

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



National Power Transmission Corporation (EVNNPT) Delegation List

Mr. LUU Minh Tuan	Member of Management Board
Mr. NGUYEN Minh Thang	Member of Management Board
Mr. TRAN Quoc Lam	Vice President
Ms. NGUYEN Hoai Anh	Vice Director, in charge of Finance and Accounting Department
Mr. DO Duc Hung	Director of Planning Department
Mr. TA Viet Hung	Director of Technical Department
Mr. TO Van Dan	Director of Investment Management Department
Mr. PHAN Le Vinh	Director of Safety Department
Mr. CHAU Anh Tuan	Director of Construction Management Department
Mr. NGUYEN Xuan Son	Director of Materials Department
Mr. DOAN Thanh Tung	Director of Information Technologies Department
Ms. TRAN Thi Mai Van	Deputy Director of International Relations Department
Mr. NGUYEN Huu Long	Deputy Director of Power Transmission Company No. 1
Mr. NGUYEN Tien Dung	Director of Nationwide Power Transmission Services Company
Mr. HOANG Van Ich	Deputy Director of Northern Power Projects Management Board
Traveling with the delegation	
Mr. David Ross	Country Manager, Southeast Asia, USTDA
Ms. Pamela Peseux	Technical Program Lead- Principal, Tuatara Group
Mr. Douglas Shuster	Emerging Markets Infrastructure Expert- Principal, Tuatara Group
Mr. Raymond A'Brial	Transmission Technical Expert - Associate, Tuatara Group
Ms. LanDai Nguyen Rees	Interpreter
Ms. Sophie Liu	Interpreter (Washington, DC and Portland, OR only)
Mr. Tin Quan	Interpreter (San Francisco, CA only)

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



Delegate Biographies and Interests

In preparation for this reverse trade mission, the delegation was asked to provide short biographies, background on their division and their interests regarding the technologies and best practices that they would like to learn from this reverse trade mission. Following is a summary of the information received back from the delegation.

MR. LUU MINH TUAN

Member of the Board of Directors
National Power Transmission Corporation of Vietnam (EVNNPT)



Mr. Luu Minh Tuan is a Member of the Board of Directors for the National Power Transmission Corporation of Vietnam, a position he has held since 2008. Before working at EVNNPT, he was the Senior Expert in the Construction Management Department of Vietnam Electricity (EVN) from 1995 to 2004. From 2005 to July 2008, he was Deputy Director of Construction Management Department at EVN.

Mr. Luu began his career at the Ministry of Energy as a technician at Hanoi's Transmission Line and Substation Installation Company, then on the 500kV North-South Transmission Line Project Management Board. He was Deputy Head of Technical Division from 1994 to 1995.

Company Profile: Established in 2008, The National Power Transmission Corporation (EVNNPT) operates under Vietnam Electricity (EVN). The establishment of EVNNPT was based on the reorganization of seven units, including four power transmission companies (Power Transmission Company No. 1, 2, 3, 4) and 3 projects management boards (Northern, Central and Southern). The aims of this establishment are to ensure secure, uninterrupted, stable power transmission for the socio-economic, political, national defense and power market of Vietnam. Currently, EVNNPT has a total 7,356 employees who are engineers and workers responsible for managing and operating the high-voltage and ultra-high-voltage equipment.

The National Power Transmission Corporation of Vietnam (EVNNPT) Board of Directors (Board) is EVN's representative to EVNNPT. The Board implements the rights, responsibilities, and obligations of EVN in EVNNPT and for the companies of which 100% charter capital is held by EVNNPT. EVNNPT's Board of Directors has the right to decide all issues related to the identification and implementation of targets, tasks and benefits for EVNNPT, except the ones relating to the responsibilities of EVN. The Board is also responsible to EVN for all EVNNPT's activities and operation. EVNNPT's Board of Directors is composed of five persons including: Chairman of the Board, CEO, three other members. All decisions are based on board member votes.

