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FACT SHEET

Asia-Pacific Partnership on Clean Development and Climate

**Power Generation and Transmission Task Force
Summary of Action Plan and Projects**

The Asia-Pacific Partnership on Clean Development and Climate is a unique public-private initiative among government and private sector partners from Australia, China, India, Japan, the Republic of Korea and the United States. In remarks delivered to experts representing all Partner nations gathered at the American Electric Power facility in Columbus, Ohio, Under Secretary of State for Democracy and Global Affairs Paula Dobriansky today announced that the Partnership has begun a new implementation phase with the start of a series of multifaceted programs designed to promote cleaner, cost-effective energy technologies and practices among the Partner nations. The Partnership is identifying policies and deploying technologies that reduce greenhouse gas emissions, promote healthier air quality, advance sustained economic growth, and reduce poverty. It is now embarking on implementing voluntary practical measures to create new investment opportunities, build local capacity, and improve economic and energy security. The Partnership involves countries that account for about half of the world's population and more than half of the world's economy and energy use.

Summary of Power Generation and Transmission Task Force Action Plan

Improvement in power generation and transmission efficiency in Partner countries has the potential to reduce the emissions by millions of tons of carbon dioxide (CO₂) and pollutants, as 49 percent of the world's electricity production occurs in these six countries. Despite a growing demand for power, the potential for increased efficiency in power generation, with associated benefits for reduced emissions in Partner countries is substantial. For example, simple and inexpensive improvements in Indian power plants can increase efficiency by more than 1.5 percent. Replicating these improvements at over 130 small coal power plants could reduce India's CO₂ emissions by over 10 million tons per year and reduce fuel costs by over \$150 million per year.

While better technology forms a basis for efficiency improvements, sharing best practices among Partner countries will catalyze improved efficiencies at existing power plants and pave the way for a more sustainable energy future.

The Power Generation and Transmission Task Force has identified thirteen initial projects and activities as a first step to meet its long-term goal of significantly improving

the efficiency and environmental performance of power generation, transmission and distribution, and end use.

Sharing Best Practices in Power Generation

The United States is hosting Chinese, Indian, Australian, Japanese and Korean power plant engineers in order to share information and techniques on several methods to improve power plant efficiency and reduce pollution. Some of these techniques include combustion optimization methods in coal-fired power plants, sulfur dioxide (SO₂) reduction technologies in power plant flue gas, and intelligent soot blowing system for steam generator efficiency improvement.

India, in association with the utilities of the U.S., Japan, and Australia, are planning site visits to the U.S. and Japan to share information on techniques and best practices to improve the efficiency of electrical generation and transmission systems and to advance their environmental performance. Many of the techniques are expected to be easily implemented and thereby have the potential for significant, short term, and very cost effective results. Other techniques and practices which require more capital investments will also be presented along with techniques to evaluate their cost effectiveness.

Partnership power generators from all six countries will host site visits for Partner country representatives, including plant engineers to highlight best practices that can be employed to improve end-use efficiency. The goal of this project is to help power generators learn from each other on how to implement best practices and technologies in their own country. A similar set of visits is planned that will improve transmission and distribution efficiency.

Transforming Markets for Power Generation

Power generators from all six countries will establish a forum for addressing challenges through improved market and regulatory frameworks. The end goal is to create and support incentives that increase investment in efficient power systems, resulting in more reliable, affordable, and environmentally sustainable sound energy services.

Summary of Power Generation and Transmission Task Force Projects

Project 1. Best Practices for Power Generation Activities Plan

This project consists of site visits, workshops and capacity building in order for Partner countries' power generators to improve their overall coal-fired power plant thermal efficiency, resulting in significant mitigation of greenhouse gases and air pollutants. Each site visit will include follow-up reports to document the demonstrated practices and technology. Information gained during the site visits, workshops, and capacity building will be compiled into a best-practices handbook that will catalyze implementation of best practices technologies and training of personnel to further stimulate their deployment.

Project 2. Best Practices for Transmission and Distribution Activity Plan

The overall goal of this project is for Partner countries to improve transmission and distribution (T&D) efficiency for local power generators, resulting in significant mitigation of greenhouse gases and air pollutants. Partner countries will host site visits to provide a mechanism to share and educate on best practices related to T&D efficiency. These best practices will be compiled in a handbook that will be created as part of the project on best practices in power generation (Project 1). Additionally, this project aims to develop and implement a standardized village distribution system as a demonstration project. The compiled and implemented best practices can ultimately provide electrification of non-urban areas resulting in increased development, poverty reduction, and increased environmental benefits.

Project 3. Best Practices for Demand Side Management (DSM) Activity Plan

This project aims to provide Partner countries with best practices that can be employed to improve end-use efficiency associated with power generation. The overall goal of the project is to raise awareness in utilities of the potential contributions of DSM in managing available capacity, reducing need for additional capacity, and controlling energy costs. The project focus is to institutionalize DSM in energy planning and operation through sharing the experiences of utilities in the valuation and administration of various DSM projects, and build management capacity to administer or contract such programs. Improvements in distribution systems can minimize line losses (possibly to less than 10 percent), increase delivered electricity, and provide a better investment climate in rural areas for development. This project includes site visits, compilation of best practices for the power generation handbook, and workshops. This project will develop and implement a standardized village distribution system in India.

