



Global Power System Transformation Consortium

Several countries, regions, and states are leading the transitions to electricity systems primarily powered by renewable energy and other low-emission energy sources. Complementary storage, efficiency, and smart grid technologies are helping advance these transitions, along with increased sector coupling.

Jurisdictions around the world are seeking to follow these paths to modern, low-emission energy systems to meet a range of environmental, economic, and reliability goals. However, governments, system operators, research and educational institutes, and other actors face significant challenges in acquiring and applying the requisite knowledge to rapidly transform power systems.

There is a clear need for a global consortium to overcome these common barriers across all regions and foment clean energy transitions at unprecedented scope and scale.

To address this need, the Global Power System Transformation (G-PST) Consortium, an expert- and practitioner-driven initiative, engages key power system operators, research and educational institutes,

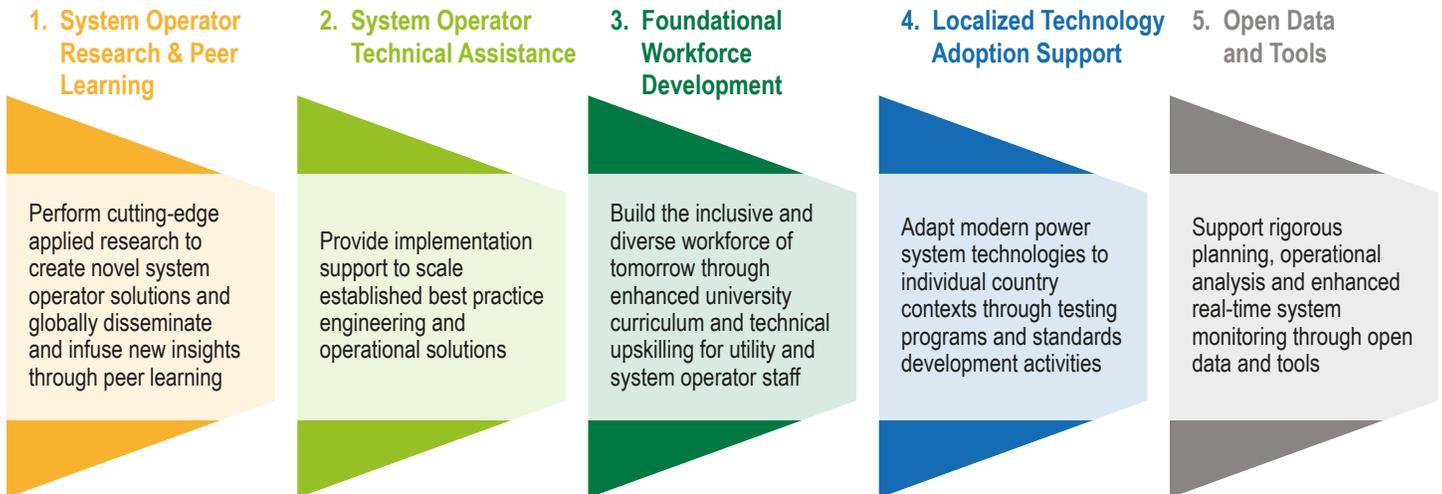
governments, businesses, and stakeholders in all regions of the world to accelerate clean energy transitions at the ambitious scope and scale that is required.

The G-PST Consortium provides coordinated, holistic support and knowledge infusion for system operators pursuing clean energy transitions, including performing cutting-edge research; providing implementation support for world-class engineering and operational solutions; supporting workforce development; building and disseminating open-access data and tools; and accelerating localized technology adoption, standards development, and testing programs.

Visionary Goal

Dramatically accelerate transitions to low-emission, low cost, secure, and reliable power systems contributing to >50% emission reductions over 10 years, with \$2 billion of donor support for technical, market, and workforce development solutions that unlock \$10 trillion+ of private sector investment.

The Consortium will Advance Action in 5 Areas that will Reinforce Existing Initiatives



Who is involved in the G-PST Consortium?

