

SEIAPI holds AGM

Article By: Sandip Kumar, GSES.

Despite challenges posed due to the Covid 19 pandemic, SEIAPI held its AGM on 30th September which saw a new President being elected with the inclusion of some new faces in the Executive Committee. The AGM convened virtually with members joining in mostly from Vanuatu, Fiji, Tonga, PNG and Australia. The meeting was chaired by Mr Bruce Clay (Clay Energy, Fiji) who presented the President's report, which was followed by the Treasurer's and Secretariat's report. Mr Clay highlighted that, *"The SEIAPI executive committee is continuing its work with regional educational stakeholders on establishing more training centres throughout the Pacific."* He added, *"With vaccination rollouts progressing throughout the Pacific we are seeing Governments relaxing public health restrictions which is resulting in increased economic activity."*

Whilst presenting the secretariat's report, Mr Geoff Stapleton (GSES, Australia), re-iterated on the SEIAPI Technical Guideline Developments (RE & EE) and the need to push for more training programs in the Pacific. Initial discussions on RE Training with PNG, Fiji and Vanuatu have commenced. Geoff mentioned that he is working on proposals on capacity building initiatives which will give more momentum to the RE industry in the Pacific.

With Bruce Clay opting to take a break to focus more on his company undertakings this year, it called for a new President to be elected. Through nominations that were received, Ms Belinda Strid (PCS, Vanuatu) was elected unanimously for the role of SEIAPI President. Mr Geoff Stapleton was re-elected as the Secretary and Mr Bruce Clay took a switch to the Treasurer's role. The ordinary members that were elected includes Peter Johnston (Fiji), Nikolasi

Fonua (Tonga), Teiti Nia (Cook Islands), Gavin Pereira (Solomon Islands/Australia).

Mr. Geoff Stapleton thanked Jennie Page from NZ for being part of SEIAPI as she has decided to take a break because of work commitments and also Nick Ritsinia from Vanuatu for continuous support since SEIAPI's inception.

Other important issues discussed included spurring work on the adoption of the SEIAPI Guidelines. Katerina Syngellakis (GGGI) also deliberated on the adoption of the SEIAPI Guidelines with some amendments into the national standards. The SEIAPI Executive is expected to discuss further and implement things on the ground later this year and next year.



SEIAPI President's Message – Belinda Strid

As the newly elected President of SEIAPI, I am excited to be handed the reins from Mr Bruce Clay, and looking forward to driving SEIAPI forward through the end of 2021 and into 2022 and beyond.

I would like to thank Bruce for his service and leadership as President of SEIAPI. Bruce and his executive team have been instrumental in driving memberships forward and more importantly capacity building and provision of guidelines for design and installation of renewable energy systems. Through SEIAPI's training and certification programs, I know my team at PCS, and specifically the Vanuatu rural electrification sector have been able to grow and provide a better quality of service as a result.

Moving forward, I am hoping to follow Bruce's footsteps and continue with increasing memberships, encourage and drive the desire for safe, reliable, improved system design and installation throughout the Pacific Islands. Through this desire for improved training and local capacity building, we will continue to work with regional educational stake holders to establish more training centres, throughout the Pacific. It is

up to us, SEIAPI, to continue to strive for better access to improve our region and our countries' technical capabilities.

We are fortunate that within Vanuatu, the SEIAPI guidelines and workshops have been instrumental in moving the quality of rural electrification systems forward, and the PCS team, together with other Vanuatu SEIAPI (and SEAV) members seek also to educate consumers on supplying a system that meets their power needs, advising the customer how their system operates, how to maintain it and how system additions (include electrical works), need to be conducted by a trained electrician. We advise customers on safety around electricity and energy efficiency, and particularly how this influences their off grid solar system. We find our customers appreciate the advice, encourage future power system consumers to adopt properly trained staff for the supply and installation of their system – and thus the desire for improved technical capabilities is also driven in Vanuatu through customer demand.

