

SOUTH AFRICA AND THE 21ST CENTURY POWER PARTNERSHIP

Paving the Way to a Clean, Reliable, and Resilient Power System

Mission and Objectives

Power systems are a foundational element of inclusive economic growth and social development. Integrating these objectives into viable power system policy frameworks is the central challenge of policymakers in the 21st century. The 21st Century Power Partnership (21CPP) serves as an open, collaborative platform for sharing policy and regulatory best practices in the service of power system transformation.

Established in 2012, the 21CPP South Africa Programme is part of the larger 21CPP global initiative that connects South African stakeholders with an international community of expertise. The overall goal of this program is to support South Africa's power system transformation by assisting along the journey to a socially just transition from fossil fuels to a low-carbon power system. 21CPP activities focus on achieving positive outcomes for all participants, especially addressing critical questions and challenges facing system planners, regulators, and operators. In support of this goal, 21CPP taps into deep networks of expertise among leading industry practitioners from both developed and developing countries.

The 21CPP South Africa Programme's primary objectives are to:

- **Accelerate next-generation power system planning** by supporting South Africa's Integrated Resource Plan (IRP), identifying policy approaches to distributed

generation and grid codes for large-scale generators, and undertaking a comparison of power system planning tools.

- **Promote various power system modernization efforts** through operational and policy support for grid integration of distributed and bulk clean power, in combination with energy efficiency and smart grid deployment measures.
- **Assist the government of South Africa to build a workforce of power system experts** through dedicated workshops and trainings, staff exchanges, consultations, and peer engagements.

2017–2018 Program Highlights

- 21CPP and Eskom launched the joint South African Grid Integration Study (SAGIS). Phase I of this grid study began in February 2017 as experts at Eskom and the National Renewable Energy Laboratory (NREL) worked together to expand Eskom's short- and long-term energy modeling and planning capabilities. These improved capabilities have provided the foundation for a detailed analysis of South Africa's grid and its ability to reliably and cost-effectively incorporate higher penetrations of variable energy.

About the 21st Century Power Partnership

The 21st Century Power Partnership is a multilateral effort of the Clean Energy Ministerial and serves as a platform for public-private collaboration to advance integrated policy, regulatory, financial, and technical solutions for the large-scale deployment of clean energy in combination with deep energy efficiency and smart grid solutions.

- 21CPP hosted two fellows from the Council for Scientific and Industrial Research (CSIR), enabling them to customize the International Jobs and Economic Development Impacts (I-JEDI) tool to investigate the potential economic impacts and job potential from clean energy projects in South Africa. With the expertise gained from this fellowship, 21CPP Fellows helped adapt the I-JEDI tool for South Africa, which is now being used regularly to evaluate the IRP. The Fellowships also supported broader training on I-JEDI in partnership with the USAID Enhancing Capacity for Low Emission Development Strategies (EC-LEDS) program, the South Africa Low Emission Development (SA-LED) program, the German Corporation for International Cooperation (GIZ) and the South African Local Government Association (SALGA).
- 21CPP partnered with the CSIR to develop first-of-its-kind, high-resolution geospatial wind and solar resource supply curves for South Africa. NREL hosted two staff from the CSIR in May 2017 as part of this collaboration. The results will inform future analyses of the potential for renewable energy across South Africa.
- NREL presented initial results of the South Africa Grid Integration Study at the annual WindAc Africa Conference in Cape Town in late 2017. Early results indicated that tandem long-term and short-term modeling can yield more cost-effective power system build plans that better consider both capital and operational expenses.
- In September 2018, 21CPP joined Eskom's biannual company-wide research conference to provide technical expertise on power sector market reform experiences from around the world, electrification and digitization trends, and natural gas utilization. The workshop provided staff and leadership at Eskom an opportunity to identify and discuss key priorities and trajectories for South Africa's power system in the coming years.

2019–2020 Anticipated Activities

Technical Support for Power Sector Reform Efforts

South Africa recently announced plans for major restructuring of the power and utility sector while also setting forth a draft IRP that proposes bold new plans for clean energy technologies. 21CPP will support this transition by expanding its work with Eskom, the South Africa Department of Energy (SADOE), and other key South African partners to build capacity on power sector design, emerging grid technologies, power system flexibility approaches, and power system decarbonization analysis.

Partners: Eskom, SADOE

Mobilize Global Expertise from CEM and Beyond

As South Africa sits poised to enter a period of major transformation in the power sector, 21CPP aims to bring together technical expertise from across the CEM and other countries to share lessons and global experiences on priority power sector topics that can help inform South Africa's own transition. In support of this, 21CPP, SADOE, and the CEM Secretariat have jointly started exploring a potential CEM Clean Energy Week event in South Africa later this year, which would build on the success of the 2018 CEM Days event held in Brazil and help strengthen the foundation for power system transition in South Africa.

Partners: SADOE, CEM membership, Eskom, CSIR, Southern African Power Pool, SALGA, partner donors, others

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NREL/FS-7A40-73783 | May 2019
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