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FEDERATION TO DEVELOP MODELLING TOOLS FOR ENERGY INFRASTRUCTURE PLANNING

Federation University Australia's Centre for Smart Analytics (CSA) in collaboration with Centre for New Energy Transition Research (C4NETR) will develop new scenario modelling tools that will improve the state's energy infrastructure planning after receiving an industry grant.

The grant from the Centre for New Energy Technologies (C4NET) will see Federation develop a modelling framework that leverages Artificial Intelligence and computer modelling to assist local authorities, energy suppliers, and the state government to plan infrastructure in the rapidly evolving energy sector. Federation will receive AUD $340k over 18 months for this project.

Federation is the lead University in this project that is supported by RMIT, with Gippsland-based Gour Karmakar, Associate Professor at the Centre for Smart Analytics, the lead researcher. The project team from Federation also includes Professor Joarder Kamruzzaman, Dr Rakibuzzaman Shah and Professor Syed Islam.

Currently, there is a significant gap in estimating future scenarios on energy supply and demand, as energy networks are undergoing significant changes such as mass adoption of renewable energy generation, the electrification of transport, and the transition from domestic gas use to electric.

The interaction of all these variables - plus the added complexity posed by climate change - will become even more intricate in future, hence the need for a rigorous whole-of-system modelling framework that this research will deliver.

The research will initially involve the development of scenarios based on emerging supply and demand forces within the energy network. These scenarios will be combined to produce a model that can be used to provide future estimations on energy supply and demand for a given region.

The Victorian Government has a target of reaching net zero carbon emissions by 2050 which will require large investment in renewable energy. Modelling tools such as these will support this transition by enhancing energy generation and transmission infrastructure planning.

Quote attributable to Associate Professor Gour Karmakar, Centre for Smart Analytics at Federation University Australia.

"The project team is proud to have received this grant from C4NET and we are looking forward to starting this exciting venture. The Australian Energy Market Operator has recently stated that the transition to renewable energy needs to be accelerated and optimising infrastructure

planning is key to achieving this. My hope is that once developed, these tools can expedite the planning process of new infrastructure to support the state's transition to net zero."

About Federation University Australia

With a history spanning over 150 years, Federation University Australia is Victoria's premier regional dual-sector university with campuses located in Ballarat, Berwick, Brisbane, Gippsland and Wimmera. From 2018-2022 Federation ranked first in Australia for first-generation student enrolments. In a first for Australia, the globally recognised co-operative education model will be embedded across all Federation programs from 2025.