

Best practice needed to keep pace with increase in renewable energy uptake

As energy prices and environmental concerns see a growing number of governments, businesses and consumers transitioning to renewable energy there is increasing need to develop sound frameworks by which the feasibility of off-grid and edge-of-grid power systems can be assessed.

“Right now, across the globe, we are amidst a significant transition to supply electricity from renewable energy sources. This shift requires a lot of analysis to be undertaken and it’s important that investment decisions are being made based upon outputs from quality feasibility studies, particularly in the off-grid space,” Renewables Analyst with Australian based Ekistica, Lachlan McLeod says.

“Over the coming years, a significant amount of feasibility studies for the installation of off-grid and edge-of-grid power systems will need to be conducted, and it can be very difficult, particularly in remote areas, to find the skills required to carry out these studies.”

As lead author of the latest International Energy Agency Photovoltaic Power Systems Program (PVPS) report, Blueprint on how to conduct feasibility studies on off-grid and edge-of-grid power systems, Ekistica hopes to provide a framework by which these systems can be assessed, particularly for those who have limited prior experience.

“Often there is not one answer to whether or not a project is feasible. Many of the inputs feeding a feasibility study are likely to change over a project’s lifecycle and this can impact the overall technical, financial and social outcomes. Before making investment decisions, it’s important to understand the boundaries within which you are operating and the likelihood of scenarios eventuating that fall outside those boundaries.

“An effective feasibility study requires a considerable amount of information and data to be gathered from a wide range of sources. Ensuring the accuracy of the input data is a key priority to ensuring a project is well designed and quality outcomes are achieved.”

Ekistica hopes that the process outlined in the blueprint can act as a guide for anyone looking to evaluate the feasibility of an off-grid and/or edge-of-grid power system.

Distributed energy systems (DES), as a ‘least-cost solution’ to energy access can help halt the concerning trend which has seen the covid-19 pandemic threatening gains in universal access to electricity made over the past decade. Estimates show that for the first time since 2013, the population without access to electricity may

have increased in 2020 and greater access to renewable energy can help to reverse this trend. As the world emerges from covid-19, investments in off-grid and edge-of-grid energy systems are expected to pick back up and help enable greater electricity access for all.

All feasibility studies are different; every project develops in a unique context that consists of different locations, stakeholders, site conditions, aims, constraints, and opportunities. In this blueprint, clear and concise definitions of what a feasibility study is and when and why they should be undertaken in the context of Off-Grid and Edge-of-Grid power systems, provide a solid foundation from which a study can be undertaken.

The full report is available here and three key takeaways from the report include:

- “An effective feasibility study requires a considerable amount of information and data to be gathered from a wide range of sources. The quality outcome of a feasibility study is highly dependent on the accuracy of the input data and thus, it should be a key priority. Forecasts of certain input parameters, both technical and financial, are required for a project to be well designed and deviation risks should be analysed appropriately.”
- “Identifying important and relevant partners and executing effective collaboration are essential. A study lacking these aspects may fail to attain its objective.”
- “An optimal set of outcomes for different scenarios can be determined by undertaking an iterative feedback process between the organisational, technical, and financial elements of the modelling and analysis stage of the feasibility study.”

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[Blueprint on how to conduct feasibility studies on off-grid and edge-of-grid power systems 2022](#)

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About the APVI

The Australian Photovoltaics Institute is a not-for-profit, member-based organisation which focuses on data analysis, independent and balanced information, and collaborative research. Our objective is to support the increased development and use of PV via research, analysis, and information.

The APVI promotes solar through its live solar mapping platform [<http://pv-map.apvi.org.au>], the national solar research conference and Australia's participation in two International Energy Agency (IEA) programs – PVPS (Photovoltaic Power Systems) for solar photovoltaics and SHC (Solar Heating and Cooling), concerned with new solar thermal products and services.

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