As the owner of PCS Limited in Vanuatu, we are largely involved in off grid rural electrification, bringing a

reliable and safe power system to many homes, schools, cooperatives, health clinics and small businesses throughout Vanuatu. We have also been involved in small solar home systems, together with Community off grid minigrids and in the on-grid markets. For most of our island installations, it is their first reliable, full time power system. Our team particularly finds the electrification of schools the most satisfying and we particularly love to hear the feedback from the students on how the power will enable their learning and their hopes for the future. We are looking forward to 2030 and hearing how these young adults have been more able to follow their dreams as a result.

Once again, thank you Bruce (our outgoing President), and welcome as the new SEIAPI Treasurer. Thank you, Geoff Stapleton for accepting the re-election as the Secretary and I am looking forward to working with you both and the rest of the Executive Team.

It feels like a great time to be looking forward, as we are working to close out the recent global tumultuous chapter, and I wish you all a safe and rewarding year ahead.



Pacific RE Training Updates

Article By: Geoff Stapleton, GSES.

As the secretariat of SEIAPI, GSES is playing an active role in trying to establish more training centres in the Pacific offering solar training. Activities undertaken in the last few months include:

FIJI

GSES and USP Pacific TAFE have been in discussions since March 2021. The objective is to establish a new solar training centre within the campus in Suva. GSES will then partner with USP Pacific TAFE for them to initially offer blended training. The theory will be held online and the practical will be conducted at the new training centre. GSES will train two of their trainers to initially conduct the practical's, act as the trainers for the online portion and then also begin to offer the face-to-face training.

In October, GSES applied for funding through the Australian DFAT's International Climate Change Engagement Program. It is hoped to hear whether we are successful by end of the year.

PNG

Geoff Stapleton is a member of a training committee that was organised

by the Solar Energy Association of Papua New Guinea (SEAP). This committee is modifying the Training unit Standards developed under SEIDP to be suitable to be accredited within PNG and also looking at how to use the Units within the Certificate Courses developed under the EU-PACTVET project to be beneficial to the industry.

VANUATU

The Vanuatu Rural Electrification Project (VREP) requires systems to be installed by SEIAPI/PPA accredited installer in accordance with the PPA /SEIAPI guidelines. GSES has been liaising with the Vanuatu Department of Energy and thirty-three people will be undertaking the Off Grid PV Systems Course (Stand Alone Power Systems). Some will do both design and install, while some will just do design or just do install. The theory will be online while the practical will be conducted by the Vanuatu Institute of Technology.

COOKS ISLANDS

Tec Aponga Uira (TAU) is developing a training centre within their head office complex in Rarotonga. GSES is liaising with TAU in developing a strategy for training and supporting their trainers.

Reminder: GSES/PPA License Agreement Funded by GIZ

In 2019 GSES signed a license agreement with the PPA funded by GIZ. Through this agreement GSES can sign license agreements with in-country training centres and PPA member utilities for them to have access to GSES face to face training material for:

- Design and Install - Grid Connected PV Systems
- Design and Install - Off Grid PV Systems (Stand Alone Power Systems)
- Design and Install Hybrid Systems (Fuel generator/PV) and
- Design and Install Batteries Systems for Grid Connected PV Systems.

If you are interested in finding out more contact Geoff Stapleton on geoff@gses.com.au



New Zealand Quadruples Climate Aid Grants

Article by: Peter Johnston

The Government of New Zealand has quadrupled its commitment for climate change assistance for those countries most vulnerable to climate effects. It will provide NZ\$1.3 billion globally (nearly US\$1 billion), over four years from 2022 through 2025. At least half of the funds – about US\$130 million per year – will go to the Pacific islands for supporting adaptation efforts. These could include clean energy, climate resilient buildings, climate resilient agriculture, and protection of coastal communities against sea level rise and storm surges.

The NZ government has also pledged to reduce carbon emissions by 50% by 2030 from a 2005 baseline, compared to an earlier target of 30%. Nonetheless, Climate Action Tracker has given the country a “highly insufficient” rating. Despite net-zero emissions by 2050 being enshrined in law, the policies focus too heavily on offsetting carbon overseas and through forestry, rather than addressing the root causes such as agriculture.