More than 20 representatives from system operators, research institutions, international agencies, businesses, and non-governmental organizations met at EirGrid Group's headquarters in Dublin in October 2019, agreed on the value of this consortium, and outlined key elements and strategies. Key partners and donors assembled in London in February 2020 and again, remotely, in July 2020 to refine the strategy, work program, and operational approach of the consortium while strongly confirming the value of a sharp focus on system operators to rapidly advance low-emission power systems.

The chief executive officers of National Grid Electricity System Operator, EirGrid, Energinet, California Independent System Operator (CAISO), Electric Reliability Council of Texas (ERCOT), and Australian Energy Market Operator (AEMO) are champions in developing the consortium mission and activities. Importantly, these system operators are leading a research agenda group to identify common, cutting-edge research questions that can inform large-scale national research and development investments. Relevant results and lessons from this process will be broadly shared for learning across all countries. The consortium is also partnering with 10 emerging economy and developing country system operators who will guide the G-PST vision and collaborate with the consortium to advance power system transformation.

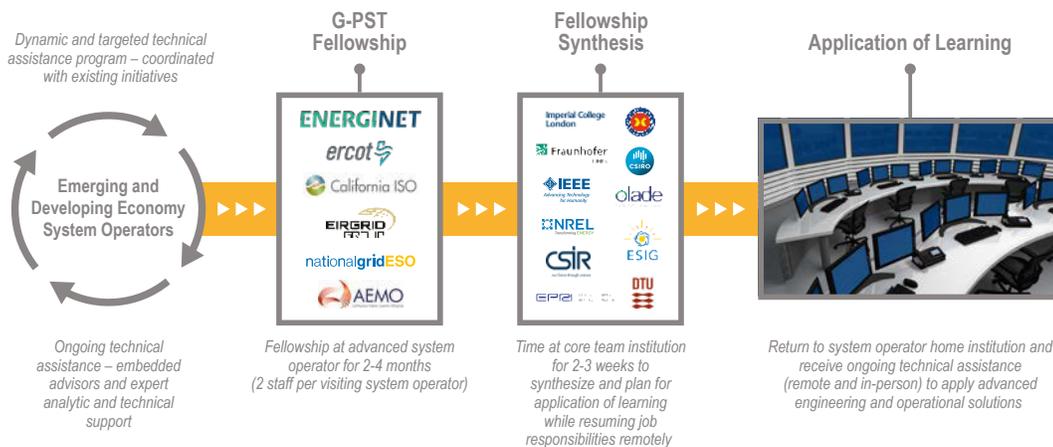
A core team, including the Energy Systems Integration Group (ESIG), Imperial College London, Council of Scientific and Industrial Research (CSIR), Fraunhofer

Cluster of Excellence for Integrated Energy Systems (CINES), National Renewable Energy Laboratory (NREL), Latin American Energy Organization (OLADE), Institute of Electrical and Electronics Engineers (IEEE), Electric Power Research Institute (EPRI), Commonwealth Scientific and Industrial Research Organization (CSIRO), the Danish Technical University (DTU), and ASEAN Center for Energy, is actively developing the consortium and will be engaged in implementation of technical work.

International agencies and multilateral development banks, including World Bank, United States Agency for International Development (USAID), German Agency for International Cooperation (GIZ), International Energy Agency (IEA), Asian Development Bank (ADB), European Bank for Reconstruction and Development (EBRD) and others are serving as key implementing partners to ensure the consortium complements and reinforces existing programs.

How are we scaling up advanced operational and engineering solutions with developing and emerging economy partners?

As a key aspect of the work, the consortium is planning activities with system operators from developing and emerging economies to provide targeted technical assistance and peer learning and exchange to advance the cutting-edge operational and engineering solutions required to bring larger shares of renewable energy and complementary technologies onto the grid. The consortium supports a holistic technical assistance approach with these countries.



Holistic Approach to System Operator Technical Support and Fellowship Program for Developing and Emerging Economy System Operators

Regional training, peer exchange, and communities of practice for system operator personnel from all countries with lighter expert advisory support available to all



NREL/FS-6A20-77624 • September 2020
 NREL is a national laboratory of the U.S. Department of Energy Office of Energy Efficiency and Renewable Energy Operated by the Alliance for Sustainable Energy, LLC.
 The views expressed in this publication do not necessarily represent the views of the DOE or the U.S. Government.