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



Delegate Interests: Luu is interested in addressing several issues affecting EVNNPT. He noted VNNPT's power transmission system has not met n-1 criteria and some transmission lines and substations have very high load capacity. EVNNPT has a lot of pressure to move capacity from the North and Central parts of the country to the South (with ~ 1,500km). In addition, much of the equipment in this area is old and needs to be replaced. Areas with a big load often short circuit. Many failures occur annually, especially due to lightning. In Vietnam, the transmission tariff is low and application of automation technologies and information technologies in operation, management of power transmission grid is limited.

Under EVNNPT's 2017 Construction Investment Plan, their current plans include: carrying out a construction investment of a total cost of VND 21,237 billion; completing and putting into operation of 63 transmission line projects (including 13 and 50 projects at 500kV and 220kV, respectively); and, starting 42 transmission line project (including 11 and 31 projects at 500kV and 220kV). Luu is interested in learning more about: transmission company's organizational model, experiences in technical management, operation, investment of power transmission systems; application of automation and information technologies in operation, management of power transmission system; and, training, human resources development in power transmission. He is also interested in learning about U.S. utility experience with static VAR compensators, FACTS, unmanned substations and HVDC transmission lines.

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



MR. NGUYEN MINH THANG

Member of the Board of Directors
National Power Transmission Corporation of Vietnam (EVNNPT)

Mr. Nguyen Minh Thang has been Member of the Board of Directors for EVNNPT since 2013. As a board member, he is responsible for providing direction and comments regarding the corporation's strategic plan, company management, governance and policy, financial advice to protect corporate assets, and monitoring all major events of the corporation. He previously served as Director of the General Affairs Department at Vietnam Electricity (EVN).

Mr. Nguyen holds a Masters of Science in Electrical Engineering from the Asian Institute of Technology in Thailand and a bachelor's degree in in Electrical Engineering from Moscow Power Engineering Institute in Russia.

Delegate Interests: Under EVNNPT's 2017 Construction Investment Plan, their current plans include:

- Carrying out construction investment with a total cost of about \$1 billion.
- Completing and putting into operation 63 transmission line projects (including 13 and 50 projects at 500kV and 220kV, respectively).
- Starting 42 transmission line projects (including 11 and 31 projects at 500kV and 220kV).

Mr. Nguyen's interests include addressing some of the company's key challenges including: securing investment capital; meeting n-1 reliability index criteria; meeting the transmission loss target of 2.1%; operation close to limits; solutions for faults and outages due to lightning (currently 68% of total); high short circuit currents; 29% of substations are without automation; lack of highly qualified personnel.

Technologies and solutions that are of interest include:

- State-of-the art analytical tools, software to support investigation of transmission line outages.
- Lightning protection for power transmission lines
- Transmission line loss reduction measures
- Unmanned substations
- FACTS
- HV and EHV power transformers, HV surge arresters, current transformers, voltage transformers, and current limiting reactors.

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



MR. TRAN QUOC LAM

Vice President

National Power Transmission Corporation of Vietnam (EVNNPT)

Mr. Tran Quoc Lam is currently the Vice President of EVNNPT, a position he has held since 2008. From 2000 to 2008, he was Director of the Economic Estimates Department at EVN. From 1996 to 2000, he was Deputy Director of the Economic Estimates Department at EVN. From 1981 to 1995, he worked for Power Design and Survey Company No 1 (now Power Engineering Consulting Company No.1 – PECC1).

Mr. Tran graduated the Hanoi Polytechnic University and graduated with bachelor's degree in engineering.

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



MS. NGUYEN HOAI ANH

Acting Director and Deputy Director of Finance and Accounting Departments
National Power Transmission Corporation of Vietnam (EVNNPT)

Ms. Nguyen Hoai Anh has more than 25 years' experience working in different organizations under Vietnam Electricity and is currently the Acting as Director of the Finance and Accounting Department at EVNNPT. She is concurrently serving as the Deputy Director of the Finance and Accounting Department at EVNNPT, a position she has held since 2008. Prior to this, she served in the Finance and Accounting Department at Vietnam Electricity.

