

June 2017

Australian Power Institute and Energy Networks Australia Innovation Initiative

A cooperative partnership between Energy Networks Australia and the Australian Power Institute (API) has been established to deliver an innovation strategy for the Australian energy network industry that will assist in driving the future direction and sustainability of the industry. This initiative seeks to:

- » Maximise visibility and collaboration on innovation projects throughout the industry;
- » Reduce duplication and wasted resources;
- » Provide clear alignment to industry priorities;
- » Focus the research perspective beyond technical constraints to include identification and realisation of potential efficiencies, innovative service delivery, policies and practices, using a multi-disciplinary approach;
- » Translate research into action and realised benefits; and
- » Provide understanding of changes required to develop energy networks of the future.

This initiative is being led by an **Innovation Steering Group** that consists of:

- » Two representatives from the API Board - Gerard Reiter and Wayne Tucker;
- » Two representatives from the Energy Networks Australia's Asset Management Committee – Craig Savage and Steve Wachtel;
- » Energy Networks Australia Officers – Stuart Johnston and Heath Frewin; and
- » API CEO - Mike Griffin (Secretariat).

“A new approach to Innovation and R&D is required, and through consultation with energy industry and universities/research organisations this new approach will involve industry driven collaborative research with university partners. But more importantly this needs to be coupled with significant development and demonstration activities and field trials in industry to apply and implement the innovation and realise the benefits”

Mike Griffin, Chief Executive of API and Secretary of the Innovation Steering Group

Innovation = Good Ideas that are Successfully Applied

Since its inception in late 2016, the steering group has achieved the following:

- » Prepared a framework and process for the establishment and ongoing operation of the initiative;
- » Established a number of key criteria to access potential innovation projects;
- » Undertaken a research capability assessment of Universities across Australia focusing on the key issues and topics identified by industry as future challenges (e.g. Electricity Network Transformation Roadmap, API innovation and agenda). This was undertaken in conjunction with the Australasian Committee for Power Engineering Academics (ACPE).

Former TransGrid CEO, Peter McIntyre was engaged to undertake this Independent Review of the Assessment of University Research Alignment to Energy Networks Australia and API Priorities.

“It is apparent that the university sector is strong in regards to power engineering. The academic head count at all 20 universities assessed is either stable or growing compared to numbers over recent years. Several universities are actively recruiting now to supplement their academic and research strength.”

Peter McIntyre

Many of the universities are active in multi-disciplinary studies and the existence of research centres or institutes to both obtain research funding and to execute research is very common.

This review identified that post-graduate research in power engineering is very strong at present with over **300 active PhD research topics currently underway**. Interestingly, of these, over 150 relate to the integration of renewables.”

The review identified 4 Australian universities with capability matched to 70+% of industry innovation topics/issues and 6 universities with capability matched to 20+% of industry innovation topics/issues.

To support this initiative the Steering Group has revised the charter of **the Australian Strategic Technology Program (ASTP)**, which now includes all Energy Networks Australia members. The ASTP, prior to the new partnership arrangement between API and Energy Networks Australia, was an Energy Networks reference group that coordinated the previous industry R&D program.

Under this new arrangement, the key roles and responsibilities of the ASTP will now be:

- » Prioritising potential innovation projects developed by the Steering Group and nominate representatives from their organisation to participate in scoping and business case development;
- » Assessment of potential innovation projects, using the key criteria developed by the Steering Group, in regard to their alignment to industry needs, benefits, risks and chances of success; and
- » Engagement with universities/researchers to form collaborative partnerships utilising the assessment of relevant research capabilities of Australia’s universities.

Innovation Steering Group & ACPE Memorandum of Understanding (MoU)

To assist the Innovation Steering Group in engagement with relevant universities and Research Centre’s, an MoU has been established with the Australasian Committee of Power Engineering Academics (ACPE). ACPE currently have 21 universities who are members. The objectives of this agreement are to:

- » Promote excellence and collaboration in power engineering education and research within universities of Australasia;
- » Encourage cooperation and collaboration between university members; and
- » Ensuring open and effective communications between the industry and universities; and
- » Sharing appropriate information and knowledge.