Climate Change Minister James Shaw said New Zealand would support a number of projects, with a particular focus on helping Pacific Island nations adapt to the effects of climate change. Some of these would be an expansion of existing support to PICs. "We've invested quite heavily in solar capacity around the Pacific; that both assists with bringing down the greenhouse gases of the islands themselves but it particularly helps with resilience in terms of cyclones and so on because what happens when you have a major event like that is that their diesel supplies get disrupted, and so having electricity that's generated and stored and used on site is very significant in terms of ensuring the capacity of their power grids to keep going. Every time any of our ministers or any part of our government has any form of dialogue with any of the islands in the Pacific the number one thing that they talk to us about is climate change, the need to reduce our own emissions to stop climate change from happening in the

first place, and also the need for that support to enable them to transition."

Unlike much aid, all of the assistance will be in the form of grant aid and New Zealand MFAT recognises the desirability of better supporting locally-based companies in delivering climate resilient infrastructure.

Sources:

Government pledges \$1.3b to climate change-affected countries (17 Oct 2021) <https://www.msn.com/en-nz/news/national/government-pledges-1-3b-to-climate-change-affected-countries/ar-AAPDrDV?ocid=entnewsntp>

New Zealand increases climate aid contribution (Rt Hon Jacinda Ardern; Hon James Shaw (8 Oct 2021) / <https://www.beehive.govt.nz/release/new-zealand-increases-climate-aid-contribution>

Australia, The Pacific Islands and Carbon Reduction Commitments

Article By: Peter Johnston

According to the United Nations Environment Programme's (UNEP) October 2021 emissions gap report, the planet will warm by 2.7C above pre-industrial levels even under the new pledges made by countries ahead of the COP26 climate summit in Glasgow (assuming optimistically that every country actually achieves its promises, which is far from assured), “a disastrous level that would drive devastating flooding, heatwaves and the risk of dangerous tipping points.”

For the Pacific Islands, climate change impacts have been described as an existential issue, and island leaders, delegates and NGO attendees have used previous COP meetings to maintain pressure on the US, Australia, New Zealand and others to support serious targets. For COP26 in November, only four Forum Island leaders are expected

to attend (Fiji, Palau, PNG, and Tuvalu). They have understandably hoped that our wealthy neighbor, Australia, one of the world's biggest carbon emitters per capita, would develop an ambitious, quantifiable emissions reduction strategy. This could spur other nations to do likewise, supporting the region's goal of a maximum temperature rise of 1.5C to minimize disruptions for the region, and for Australia itself. What has Australia committed to do? And what are the implications, if any, for SEIAPI members?

In September, Fijian prime minister Frank Bainimarama said leaders who cannot take action on climate change shouldn't bother going to COP26, subsequently welcoming the Australian pledge as a start and urging Australia to provide a concrete plan to half emissions by 2030. Samoan PM Fiame Naomi Mata'afa said the Glasgow COP

our point of no return. On 26 October, Australian PM Scott Morrison announced a national commitment to net-zero emissions by 2050, describing it as the right plan for Australia and for the region, which he expected the Pacific to welcome strongly. By the following day, the initial response to the 'so called plan' was at best lukewarm according to those interviewed on ABC Australia's Pacific Beat:

FSM president David Panuelo described Morrison's plan as 'somewhat hollow' and a 'public relations campaign', unclear about timing, specific goals, and the unproven technologies to be used considering the existential threat to the Pacific. Australia should be leading but without measurable commitments, it hurts the credibility of the Pacific Island Countries.

Former Kiribati President Anote Tong said the Pacific remains disappointed, with Australia not showing any leadership. PICs have made it clear that they want an agreement which will cap the global temperature rise to 1.5C, which requires a 50% reduction in emissions by 2030. Australia's goal remains unchanged at a 26-28% compared with 2005 levels.

Solomon Island climate negotiator Chanel Iroi is very concerned about the effects on COP26 of goals which are not ambitious.

