

## TRANSFORMING POWER SYSTEMS THROUGH GLOBAL COLLABORATION

Ambitious and integrated policy and regulatory frameworks are crucial to transforming and modernizing power systems. The 21<sup>st</sup> Century Power Partnership—a multilateral initiative of the Clean Energy Ministerial—augments national reform efforts with technical excellence deployed through a flexible range of international knowledge-sharing and research activities.

### Structure

The 21st Century Power Partnership (21CPP) aims to accelerate the transition to clean, efficient, reliable, and cost-effective power systems. The initiative engages in a broad range of research and technical assistance activities to support bilateral and multilateral collaboration that accelerates the diffusion of high-impact policy and regulatory strategies. The Power Partnership connects governmental, nonprofit, and industry stakeholders to share experiences, accelerate learning, and expand the visibility of power system transformation efforts around the world.

### Why a Power Partnership?

In 21<sup>st</sup> century power systems, electricity from heterogeneous sources will be delivered through smart, efficient networks and balanced by a variety of flexibility options, such as demand response, storage, and smart electric vehicle (EV) charging. Developing such systems will require new global partnerships focused on technical excellence, targeted innovation, and smart policy and regulations, supported by sustained financial and political investment and ambitious public-private sector collaboration. The Power Partnership builds upon technology-specific efforts from across the various Clean Energy Ministerial (CEM) initiatives and coordinates targeted engagements to support participating member countries.

### Activities and Projects

The 21CPP exchanges knowledge, best practices, and innovations on clean power system transformation measures across CEM countries and stakeholders at all levels and combines this with in-depth technical assistance with partners in Brazil, China, India, Mexico, and South Africa.

#### Brazil



As the newest member of the 21CPP, Brazil is working with the 21CPP to exchange technical information, prioritize needs, develop workplans, and engage in fundraising.

#### China



In partnership with the Children's Investment Fund Foundation, the 21CPP has supported China's efforts to develop a cleaner, more efficient power system. The 21CPP has worked multilaterally with international partners to deliver relevant subject matter expertise on international experiences and best practices in energy transformation.

#### India



In partnership with the Indian Ministry of Power, U.S. Department of Energy, Power Grid Corporation of India, Ltd. (PGCIL), USAID, and Power System Operation Corporation Ltd. (POSOCO), the 21CPP contributes to the development of India's national Renewable Energy Roadmap, shares

experiences managing variable renewable energy on the grid, and collaborates on efforts to model the power system with high penetrations of variable renewable energy.

## Mexico



In partnership with the Children's Investment Fund Foundation, the Mexico Ministry of Energy (SENER), the Mexico National Energy Control Center

(CENACE), the Mexico Energy Regulatory Commission (CRE), and the Mexico Federal Electricity Commission (CFE), the 21CPP works to accelerate "next generation" power system planning for 2030, provides operational support for grid integration, evaluates and expands distributed generation and smart grid deployment, and assists with implementation of Mexico's energy reform directives.

## South Africa



In partnership with the South African Department of Energy (SADOE), National Energy Regulator of South Africa (NERSA), South African National

Energy Development Institute (SANEDI), Council for Scientific and Industrial Research (CSIR), and Eskom, the 21CPP supports South Africa's Integrated Resource Plan by promoting next generation modeling practices, sharing global experiences on distributed generation regulation, and assisting the government of South Africa in building a workforce of power system experts.

In 2018–2019, the 21<sup>st</sup> Century Power Partnership worked closely with the International Energy Agency (IEA) to jointly produce *Power System Transformation 2019: Power System Flexibility*. The report is a key deliverable of the Advanced Power Plant Flexibility Campaign, led by Germany and Denmark. The work builds on previous power system transformation reports jointly produced by NREL and IEA.

### Read the report:

[www.21stcenturypower.org](http://www.21stcenturypower.org)

## Knowledge Development and Expert Networks

The Power Partnership coordinates targeted knowledge and research development, dissemination, and exchange efforts on timely, policy-relevant electricity sector issues such as evolving utility business models, next generation regulatory frameworks, and integrated resource planning. This information is made available through a variety of web forums, published reports, and information databases and tools. Visit [www.21stcenturypower.org](http://www.21stcenturypower.org) to learn more. The Power Partnership also organizes platforms for multilateral expert consultation and knowledge sharing, including ad hoc consultations, workshops, roundtables, and cross-national fellowships. For example, the 21CPP regularly facilitates staff exchanges between research institutes for training on modeling, forecasting, and grid integration management. Learn more about the fellowship program: [www.21stcenturypower.org/fellowship.cfm](http://www.21stcenturypower.org/fellowship.cfm)

## Organization, Participants, and Partners

Three coordinated main bodies support the Power Partnership: the Power Partnership Steering Group (PPSG), the Public-Private Leadership Forum (PPLF), and the operating agent. The PPSG develops and guides the Power Partnership program of work. PPSG members include the governments of Brazil, China, Denmark, Finland, Germany, India, Mexico, Spain, South Africa, the United States\*, and representatives of the Children's Investment Fund Foundation. The PPLF coordinates activities with private sector stakeholders and provides input to the annual program of work. As the operating agent, the National Renewable Energy Laboratory (NREL) and the Joint Institute for Strategic Energy Analysis (JISEA) lead the Power Partnership and serve as the liaison to the CEM Secretariat.

\*U.S. participation under review

[WWW.21STCENTURYPOWER.ORG](http://WWW.21STCENTURYPOWER.ORG)



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.

Front page photo: iStock 16542720

15013 Denver West Parkway  
Golden, CO 80401  
303-275-3000 | [www.nrel.gov](http://www.nrel.gov)

NREL/FS-6A20-73780 | May 2019  
NREL prints on paper that contains recycled content.