Vietnam Market for Power Generation, Transmission and Distribution

By U.S. Commercial Service – Vietnam
June 2014

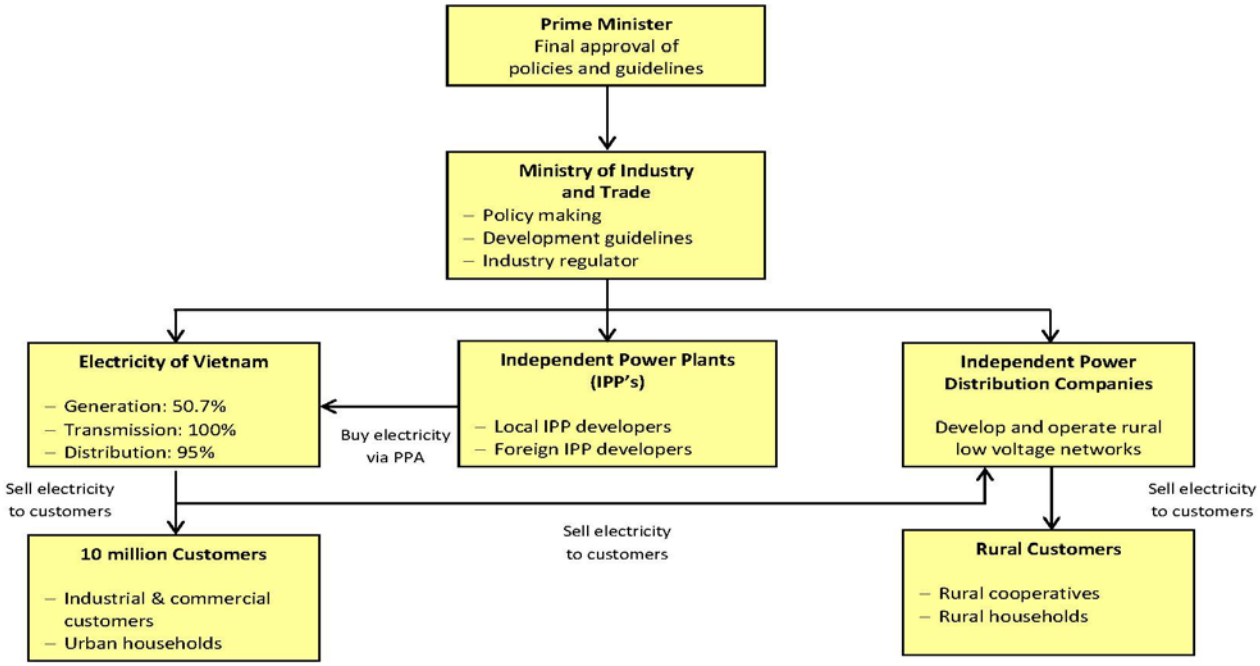
Overview

Unit: USD thousands

	2012	2013	2014 (estimated)	2015 (estimated)
Total Market Size	3,700,000	4,255,000	4,900,000	5,630,000
Total Local Production	1,665,000	1,915,000	2,200,000	2,530,000
Total Exports	N/A	N/A	N/A	N/A
Total Imports	2,035,000	2,340,000	2,700,000	3,100,000
Imports from the U.S.	203,000	233,000	330,000	430,000

Figures are in $ Thousands. Total market size for equipment and services is based on official statistics and estimates. Other statistics are based on U.S. Census and unofficial estimates.

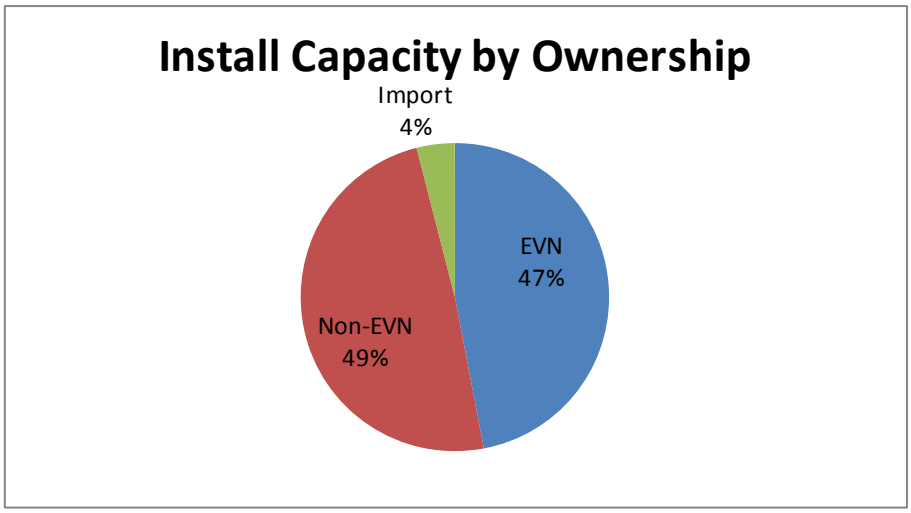
Industry Structure: The electric power sector represents one of the most promising areas for U.S. commercial prospects in the Vietnamese market. At present, Electricity of Vietnam (EVN), a state owned enterprise which reports directly to the Prime Minister, is the biggest buyer of electricity from power plants and holds a monopoly on electricity transmission and distribution. The electric power industry is under the jurisdiction and management of the Ministry of Industry and Trade (MOIT).