I-Kiribati campaigner Maria Chee-Fong noted that Australia has a bad reputation on climate change efforts and should do what it knows is right: climate action now. However, the plan is very disappointing and far from the Paris agreement.

Within Australia, the 'eleventh hour commitment' was described by Prof Jeremy Moss of the University of New South Wales as a monumental failure, with no increase to Australia's 2030 climate target, no new funding, no new policies and few details of how reductions will be achieved – except a heavy reliance on technological solutions not yet invented. The focus on subsidizing technologies such as carbon capture and storage seem designed to allow the fossil fuel industry to keep operating for decades to come. The most glaring gap is a complete failure to tackle Australia's biggest contribution to climate change: coal, gas and oil exports. 'For a net-zero plan not to include a strategy to phase out this enormous contribution to climate change is an abrogation of responsibility.'

Other Australian experts (at the University of Melbourne, the Australia Institute and Climate Analytics) said that plan relies on a 'gross manipulation' of data that suggests trees and soil can absorb far more carbon dioxide than is actually possible, did not seem to acknowledge that trees cannot sequester carbon dioxide indefinitely, and did not factor in the impact of climate change-enhanced bushfires and drought.

Shadow energy minister Adam Bandt described the net zero plan as having less detail than a fortune cookie. Prof Tim Flannery of the Climate Council said the Plan was neither credible nor concrete and 'means little', noting that

'A net zero target is fundamentally incompatible with new coal or gas – yet, the Federal Government is still funding fossil fuels.'

Global media were also critical and sceptical. CNN labelled Australia 'the rich world's weakest link at COP26' contrasting the government's 'defiant' climate plan against the US, UK and EU's efforts to legislate net zero and cut greenhouse gas emissions.' The BBC described Australia as a 'massive exporter' of fossil fuels which has 'long dragged its heels on climate action.' It was sceptical that investing in low-emissions technologies, and avoiding a climate tax, while maintaining the coal industry, can achieve net zero. The New York Times noted that Morrison did not mention the devastating risk of temperatures continuing on their current trajectory, 'which is what world leaders who have made more ambitious commitments are seeking to avoid' with Australia increasingly vulnerable to global warming, noting that recent severe fires, droughts, cyclones and the nation's surface temperature warming by 1.4C since 1910 were not part of Morrison's address.

In brief, there has been considerable Australian, regional and international scepticism about Australia's proposals. Nothing has changed substantively since climate experts ranked Australia last out of 54 nations assessed on its strategy to cope with climate change.¹

Does this have any implications for the work of SEIAPI members? Global commitments are already far weaker than those needed to avoid serious adverse climate impacts globally, the PICTs are among the world's most vulnerable countries, and Australia is currently unwilling to match the efforts of other rich countries, but is rather undermining global efforts.

It is important that SEIAPI members advocate, plan, design and build energy infrastructure that is highly resilient to hurricanes, flooding, high winds and other coming climate impacts. Energy infrastructure in the Pacific must be adapted to severe climate change, not just be built to maximize emissions reductions to which the region has contributed little. And this means SEIAPI members need to lobby their governments and donors for stringent standards and ensure that their staff are trained to meet and exceed these standards.

This was evident before the Australian plan was released but is even more necessary now.

¹ *Australia ranks last out of 54 nations on its strategy to cope with climate change.* (Johanna Nalau, Griffith University & Hannah Melville-Rea, New York University / 19 Oct 2021 <https://theconversation.com/australia-ranks-last-out-of-54-nations-on-its-strategy-to-cope-with-climate-change-the-glasgow-summit-is-a-chance-to-protect-us-all-169627>

Membership Update

- Fijian Competition & Consumer Commission (FCCC) joins as an Honorary Member of SEIAPI

Accreditation Update

Full Accreditation – Individual

September, 2021

- Aaron Strid PCS, Vanuatu *Design and Install Off Grid L1 & L2*
- Belinda Strid PCS, Vanuatu *Design and Install Off Grid L1 & L2*
- Mendra Christino Telavan PCS, Vanuatu *Install Off Grid L1 & L2*
- Thompson Alick PCS, Vanuatu *Design and Install Off Grid L1 & L2*
- Tagar Yannick PCS, Vanuatu *Design and Install Off Grid L1 & L2*
- Owen Moli PCS, Vanuatu *Install Off Grid L1 & L2*