Project 4. Energy Regulatory & Market Development Forum

This project proposes the establishment of an *Energy Regulatory and Market Development Forum* to provide an ongoing mechanism for information sharing, capacity building, and cooperative development of the regulatory arrangements conducive to efficient energy market development. The Forum's initial objective is to establish a shared understanding of the regulatory framework and market arrangements governing power generation and transmission operation in Partner countries. It is envisaged that the Forum would be a mechanism for long term engagement to facilitate continued information sharing, capacity building, and cooperation to support implementation of best-practice regulatory principles. Objectives will be fulfilled by site visits, meetings, and an annual report through the Power Generation and Transmission Task Force to the Policy and Implementation Committee. This forum will provide an essential foundation for all other Task Force projects based on shared practices and market developments.

Project 5. Trade Exhibitions, Conferences and Trade Missions

This project aims to increase the level of trade; deploy available clean energy technology, foster development; and assist companies from all Partner countries in finding buyers, seller and partners within the power generation and transmission sector. Power generation and transmission trade promotion will be managed by the U.S. Department of Commerce (DOC) APP team, consisting of trade specialists through the U.S. and in each of the Partner countries. The team will use its network to encourage and attract companies to participate in DOC-led trade shows, trade missions, business-to-business matchmaking, and client counseling programs that will facilitate trade within the power generation and transmission sector. Trade promotion will advance the Task Force's objectives to increase sharing best practices, encourage market transformation, and facilitate funding for power generation and transmission projects in the Partner countries.

Project 6. Hydroelectric Generation Best Practices

This technical information program will focus on hydroelectric generation efficiency improvement practices that can be shared with and replicated by Partner country utilities. Duke Energy Corporation (a United States utility) will invite Partners to participate in an information sharing session concerning processes for improving hydro- efficiency and capacity and will conduct an associated site visit at Jocassee Hydroelectric Pump Storage Facility (4 units, 610 megawatts) in South Carolina, which is in the process of being upgraded. Relationships established by these initial interfaces will facilitate further information exchange regarding engineering concepts and technologies, hydroelectric upgrade approaches, outage planning techniques, and grid interfaces to avoid CO₂ emissions.

Project 7. Combustion Optimization in Coal-Based Power Plants

This cross-sectoral project will enable India, in association with the utilities of the United States and other Partners, to identify the necessary upgrades required in the combustion process to ensure a state-of-the-art system designed with precise measurement techniques for air and fuel, supported by intelligent software to enable defined parameters online for determining the steam generator control setting needed for optimizing the cycle heat-rate. Combustion optimization assists steam generators to operate at maximum efficiency. This project will provide India essential information that could potentially be adopted for the use of steam generators to burn Indian coal proven to be highly efficient for Japanese and United States' utilities.

Project 8. Implementation of Artificial Intelligent Soot Blowing System for Improving the Steam Generator Efficiency by Increasing the Effectiveness of Soot Blowers.

This project aims to establish and implement best practices and new technologies which offer "efficient heat transfer" for steam generators by studying direct and indirect methods of appropriate software to execute artificial intelligence soot blowing systems that optimize heat transfer rate and address local slagging conditions. The project,

proposed by India in association with United States' utilities, will address problems associated with existing conventional soot blowing systems in coal-fired steam generators, such as excessive use of steam, air and water.

Project 9. SO_x Reduction Technologies in Flue Gas

This project aims to select the most appropriate technology for reductions of sulfur oxide (SO_x) emissions from high-sulfur Indian coals). The project envisions making it possible for Partner countries to use high-sulfur coal while reducing SO_x emissions by deploying various flue gas desulphurization technologies. Participants will visit utilities in Japan and the United States to study operational experience associated with sulfur dioxide removal efficiencies, economic factors, and other aspects related to SO_x technology markets.

Project 10. Risk Evaluation and Prioritization (REAP) for Maintenance and Renovation & Moderation (R&M) of Power Plants

The goal of this project is to study the best practices of REAP in power plant utilities and acquire information on prior experience associated with execution as it would pertain to Indian utilities. The project will highlight power plant equipment integration and analyze reasons behind failed power generation, which could be due to equipment, location, operational parameters, and constructional features. The United States and other Partners will assist in evaluating solutions and prioritizing them based on cost, down time cost, frequency of occurrence of such failure, and reduced force outages. This project will promote power plant modernization in India and other Partner countries.

Project 11. Life Extension & Remaining Life Assessment of Power Plants

This project—proposed by India in association with Australia, Japan, and the United States—aims to evaluate and analyze the best practices and technology of remaining life assessment of power plants. Partners will compile the best practices and provide necessary implementation directions as they relate to power plants in India. Project performance will be measured by the recapture of lost capacity at minimum cost and operating the plant near to its design efficiency.

Project 12. Site Visit of Energy Conservation and Environment Protection Technology—Application of Plasma Ignition Technology in Power Generation

China Guodian will host a series of site visits to demonstrate plasma ignition technology, which can directly ignite pulverized coal, thereby replacing fuel oil and ensuring ignition and stable combustion for pulverized-coal boilers in an energy-efficient manner.

Project 13. Generator Transformer Programs (Inspection Procedures, Diagnostic Tool and Maintenance)

As energy consumption increases in Partner countries, such as India, it is important that generator transformer reliability and availability improve to meet those needs. India, in association with the Edison Electric Institute, Japan, and the United States will share information on design improvements, manufacturing techniques, state-of-the-art on-line condition monitoring, repair, testing and failure diagnostic tools to improve generator transformer reliability.