Ms. Nguyen holds a Master in Business Administration.

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



MR. DO DUC HUNG

Director of Planning Department
National Power Transmission Corporation of Vietnam (EVNNPT)

Mr. Do Duc Hung has worked for Vietnam Electricity for 25 years and is Director of the Planning Department at EVNNPT, a position he has held since 2014. He is responsible for providing advice to EVNNPT's leaders in the formulation and direction of implementing the development strategies; long-term, mid-term and short-term production and business plans; and construction Investment plans of EVNNPT. His department has contributed to the investment in construction, management, and operation of the national power transmission system, ensuring stable and reliable power transmission, and meeting the load demand with a growth rate of over 10%.

From 2012 to 2014, Mr. Do served as the Director of Organization and Human Resources Department at EVNNPT. From 2010 to 2012, he was Director of General Affairs Department at EVNNPT. From 2006 to 2010, he served as the Secretary of Vice President at Vietnam Electricity. From 1998 to 2006, he served as an expert in the Business Department at EVN. He was also served as an Engineer in the Testing Center for Power Company No. 1.

Mr. Do holds a bachelor's degree in Electrical Engineering and a Master of Business Administration.

Delegate Interests: The Planning Department is responsible for providing advice to EVNNPT's leaders 2025 development strategy and vision until 2040. Currently, they are learning from the advanced power transmission utilities from around the world, including the U.S. During this RTM, he would like to collect more information from utilities including information and experience on development planning models, application of advanced technologies, and renewable energy integration, which will be very useful for Planning Department to formulate and direct the implementation of EVNNPT's development plan.

Specific areas of interest include: overview on power and power transmission in U.S.; power market and power system dispatching; the role and operation of power transmission utilities in the power market; transmission tariffs; U.S. transmission utility organizational and management models; criteria for assessing operational efficiency of power transmission utilities in the U.S.; power market and power system dispatching; application of technologies in management and operation of power transmission systems; and integration of renewable energy on the power transmission system. Specific technologies of interest include FACTS, SVC, HVDC, back to back, and live line working and maintenance in transmission lines and substations.

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



MR. TA VIET HUNG

Director of Technical Department

National Power Transmission Corporation of Vietnam (EVNNPT)

Mr. Ta Viet Hung has 16 years of experience working at Vietnam Electricity and is currently Director of the Technical Department at EVNNPT. He manages and runs the technical boards to provide technical advice on operation of transmission grids, scientific and technological research, application of technology, standardization, quality control, and environmental issues. His experience includes appraising feasibility study reports, and technical design of 500kV and 220kV transmission grid projects.

From December 2013 to July 2017, Mr. Ta served as Deputy Director of the Technical Department for EVNNPT. He was Project Management Officer in the Investment Department, EVNNPT from March 2012 to December 2013. From August 2009 to March 2012, he was Technical Officer of the Technical Department, EVNNPT. He also served as the Technical Officer for the Technical Department at Power Transmission Company No. 1 from February 2004 to July 2009 and in several other capacities, including Technical Officer of Dispatching –Communication-Computing Department; and Technical Engineer of Ha Dong 220kV Substation. Prior to this, he was a Testing Worker of Automation Workshop, Hoa Binh Hydropower Plant

Mr. Ta received a bachelor and master's degree in electrical system engineering from Hanoi Polytechnic University. He attended the Institute of Business Administration at FPT University and received additional certificates in Business Administration, Political Theory, and Advanced LLCT. He also attended Hanoi Foreign Language University where he studied English.

Delegate Interests: Some issues his organization faces include: lack of professional staff with deep technical and management skills; controlling the quality of equipment when shopping for TBA 500 and 220kV; application of information technology and artificial intelligence in technical management and asset management.

Ta's department is interested in implementing solutions to limit short-circuit currents in the transmission grid, as well as research and experimental application of new technologies such as superconducting technology. He would like to study and apply new technologies such as FACTS into the electricity transmission grid, along with deploying intelligent grid technology applications such as GIS-based transmission equipment management, transformerless substations, transformer integrated control systems, remote meter data collection, and monitoring direct line thermodynamics.