Stocktake of Existing Innovation/R&D Projects and Online Database

Energy Networks Australia has approved a project to develop an online database to capture both current and existing innovation and R&D Projects undertaken by Energy Networks Australia, individual network businesses and API (between universities and industry) - this will provide a valuable resource to the industry. This database will be built along similar lines to the existing Energy Networks “Database of Renewable Grid Integration Projects” that can be found at the following link:

<http://renewablestocktake.com.au/>. It is anticipated that this new innovation database will be completed and available in December 2017.

“Such a database populated with all known innovation and R&D projects will not only help to reduce duplication but will also provide valuable information when scoping and undertaking future projects”

**Stuart Johnston, Energy Networks Australia,
Executive Director, Assets and Network Transformation**

Update on Current Innovation Projects being Progressed by the Innovation Steering Group

1. Increasing Visibility of Distribution Networks to Maximise PV Penetration Levels

- » Australian Renewable Energy Authority (ARENA) Grant being sought with project lead from University of Queensland (UQ) and project partners including Queensland University of Technology (QUT), API, Energy Networks Australia, United Energy, TasNetworks, Energy Queensland, Redback Technologies, Springfield Land Cooperation, & Aurecon.
- » Aims to remove roadblocks (and hence PV Penetration) for the installation and operation of new PV installations, with capacity typically in the range 15kW to 5MW by improving the network impact processes of Australian distribution companies when approving the connection of PV installations to their medium and low voltage distributions networks.
- » Project has proceeded past expression of interest stage to full application and ARENA Board decision regarding project is expected in June 2017. If successful, project will commence in August 2017 to run for two years.
- » For more information, contact: Prof. Simon Bartlett, UQ Chair in Electricity Transmission, e:simob.bartlett@uq.edu.au

2. Priority Innovation Topics/Issues (6) Identified and Approved for Industry to Prepare Project Scoping Statements (2-4 pages) followed by Business Case Preparation (by Industry and University Partners with capability in the particular topic/issue)

- » Management of voltage on local networks and excessive variation caused by swings between generation and demand
- » Regulation of frequency at a system level and contending with a multitude of smaller generators that will operate in parallel and are risk of islanding
- » Intelligent network sensing requirements for the future
- » Accurate forecasting of multi-year vegetation growth near overhead conductors
- » Overhead conductor condition monitoring and replacement
- » Bushfire mitigation
- » Industry scoping teams are currently preparing Project Scoping statements which will identify the industry challenge/problem to be addressed, potential outcomes and benefits to industry, how to deliver and associated timeframes, high level estimates of resources/costs to deliver and an annual budget.
- » For more information, contact: Mike Griffin, Chief Executive, the Australian Power Institute, e:mike.griffin@api.edu.au, mob 0419643795

ABOUT API

API represents major Australian power companies in providing future professional power engineering capability. Its aim is to ensure a sustainable supply of innovative, agile power engineering professionals equipped with contemporary skills to transform and sustain Australia's energy future through initiatives focused on:

- » Providing a sustainable supply of quality power engineering graduates to Energy Industry;
- » Facilitating a strong power engineering education platform for undergraduate students and existing industry professionals;
- » Coordinating industry and university innovation initiatives & research;
- » Supporting the Technical and Commercial Success of Member Companies in the Energy Sector

To learn more about API visit: <http://api.edu.au/>

ABOUT ENERGY NETWORKS AUSTRALIA

Energy Networks Australia is the national industry association representing Australian electricity networks and gas distribution businesses.

Our members provide energy to virtually every household and business in Australia. Energy networks are leading the transformation of the grid into a platform for new products and services—empowering customers with new information, new tools and new ways to cut costs.

For more about Energy Networks Australia visit: <http://www.energynetworks.com.au/>