Commercial 3 -Phase Victron Off- Grid Solar System in Taveuni, Fiji

Article By: Solar Fiji

16.8kW_p Solar PV & 28kWh Lithium Stand Alone System

Green Power Co & Solar Fiji engineered, supplied and installed a 16.8kW_p Canadian Solar system with 28kWh Simpliphi Lithium battery storage, for Yanuyanu Food Production in Matei, Taveuni, Fiji Islands. The heart of the system is controlled by Victron Energy equipment which is installed by Ciaram Granger and Pat Gangemi, along with Solar Fiji Technicians.

Overview:

- 16.8kW_p of PV using 42 Canadian Solar Hiku 400W Modules and is DC coupled by 4 Victron Smart Solar Charge Controllers.
- 28kWh of Battery Storage using the Simpliphi 48 Volts Lithium Phosphate Batteries.
- 15kVA Continuous Power | 30kVA Peak Power | 3 Phase | Delivered by 3 Victron Multiplus 48/5000 inverters.
- The system utilizes the Color Control GX for live system

performance data and allows the system to be monitored remotely via the free Victron VRM.

- The system integrates with the existing Geko 4kVA 3phase Diesel Generator.
- The system is designed to deliver 3 phase power to the farm, ice cream factory and future residence.

The solar system will minimize the use of a diesel generator, which will save the operators of the facility approximately FJD\$27,602 per year.



Caption: Off grid PV system in Taveuni

Accreditation Update

Provisional Accreditation – Individual

November, 2021

Pawan Kumar Bajpai Narhari Electrical Co. PTE LTD,
Fiji *Design and Install Grid Connected PV System*

Pawan Kumar Bajpai Narhari Electrical Co. PTE LTD, Fiji
Design and Install Off Grid L1, L2

FCCC Becomes Honorary Member of SEIAPI

Article By: Fijian Competition & Consumer Commission (FCCC)

The Fijian Competition and Consumer Commission (FCCC) became an Honorary Member of Sustainable Energy Industry Association of the Pacific Islands (SEIAPI). The FCCC is an independent statutory body established under Section 7 of the Fijian Competition and Consumer Commission Act 2010, responsible for enforcing laws relating to competition, fair trading, consumer protection, and through which it possesses regulatory responsibilities in the electricity, gas and liquefied petroleum gas (LPG) sectors, apart from others. Over the years, we have established rapport with industries

and strategic partners – serving as an enabler for effective governance, risk management, and serves as a means of detecting and disrupting restrictive and unfair trade practices. Our Strategic Plan embraces the fundamental principles of Fiji’s National Development Plan and we know we play an important role in Fiji’s sustainable economic growth. In 2019, we were appointed as the Independent Regulator for electricity, with the primary responsibility of controlling and regulating prices of electricity sector in Fiji. We are also responsible for issuing Generation, Transmission and Supply Licenses to all electricity operators in

Fiji. We believe the work we do actively contributes to Fiji’s national ambitions of Sustainable Development Goal (SDG) 7. Becoming an Honorary Member serves as an opportunity for us to enhance our role in Fiji’s sustainable energy transition, considering the various reputable industry, associate and honorary members that already form SEIAPI. We look forward to building our internal capacities by accessing trainings and workshops and knowledge and expertise of other members, and being informed about new technologies and innovations



Caption: FCCC conducting inspection at one of the site

Tell us what important technical topics you wish to see in the next newsletter and we will try to get them to you.

Email your topics on secretariat@seiapi.com or info@seiapi.com or admin@seiapi.com

Technical Article

By Dr Herb Wade

Lithium Batteries for Rural Solar Home Systems (SHS)

Due to their increasing use in utility sized solar systems and electric vehicles, lithium-ion batteries are becoming more available, even in sizes that compete directly with the 12V lead-acid batteries commonly used in small solar systems for providing basic electrical services to rural homes. For example, the Dakota line of small lithium-ion batteries are specifically intended to take over tasks, such as storage for small solar installations, that have been using sealed lead-acid batteries.