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



MR. TO VAN DAN

Director of Investment Management Department
National Power Transmission Corporation of Vietnam (EVNNPT)

Mr. To Van Dan has 29 years experience working in different organizations under EVNNPT and is currently the Director of the Investment Management Department at EVNNPT. He is responsible for appraising and submitting to the relevant agencies pre-feasibility studies, feasibility study technical designs, total estimate of investment projects, and cost management in construction investment for EVNNPT.

Mr. To's other roles have included: Deputy Director of Procurement Department, EVNNPT from 2014 from 2017; Deputy Director of Investment Management Department, EVNNPT from 2010 to 2012; Deputy Director of Construction Investment Management Department, EVNNPT from 2008 to 2010; Manager of Procurement Management Department, Power Transmission Company No. 1 (PTC1) from 2004 to 2008; Vice Manager of Substation Technical Department, PTC1 from 2000 to 2004; Engineer of Technical Department, PTC1 from 1999 to 2000; Testing Engineer of Testing Electric Team, PTC1 from 1988 to 1999.

Mr. To receive his bachelor's degree in power systems from Hanoi Polytechnic University in Vietnam and graduated from Asia Institute of Technology in Thailand with an Executive Master of Business Administration.

Delegate Interests: To's department is responsible for selecting advanced technologies for their power transmission network, and is interested in learning about new technologies in power transmission including automated control systems for substations; online monitoring of transformers, and lightning arrester/protection systems for transmission lines. He is interested in meeting power transmission system operators and equipment producers and to learn about best practices and tools for power transmission system design. Mr. To says the biggest challenge for his department is how project designing consulting firms must work the relevant Ministries to discuss the location of a substation, transmission line route, environment impacts assessment, which often leads to delayed projects.

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



MR. PHAN LE VINH

Director of Safety Department
National Power Transmission Corporation of Vietnam (EVNNPT)

Mr. Phan Le Vinh has 18 years of experience working in different organizations under EVNNPT, and is currently the Director of the Safety Department at EVNNPT. In this position, he supervises safety compliance and regulatory compliance to prevent network failure caused by malfunction or by operational and/or maintenance personal.

Mr. Phan previously served as Director of the Technical Department from EVNNPT from July 2012 to July 2017. Other positions he has held include: Deputy Director of Technical Department, EVNNPT, where he served from September 2009 to July 2012; Manager of Testing Center at the Power Transmission Company No.1 from July 2007 to June 2009; and, Deputy Manager of Testing Center, Power Transmission Company 1, where he served from January 2005 to June 2007.

Mr. Phan received a Master's degree from the Asian Institute of Technology in Thailand.

Delegate Interests: Phan is interested in hotline maintenance projects and solutions to reduce transmission networks faults and outages. He would like to see site substations, control centers, equipment factories, testing centers, and maintenance divisions of transmission companies. He is interested in the following technologies: FACT, HVDC; online monitoring; and, hotline maintenance

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



MR. CHAU ANH TUAN

Director, Construction Management Department
National Power Transmission Corporation of Vietnam (EVNNPT)

Mr. Chau Anh Tuan has 30 years of experience working for Vietnam Electricity and currently is the Director of the Construction Management Department at EVNNPT, a position he has held since July 2010. His responsibilities include: advising NPT leaders on: dissemination of state policies on the construction of power transmission works; to perform the task of managing the progress and quality in the construction of electricity transmission works; advise on the development of internal progress and quality management regulations of EVNNPT; and participate in the appraisal of project documents on environmental impact assessments of electricity transmission projects.

From 2008 to 2010, Mr. Chau served as Director of the Construction Investment Management Department. From 2003 to 2008, her served as Deputy Director of the Procurement Management Department at Electricity Vietnam (EVN). From 1997 to 2003, Chau was an expert in the Appraisal Department within the Procurement Department at EVN. From 1984 to 1997, he was an Engineer of Transmission Line Design Department at the Power Engineering Consulting Company 1.

