MEDIA RELEASE

Alice Springs can lead on energy transformation, but urgent investment needed: Roadmap Report

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Contact: Lyndon Frearson Alice Springs Future Grid Project Director 0438 839 920
lyndon.frearson@ekistica.com.au

Alice Springs is leading the way on energy transition with today's release of detailed plans on how to adapt an electricity grid for a renewables-dominated future. The landmark *Alice Springs Roadmap to 2030* report explores the challenges the Alice Springs energy system faces, providing four possible pathways to achieving the 50% renewable energy target by 2030. It highlights the opportunity for Alice Springs to continue to lead in this space, providing Australia and the world with a 'postcard from the future' on how power systems can be transformed to make way for higher levels of renewables.

The Roadmap is one of the key outputs from Alice Springs Future Grid, a three-year whole of system project identifying the barriers to further deployment of renewable energy in the Alice Springs power system and finding solutions based on real-world trials, investigations, and modelling. It's led by the Intyalheme Centre for Future Energy, on behalf of Desert Knowledge Australia (DKA), with project partners Ekistica, CSIRO, Power and Water, Territory Generation and Jacana Energy.

The report describes four scenarios that will get Alice Springs to the 50% renewable target by 2030, exploring different variables in the amount of central or decentralised renewable energy assets, and different operating modes for the existing gas generators. It also identifies the 'least regrets' options relevant across all scenarios and recommends the next best steps to move this work forward. There will need to be significant investment from private and public investors to carry out these plans, but this will be partly outweighed by the reduced use of conventional generation, the report says.

The current system was designed for conventional energy generation from diesel and gas, but the growing input of rooftop solar systems, currently estimated to be 23 MW, is leading to increased system volatility as a result of instantaneous renewable contribution exceeding 80% on a regular basis. If this continues without necessary upgrades, the reliability of the service will be at risk. And this is just to adapt to current levels of solar input, let alone to account for renewable levels of 50% and higher. Currently, Alice Springs is powered by 87% centralised fossil-fuel generation, 9% household-generated solar and 4% centralised renewable generation annually.

"This Roadmap recognises the challenges we face. It accepts that changes must be made and provides plausible pathways to the future," says Lyndon Frearson, Project Director Alice Springs Future Grid, and Managnig Director of Ekistica. "The challenge for Alice Springs is not just its

remoteness, but also the lack of alternative energy sources meaning that 50% renewables requires frequent operation of the power system at, or near, 100% instantaneous renewables.

"We think the Roadmap is a seminal piece of work that we hope many will be able to see and utilise both for the future of the Alice Springs power system but importantly for the future of power systems across the Territory and the rest of Australia."

"This Roadmap makes it clear; the system has to change. Whilst we've set out four possible ways forward, we know that change will only happen through collaboration," says Jimmy Cocking, CEO of Desert Knowledge Australia.

"The challenges we are facing as we move towards our goal of 50% renewable energy by 2030 are system challenges, and any solutions need to be system solutions. All the key players in the energy system, including consumers, worked together in new and inspiring ways as part of Alice Springs Future Grid, and this must continue if we're to meet the challenges ahead. This is a real opportunity for Alice Springs to come together, build momentum and continue to demonstrate our place as global leaders in this field."

Report available from: https://alicespringsfuturegrid.com.au/knowledge-bank/alice-springs-roadmap-to-2030

Contact:
Lyndon Frearson, Alice Springs Future Grid Project Director 0438 839 920
lyndon.frearson@ekistica.com.au

Jimmy Cocking, Desert Knowledge Australia CEO, 0423511931 jimmy.cocking@dka.com.au

>> Read the full Roadmap to 2030 report (link)
- Executive summary (p.7)
- The recommended three phrases of transition (p.53)
- Priority actions for stakeholders (p.63)

>> Read the Techno-Economic modelling report (link)

>> Explore further reports and results on the Alice Springs Future Grid website.

Desert Knowledge Australia will hold an open event on **15 April from 5.30pm** to celebrate the end of the Alice Springs Future Grid project and publicly launch the Roadmap to 2030, including a sunset tour of the Solar Centre at the Desert Knowledge Precinct.