They do have definite advantages over their lead-acid competitors. Those include:

Light weight

About one-third the weight of high-quality sealed lead-acid batteries of similar capacity

Longer life

Typically, lithium-ion batteries provide more than 10 years for high quality units that are charged and discharged properly. Manufacturer warranties in excess of 10 years are not unusual while 5- or 6-year warranties are common for high quality sealed lead-acid batteries.

Use of a much higher percentage of available capacity

Typically designs that average 80% of rated lithium-ion battery capacity instead of averaging the 30% generally used to design SHS for long lead-acid battery life. Lithium-ion batteries have no problem sitting at low charge levels for extended times – yes lithium batteries can be damaged if totally discharged but are not harmed (and some may actually benefit) if left sitting for long periods at low charge levels.

Higher rates of charge than appropriate for high quality lead-acid batteries are generally acceptable for lithium batteries

This is generally not an important feature of lithium batteries for SHS use but does allow oversizing of PV arrays to provide rapid recovery of charge levels after cloudy periods. This can be an important characteristic for micro grid and institutional type loads.

Can be connected safely to many types of existing charge controllers

Because there is an internal Battery Management System (BMS) to protect the cells from damaging charge and discharge conditions, and because the cell voltage of around 3.7V allows the construction of batteries with the 12V, 24V or 48V rating typically found in off-grid loads such as lights, pumps and inverters, they often can be safely operated using high quality charge controllers that are used with lead-acid batteries. It is advised, however, that the

battery supplier be advised of the proposed controller that is to be used and get their written approval so that all warranties are maintained.

Are not harmed if they spend long periods at partial charge

Lead-Acid batteries soon become sulfated if they remain for several days at partial charge, they need to be brought to full charge regularly or sulfation damage may occur. Lithium-ion batteries are not affected adversely by sitting at partial charge for long periods of time.

Wider operational temperature range

Sealed Lead Acid batteries have a peak performance temperature range from about 15 to 35 degrees Celsius. Lithium-ion batteries have a peak performance temperature range of about 5° to 45°C.

Of course, lithium-ion batteries also have definite disadvantages. Those include:

Highly inflammable contents that under some conditions of overcharge at temperatures above about 50°C can cause ignition and high intensity fires.

Fires can be caused by uncontrolled charging so commercially available lithium-ion batteries have an internal battery management system (BMS) to ensure that charging conditions conducive to fires are automatically prevented. One aspect of using lithium batteries that include an internal battery management system is that they should not be connected together in series to increase the voltage of the battery system. Parallel connections to increase available amperage is allowed though.

Substantially higher initial cost for the same battery storage capacity

Typically, lithium-ion batteries are more than double the cost of high-quality sealed lead acid batteries of similar rated capacity; however, they are able to be consistently discharged to 80% of rated capacity while lead-acid batteries should not be regularly discharged below 50% of rated capacity and for the longest life (5+ years) lead-acid batteries are best operated at an average discharge level of only 20% to 30% and never discharged below 80% of capacity. If properly installed and managed, lithium-ion batteries have more than double the useful life provided by comparable high-quality lead-acid AGM units. So, on a delivered Ah (or Wh) basis, lithium batteries are generally lower in delivered Ah (Wh) cost relative to high quality AGM type lead-acid units but the savings are seen over a 10+ year period and the higher initial cost is often prohibitive for systems being directly financed by rural off-grid homeowners who generally have limited cash resources. But they

do make good economic sense for government or utility financed installations due to lower per delivered kWh cost plus they have generally lower maintenance requirements making them more suitable for remote installations where good technical support is more difficult to arrange.

Most of the smaller Lithium batteries are imports from Asia and it may be difficult to determine in advance of purchase if performance promises can actually be met when they are in service.