Mr. Chau received his Bachelor's degree in Power Systems and master's degree from Hanoi Polytechnic University in Vietnam.

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



MR. NGUYEN XUAN SON

Director of Materials Department
National Power Transmission Corporation of Vietnam (EVNNPT)

Mr. Nguyen Xuan Son has worked for EVNNPT for 26 years and is currently serving as the Director of the Materials Department for EVNNPT, a position he has held since 2012. His other roles included: Vice Director of Telecommunication and information Technology Department at EVNNPT from 2008 to 2011; staff of Telecommunication and Information Technology Department at Vietnam Electricity from 2005 to 2007; staff of Power Network Technical Department at Vietnam Electricity from 2002 to 2005. Prior to these roles he also served as part of the staff of the Electricity Communication Company and National Load Dispatch Centre.

Mr. Nguyen received a Science Technology degree from Hanoi Polytechnic University.

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



MR. DOAN THANH TUNG

Director of Information Technologies Department
National Power Transmission Corporation of Vietnam (EVNNPT)

Mr. Doan Thanh Tung is currently the Director of the Information Technology Department at EVNNPT. He previously served as Deputy Director of the IT Department. Prior to working at EVNNPT, he worked at a few IT companies in Vietnam and Finland.

Mr. Doan holds a Bachelor's degree in power systems a master degree in computer science.

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



MS. TRAN THI MAI VAN

Deputy Director of International Relations Department
National Power Transmission Corporation of Vietnam (EVNNPT)

Ms. Tran Thi Mai Van has 13 year's experience working at Vietnam Electricity and National Power Transmission Corporation. Since 2010, she has served as Deputy Director of International Relations Department of EVNNPT. She previously served as an Expert in the International Relations Department at Vietnam Electricity from 2004 to 2010 and an Expert of Planning Department of Power Transmission Company No. 1.

Ms. Tran holds bachelor's degree and a Master of Business Administration.

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



MR. NGUYEN HUU LONG

Deputy Director
Power Transmission Company No. 1 (PTC1)

Mr. Nguyen Huu Long has 36 years of experience working at Vietnam Electricity and currently serves as the Deputy Director of the Power Transmission Company No. 1. He previously served as Manager, Deputy Manager and Engineer at the Technical Department of PTC1. He also served as an Engineer of Electrical Workshop at Pha Lai Thermal Power Station.

Mr. Nguyen received a bachelor's and master's degree from Hanoi Polytechnic University.

Company Profile: Power Transmission Company No. 1 (PTC1) is responsible for managing, operating Transmission System in Northern Vietnam. PTC1 oversees 56 substations (46 x 220kV substations, 10 x 500kV substation), over 2800km of 500kV lines, 6400km of 220kV lines, covering all 28 provinces in Northern Vietnam. In 2016, 63 billion kWh was transmitted through PTC1 transmission grid; the number to be increased up to 72 billion kWh by 2017.

Delegate Interests: PTC1 is now working to have eight substations operating unmanned within 2017 and about 20 more in 2018. Specific areas of interest include: unmanned substations; HVDC technology; FACTS technology; and, hotline maintenance. He is particularly interested in visiting transmission substations (at 220kV, 500kV or similar).

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



MR. NGUYEN TIEN DUNG

Director

National Power Transmission Services Company (NPTS)

Mr. Nguyen Tien Dung is currently the Director of the National Power Transmission Services Company, a position he has held since June 2017. Prior to this position, Nguyen served as the Deputy Director of Power Transmission Company No. 2 (PTC2) for almost nine years.

Mr. Nguyen has held other positions, including: Deputy Director of Power Grid Technical Department at Vietnam Electricity from 2003 to 2008; working in the Power Grid Technical Department at the Power Corporation from 2000 to 2003; working in the District 3 110kV Substation at Power Transmission Company No. 2 from 1998 to 1999; and, working in the Technical Division of Power Transmission Company No. 2. from 1990 to 1998. Nguyen graduated the Danang Polytechnic University as an electric engineer.

