a meaningful action plan.

Our approach is evolving over time with improvements being introduced as we progress. The improvements include:

- ❖ conducting a full meter audit survey of businesses and residences to ensure the meters are all working properly and fixing or replacing any that have problems
- ❖ establishing a permanent meter audit team and adopting a schedule of audits that are confidential and not advised (even to the staff)
- ❖ establishing a focused customer services team who provide information to the community about the electricity issues (including holding community/schools talks and regular radio talk-back shows)
- ❖ investigating power theft and adopting a no-compromise position with debtors (including moving 90% of our domestic customers to prepaid metering i.e. use of cash power meters)
- ❖ mapping all our meters on our computer system for easy identification of customers (both in Honiara and for the outstations), and
- ❖ upgrading of the cables in the network to ensure they are at an agreed standard (i.e. N-1 capability).

Losses have dropped from 28% to 14% over the last two years.

Having completed all this work, we are now monitoring our progress through the benchmarking data and the results are very pleasing. Losses have dropped from 28% to 14% over the last two years. ”



Matthew Korinihona
Manager, Distribution
SIEA

SELF-EVALUATION

improves credibility

“ I am a young female electrical and electronics engineer working at UNELCO (a power and water utility in Vanuatu) for almost two years. My current tasks are to manage utility statistics and reporting, and to support the distribution network project team in the design and implementation of new projects.

Through participating in the last couple of years of benchmarking, I have come to understand the importance and influence it has on our utility’s performance. The PPA benchmarking not only provides an opportunity for UNELCO to self-evaluate its various areas of operation and improve where there is weakness, but it also provides a way to build the utility’s credibility with other utilities on the performance chart.

PPA benchmarking is one of the key inputs in the tariff review that UNELCO conducts with the Utility Regulatory Authority every five years. This enables the utility and the regulator to better evaluate the concessional tariff and improve the electricity price for the population residing within the concession area. In this way, benchmarking indirectly affects the social and economic welfare of the people of Vanuatu.

In analysing our data . . . we realised that we needed to improve our techniques and planning for future operations.

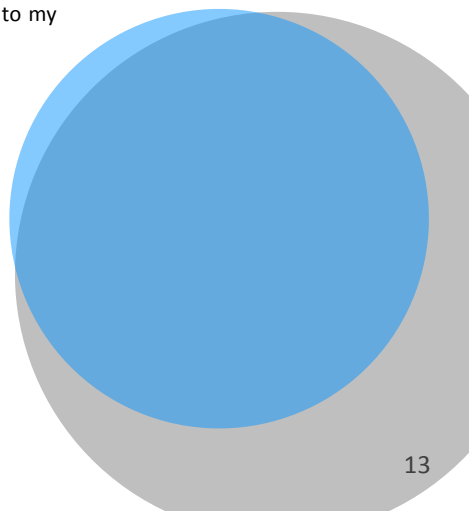


Angèle Jacquier
Engineering Officer in Charge of Statistics & Reporting
UNELCO Vanuatu Ltd

Benchmarking indicators such as Distribution Transformer Utilisation, and SAIDI and SAIFI also play an important role in the evaluation of the utility's performance. The Transformer Utilisation indicator has enabled UNELCO to assess the current loading of the distribution transformers and to reduce future over-designing. SAIDI and SAIFI are important in measuring effectiveness of planned power cuts on the network and the impact on customers. In analysing our data for these two indicators, we realised that we needed to improve our techniques and planning for future operations. Consequently, we now use power cuts more strategically and perform several operations during the one power cut for a specific zone, reducing the frequency of power cuts to any area over the course of a year.

As an active Liaison Officer for PPA benchmarking, I have great interest in the exercise. It provides me with an opportunity to work with all the sections in the utility and I have gained knowledge and experience in data collection and coordination work. One of the key challenges for me is keeping the data timely as there can be delays in receiving data from all the sections of the utility.

In the 2014 benchmarking exercise, data was collected on gender composition of utilities and the participation of both men and women in decision-making roles. Over time I think it will be both interesting and useful to study women's involvement and contribution in the power utilities. I hope to continue working in a benchmarking role and to make a worthwhile contribution to my utility through this and other work I do. ””



BENCHMARKING

inspires us

“ In the first round, the benchmarking results were a huge surprise to us. We had no idea how we were doing. Now, after a few rounds, we are finding the information very useful and we are setting up a database for ongoing data collection.

It has been a big challenge to us. We are learning all the time and understanding our performance in a way we did not understand it before.

Interruptions and power outages have been a big issue for us. The training at the annual Benchmarking Workshop has shown us all how to calculate the SAIDI and the SAIFI. This is very helpful as is the message about the importance of accuracy in the data collection. We have also been able to get ideas from other utilities about how to address the problem. This includes conducting loss studies (particularly given that 50% of the losses may be non-technical); metering of all installations; operations and maintenance work on the distribution network (currently about 40% completed); and ensuring we have correct sizing of transformers (completed but we will reassess from time to time).

Every year we develop a Performance Improvement Plan and the database was one of the initiatives we had in our last Plan. The timeliness of collating data has been another issue for us and we are in the process of automating the data entry process. Ultimately, the database will reflect the benchmarking indicators and staff in each division will enter the data directly. People are catching on now about how this can help us and we need to continue our efforts. It has been very good to have the training and support and we extend our thanks for that. ”



We are learning all the time and understanding our performance in a way we did not understand it before.

Francis Falan
Power Plant Manager
Yap State Public Service Corporation

LEARNING FROM OTHERS

& making changes

“ Tuvalu Electricity Corporation (TEC) is 100% government-owned and is the sole supplier of power in the country. Benchmarking helps us understand how other organisations are achieving their results. We look at the results, particularly in countries similar to us, and then communicate with them about how they are managing the issues we want to improve on.

One example is debtor days. Benchmarking alerted us that we had a problem - our figure was 107 days in 2011. When we investigated the situation, we realised that a key issue was the situation with the Outer Islands. All the billing is managed centrally and it takes time for invoices to get there and then any queries also required central office involvement. We made two key changes: firstly, we provided training to staff in the Outer Islands so they can handle some of the queries from the public, and secondly, we introduced a power disconnection policy and reconnection fee if bills are not paid within a set period. As a result of these two actions, we reduced the debtor days to 80 days in 2012 and our next target is 56 days.

Overall benchmarking has:

- ❖ increased our general awareness of costs and performance of products and services
- ❖ brought all the divisions together to discuss key issues and develop a common approach to challenges and competition
- ❖ highlighted the importance of employee involvement and recognition of individual and team efforts, and
- ❖ encouraged innovation in managing our operations.

It has been a very encouraging experience and we are keen to continue our involvement in benchmarking to ensure ongoing improvements. ”

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Polu Tanei
Renewable Energy Officer
TEC



The Pacific Power Association (PPA) is a member of the Council of Regional Organisations in the Pacific (CROP) and represents 25 electric power utilities in 20 PICTS. It was established to promote the cooperation of the Pacific Island Power Utilities in technical training, exchange of information, sharing of senior management and engineering expertise, as well as other activities.

The Pacific Region Infrastructure Facility (PRIF) is a multi-development partner coordination, research and technical facility which supports infrastructure development in the Pacific. PRIF Members include: Asian Development Bank (ADB), Australian Department of Foreign Affairs and Trade (DFAT), the European Union and European Investment Bank (EU/EIB), Japan International Cooperation Agency (JICA), New Zealand Ministry of Foreign Affairs and Trade (NZMFAT), and the World Bank Group.

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