Whenever possible, choose lithium-ion batteries from well-known and trusted suppliers that have a performance history that is for actual use in a comparable environment. Trusted third party users of batteries are also reasonable sources of information about products but try to choose users of the batteries that have similar operating and environmental conditions to those you are expecting for your applications.

Lithium-ion batteries should never be completely discharged or charged at higher than rated voltages

Complete discharging of many types of lithium-ion battery can cause them to become impossible to recharge. If a lithium-ion battery cell is discharged below 2.5V, a safety circuit usually built into the battery opens and the battery appears to be dead. Only battery analyzers with a boost function can recharge the battery. Charging at higher than rated voltage may cause permanent damage or even fire.

Should not be connected to some types of lead-acid battery controllers

Most modern controllers such as some PWM (Pulse Width Modulated) units may generate charging pulses higher than the lithium-ion battery will accept through its internal Battery Management System. The battery manufacturer should always be contacted regarding the specific controller to be used to ensure that the battery will indeed be properly and safely charged by that controller. It is always best to use a controller specifically designed to charge a Lithium-ion battery. In particular, any controller that will automatically provide an "equalizing charge" to the battery will not be acceptable. An equalizing charge is a higher-than-normal charging voltage intended to equalize the voltage in lead-acid battery cells by "burning off" lead-sulfate deposits from the cells. Those higher voltages are not acceptable to lithium-batteries.

Cannot be connected safely in series to increase battery bank voltage though they can be connected in parallel to increase overall battery bank current.

With lead-acid batteries, increasing the voltage of a SHS in order to handle larger or more diverse appliances is easy: simply add more batteries in

series. That cannot be done with lithium batteries, a completely new battery that has the needed voltage must be installed.

A major problem with customer owned SHS installations is the tendency of users to make unauthorized modifications to the systems that are installed. That includes removing batteries and using them for night fishing and other uses of the batteries that were not planned for the installation. Because the end users are often familiar with the varied uses of lead-acid storage batteries but not familiar with lithium-ion batteries, lithium-ion batteries may be exposed to use patterns that do not directly cause problems with lead-acid batteries but are detrimental to lithium batteries and may cause expensive damage or even cause fires when lithium-ion batteries are removed from the SHS and subjected to other uses. Being in a wooden boat with a fiercely burning battery while at sea fishing is not an experience anyone wants. It is therefore important that the lithium batteries are only accessible to authorized, properly trained technicians. Customers also should be advised of the dangers of removing the batteries from the SHS and using the lithium batteries for other purposes. There have been instances where island technicians have actually helped households remove batteries for unauthorized uses and it is very important that all persons who are given access to the batteries are aware of the dangers of improper use of the batteries when removed from the SHS.

The Dakota brand Lithium-ion battery looks almost exactly like a sealed lead acid battery and has a comparable capacity. But it delivers more than twice as much electricity over its much longer life – but at around double the purchase cost relative to a lead-acid battery of similar rated capacity. It has an 11-year warranty compared to typically 5 years or less for most sealed lead acid batteries. For micro/mini grids the long life at a lower per Ah cost is exactly what is needed since the grid-based system can be easily increased in capacity by the addition of power generation units consisting of panels, controls and batteries in modular generation units, thus individual battery replacement is not required.



But is it worth using for small home installations? Probably only if the installation and its usage is expected to stay essentially the same for the more than ten years of its useful life and if it is impossible for the homeowner to access the battery for other inappropriate uses. If there are changes to the

system that require a different capacity battery years before the original lithium-ion battery wears out and needs to be replaced with a bigger one, the lower per Ah cost of the longer life lithium battery is lost. More to the point, for this to be practical, the homeowner must not have access to the battery for any use outside that for which the system is designed and for rural island users, that is very hard to enforce for individual home users though generally reasonable for schools and other government facilities.