Company Profile: National Power Transmission Services Company (NPTS) is a subsidiary of EVNNPT. It is established on April 14, 2017 by EVNNPT's Management Board based on reorganizing the Power Transmission Companies' Divisions and Departments specialized in testing, maintenance, repair activities. Its functions include: overhaul of power transmission grid; periodic testing, frequent repair of the power transmission grid; tackling failures of the power transmission grid; constructing, consulting and monitoring the power projects; substation automation and control; power projects management; training and human resources development; mechanics process, transportation; and study and apply new technologies in production.

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



MR. HOANG VAN ICH

Deputy Director
Northern Power Projects Management Board

Mr. Hoang Van Ich has 14 years of experience working in different organizations under Vietnam Electricity and is currently serving as the Deputy Director of the Northern Power Projects Management Board. From 2011 to 2014, he served as Deputy Director of the Construction Management Department at EVNNT. He also served as Project Officer for the Northern Vietnam Power Project Management Board from 2003 to 2011.

Mr. Hoang graduated from Hanoi Polytechnic University with a degree in electrical system engineering.

Company Profile: The Northern Vietnam Power Projects Management Board (NPMB) is a unit directly under the National Power Transmission Corporation (EVNNT), established following the Decision No. 116/QD-NPT on June 30th, 2008 of EVNNT.

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



Areas of Interest Summary

As electricity demand in Vietnam continues to grow, the country is working to advance and modernize its power sector. Developments in industrialization and connectivity have led to electricity demand growth of 10 to 12 percent per year in Vietnam, placing additional pressure on the national grid. As a result, transmission capacity must expand and modernize to keep up with increased demand and generation. Intermittent renewable power is growing with several hundred MW of wind power coming on line over the past few years, and the solar power sector is just beginning to emerge.

As a state-owned entity in Vietnam, EVNNPT is responsible for transmission network investment, construction, operation, and maintenance. Over the next 3-5 years, EVNNPT anticipates investments of \$800 million to \$1 billion annually. The company is looking to build its technical capacity in transmission technologies and identify vendors, manufacturers, and service providers in the United States to help achieve its development goals.

EVNNPT is interested in learning more about the following technologies and issues during this mission:

Technologies to Modernize Grid Infrastructure - EVNNPT is looking to utilize:

- High Voltage Direct Current (HVDC) technology, including Back to Back
- Static VAR Compensators (SVC)
- Flexible Alternating Current Transmission Systems (FACTS)
- GIS in power grid management
- Surge arresters
- Fault Current Limiting Technology
- Lightning mapping
- Substation automation
- Low-loss conductors

Technologies and Training to Support Live Line Maintenance and Repair Equipment and Training - EVNNPT is looking at improving its live line maintenance and repair program to operate on energized lines and is looking at the equipment and training facilities to support this initiative.

Technologies and Best Practices to Support Integration of Renewable Energy in An Unbalanced System - With a surge of wind power coming online and planned utility scale solar power, EVNNPT needs to address issues of intermittency and stability of the system. Adding to the challenge is the fact that the renewables will primarily be integrated into the southern region of the grid while baseload power is primarily in the north.

Technologies to Update ICT and Grid Management Infrastructure - Investment is required to modernize the ICT and grid management infrastructure over the next 10 years, which would include:

Vietnam Power Transmission Modernization Reverse Trade Mission

Washington, DC - Portland, OR - San Francisco, CA
October 16 - 27, 2017



- Substation modernization and moving to the IEC 61850 communication protocol,
- Operational control centers and related software and systems for the subsidiary power transmission companies (PTCs)
- Fiber optic and WAMS (Wide Area Monitoring System)
- Integration with EVN Enterprise Resource Platform (ERP)
- Creating an EVNNPT owned and operated IT/Data Center
- Analytics software
- Mobile device and Internet of Things (IOT) deployment