Recommended Phases of Transition

The immediate priorities following the report release are to encourage responses to the Roadmap for 2030, establish a cross-organisation transition process, secure transition funding, and commence Phase One with urgency.

The three recommended phrases are:

1. **Secure the System**
   Address the current and nearer-term operational challenges in a manner that lays an enduring foundation for a power system increasingly based on renewable energy.
2. **Advanced Planning & Operation**
   Develop and operationalise new capabilities, systems, and tools to operate a more sophisticated, digitised, and dynamic system.
3. **Accelerate Renewable Deployment**
   Commission new large-scale renewable generation and enable the system to run for periods with zero gas generation.

Key Insights: sub-projects

- Ekistica led the technical and economic system modelling, analysing the existing power system infrastructure and looks at likely challenges that could emerge during a transition. The Techno-Economic Modelling Report is a key input to the Roadmap to 2030 and is provided as an accompanying document. It shows that if distributed energy resources, such as rooftop solar generation, continues to grow at high levels, system minimum demand will fall below the level it was designed to operate at as soon as 2025, or by 2030 with moderate uptake of DER.

- The first grid-connected and 'islandable' microgrid in Alice Springs was created at the Desert Knowledge Precinct through the design and installation of a 300kW/350kWh Battery Energy Storage System (BESS). The live site data will also be available publicly soon. www.dkasolarcentre.com.au

- The Solar Connect Virtual Power Plant (VPP), managed by Jacana Energy, was a solar and solar battery trial with 48 community participants. This first-for-the-NT trial included a 12-month trial period from October 2022 to October 2023. The trial developed a two-speed tariff for solar batteries that incentivised shifting solar generation away from the middle of the day, reducing the impact on minimum demand in the system, and exporting instead at times when demand was high (in the evening). The trial achieved a significant reduction in the evening import peak, lowering demand by approximately 22% and with export of solar energy shifting to earlier in the day before 11 am. Over the length of the trial, battery trial participants saved on average $12.97 per month.

- The Arid Lands Environment Centre led community engagement on the Solar Connect VPP and managed local installations. Significant interest was shown in the trial, however, factors such as age of technology and compatibility meant that only approximately 40% were eligible for the trial. The trial also showed that a transition to a renewable future needs to consider the impact on the solar installer workforce and take steps to address the shortage of qualified technicians.

- A 12-month wind study was undertaken by Ekistica, with data collected at two sites. The findings of this study are published online (Wind Study link). Solar energy has been considered the only commercial resource available in Central Australia. However, despite poorer wind resource and higher costs to develop a wind farm compared to the rest of Australia, some scenarios in the Roadmap to 2030 showed that wind could be commercially viable. A wind resource would complement solar well as it works best later in day, coinciding with the decline in solar generation. It was not found to be commercially viable in gas-off scenarios.

- Power and Water Corporation undertook several trials in the project, including: a dynamic export trial where solar systems that are typically not allowed to export are able to export on days with low system risk. They also completed a trial in improving solar and gross forecasts; and a dynamic dispatch trial that included testing dynamic operating envelopes for solar and solar batteries.

- 15 solar batteries were installed at public houses in Alice Springs, with results during Alice Springs Future Grid showing that all participating households reduced their energy consumption and cost of energy.

Alice Springs Future Grid

The Alice Springs Future Grid (ASFG) project is a $12.5m collaborative project involving multiple organisations from across the Northern Territory and Australia. Launched in 2020, the purpose was to identify and overcome barriers to the further deployment of renewable energy in the Alice Springs power system and provide valuable insights to the sector.

Alice Springs Future Grid is led by the Intyalheme Centre for Future Energy, on behalf of Desert Knowledge Australia (DKA). Intyalheme is proudly supported by the Northern Territory Government. The Alice Springs Future Grid project received funding from ARENA as part of ARENA's Advancing Renewables Program. This project is also funded by the Australian Government Department of Industry, Science, Energy and Resources through the Regional and Remote Communities Reliability Fund – Microgrids Program.