SEIAPI Executive Committee Members

	<p>Mrs. Belinda Strid President – SEIAPI</p> <p>Belinda Strid is a proud mother of 3, wife, engineer, owner/manager of PCS, runner, fisherwoman, NiVanuatu and Australian. Born in Newcastle, Australia, at 20 I joined the Australian Army for 10 years, mainly in satellite, data and radio communications. I managed the 3G Telstra rollout for Northern Territory, before relocating to Vanuatu in 2007, to assist Digicel with the build of the new mobile phone network throughout Vanuatu, whilst also learning the trade of robust Off-grid Solar Systems for the telecommunications market.</p> <p>After establishing the shopfront in 2012, our focus has been on understanding the customer's requirements, growing our team, both in numbers and an individual's capacity, and the provision of good quality products. Whilst there is always room for improvement, we are always growing stronger, and we proudly support the Vanuatu off-grid market with strong, reliable and safe power solutions.</p>
	<p>Geoff Stapleton Secretary –SEIAPI</p> <p>Geoff specialized in solar (PV) energy in the final year of his electrical engineering degree in 1981 and then went on to obtain his electrician's license. He joined BP Solar Australia in 1987. In 1989 he started his own company on the south coast of NSW where he designed, installed and maintained off grid power systems. In 1998 he was one of the co-founders of Global Sustainable Energy Solutions Pty Ltd (GSES) and is still the managing director. Geoff has played an active role on committees within the various Australian solar/sustainable energy industry associations since 1991; a Member of Standards Australia Working Groups since the mid 1990's and for 10 years was a member and later Chair of the Renewable and Sustainable Technical Advisory committee that oversaw the ongoing management of renewable energy training units in Australia. Geoff has been an accredited designer and installer since 1994.</p>
	<p>Bruce Clay Treasurer- SEIAPI</p> <p>Bruce is the founder and General Manager of Clay Energy, a member of the Sunergise group. Based in Suva, Fiji and established in 1998 Clay Energy has grown into one of the region's leading renewable energy EPC companies with experience in delivering power solutions from small SHS to large hybrid and utility grid connected systems throughout the Pacific."</p>
	<p>Peter Johnston Committee Member – SEIAPI</p> <p>Peter Johnston is a Fiji citizen with degrees in aeronautical engineering, technology policy and environmental management. He who has been involved in sustainable energy and environmental issues in the Pacific and to a lesser extent Southeast Asia since the late 1970s. He was Fiji's first Director of Energy in 1981, managed a UNDP-funded Pacific regional energy programme in the 1980s, was chief technical adviser for a national environmental advisory programme in Cambodia in the 1990s, and has been a consultant with ADB, DFAT, the EU, GIZ, GGGI, PRIF, SPC, SPREP, the World Bank and other regional and international organizations. He was lead consultant for ADB/PRIF and SPC for an external review of the 2010-2020 Pacific regional energy framework and for its 2021-2030 update.</p>



Mr. Nikolasi Fonua
Committee Member – SEIAPI

Nikolasi Fonua is an Electrical and Electronics Engineer who also holds a Master’s in Business Administration from the Nagoya University of Commerce and Business (NUCB). He has worked for 10 years with the Electricity Utility in Tonga and has specific expertise in Project Management, Strategic Business Development and has also headed the Engineering Division of the utility. With strong business and engineering acumen his passions are in developing the energy industry to be more sustainable with a particular focus on the development of appropriately skilled talent within the industry. Ultimately his objectives are to see and realize the difference a sustainable energy industry can make in people’s everyday lives.



Mr. Gavin Pereira
Committee Member – SEIAPI

Gavin started Superfly Limited in 2011. Superfly is a Solomon Islands solar energy engineering company that specialises in the design, supply and installation of off-grid PV systems. Superfly has grown to become the leading solar energy company in Solomon Islands, and specialises in small off-grid systems, solar water pumping systems and large hybrid power systems.

Gavin has also worked within the development sector in the Pacific Islands for projects funded by EU, GIZ, USAID, MFAT and others.

*The profile of **Teiiti Nia** could not be obtained who is also a member of the Committee.



For more updates, please visit <http://www.seiapi.com> or email on info@seiapi.com/secretariat@seiapi.com for any queries and comments.



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