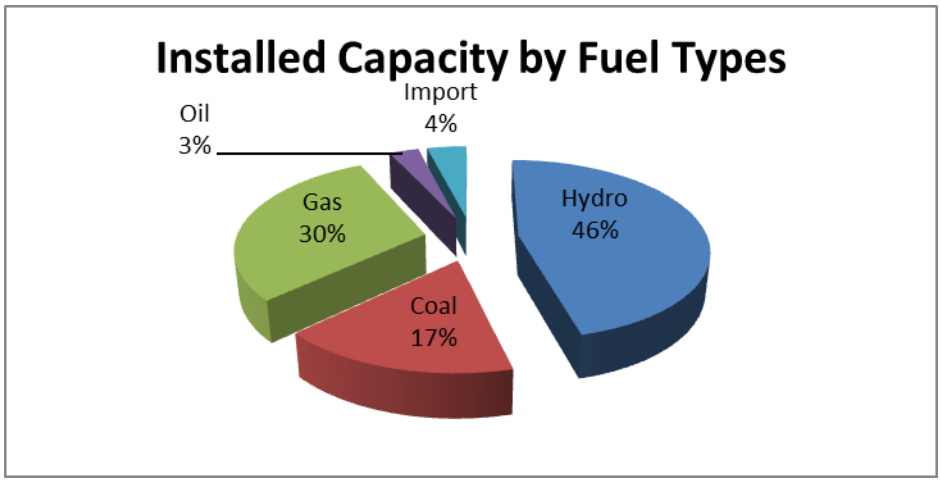


The Vietnamese government relies on the national power development plans to advance the development of the electric power sector. These plans forecast growth in demand and map out the overall development of the power industry to meet that demand going out ten years, while also providing a twenty-year overview.

Power Consumption: The country's robust industrialization process has fueled its surging demand for energy in general and electricity in particular. The GVN expects electricity consumption to grow by 12-16 percent annually through 2015. This soaring demand is attributed both to increasing industrial and residential use. Power shortages are expected during this period if adequate measures are not taken to increase the power supply accordingly. It is also estimated that an additional capacity of 4,000 MW will be required per year on average during the 2011 – 2015 time period to meet rapidly growing demand for power.

Power Generation: According to EVN, by the end of 2013, the total installed capacity was approximately 26,000 MW and power generation was approximately 130 billion kWh. Below is the installed capacity by ownership and by fuel sources:





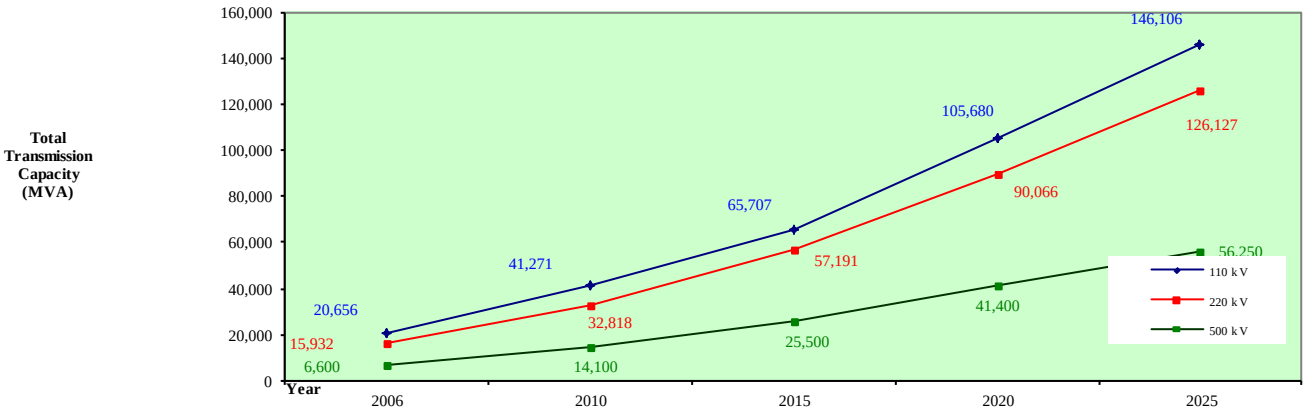
Source: EVN

Electricity Pricing: The government strictly regulates electricity retail prices, with adjustments recommended by MoIT and requiring approval by the Prime Minister. A unified tariff is applicable across the country and is low in comparison with other countries in the region. Both urban and rural residential rates are cross subsidized by higher rates for industry, commerce, and foreign consumers. To attract more investment from the private sector in developing IPP projects, MoIT and EVN have been working on a roadmap for price increases and gradual elimination of government's control.

Independent Power Producers (IPPs): As EVN's self-financing and other sources of debt financing can meet only about 66 percent of the total investment requirement, IPPs are expected to carry a large portion of the investment in the power generation sector, including those to be developed by foreign investors. MoIT, the government agency responsible for planning, executing bidding, and contracting procedures for large IPPs, issued Decision 30/2006/QD-BCN in 2006 to regulate the investment, construction and operation of IPPs. To date, a considerable number of foreign investors have shown interest in developing IPP projects in Vietnam, yet few projects have been realized due to obstacles including legal and regulatory issues, low electricity purchase prices by EVN, the lack of a competitive market, and poor coordination among related government agencies. In recognition of these hindrances, MoIT has taken bold measures in an effort to facilitate IPP development to increase private participation in the power sector through open competitive bidding.

Transmission and Distribution: By the end of 2013, the rural electrification rate in Vietnam was 97.26 percent and is expected to reach nearly 100 percent by 2020. The following chart

shows the current transmission system as well as its projected development to 2025.



Projected Expansion of the Power Transmission System to 2025

Source: EVN

In addition to the transmission system, Vietnam currently operates a power distribution system of about 115,659 km of 6kV, 10kV, 15kV, 22kV and 35kV lines with a total capacity of 3,662 MVA and 109,199 km of 220V lines with a total capacity of 32,061 MVA. The rapid development of power generation and transmission systems will require expansion of the distribution system.

Vietnam has developed an investment plan for the period 2010-2015 with the total capacity of 48,900 MVA for substation (S/S) and 8,219 km of transmission lines (T/L) corresponding to the total investment of $4.3 billion. With such major investments, Vietnam is expected to have an increased demand for control and protection equipment and devices such as power transformers, circuit breakers, disconnect switches, capacitors, calculated software, telecommunication and information technology equipment, etc. for transmission grid.

Power Master Plan VII

On July 21, 2011, the Prime Minister approved the seventh power development plan for the period 2011-2020 with a vision towards 2030 (the Power Master Plan VII). The Power Master Plan VII emphasized EVN restructuring, power market liberalization, energy efficiency (smart grid), and renewable energy development. The Power Master Plan VII envisions that with forecasted GDP growth at 7- 8 percent over the period 2011-2030, the demand for electricity will grow by 12.1 percent per year (low-case scenario), 13.4 percent per year (base-case scenario) or 16.1 percent per year (high-case scenario) during the period 2011- 2015. In early 2013, MoIT began a process to revise Master Plan VII to reflect slower economic growth and delays in current power plant constructions.

Industry Restructuring: One of the many key transitional steps towards a competitive electricity market is the restructuring of EVN, a state-owned monopoly with many wholly owned subsidiaries, into shareholding companies with different types of shareholders including local and foreign private investors. This restructuring aims to create an increasingly business-oriented enterprise with an increased degree of separation from the government. This enterprise reform involves splitting various subsidiary entities away from EVN to form new shareholding companies.

Establishment of a Competitive Power Market: In 2004, the Vietnamese National Assembly passed the new Electricity Law that outlines the development of a competitive electricity market. In 2006, the Prime Minister issued Decision 26/2006/QD-TTg to detail the implementation of a competitive power market which will be carried out in three phases: (1) The first phase (2005-2014) focuses on creating competition in power generation with a single buyer, (2) the second phase (2015 – 2022) introduces competition for bulk supply of electricity (wholesale) including supply directly to major industrial customers, and (3) the final phase (after 2022) involves competition at the retail level.

Development of Power Sources: The Power Master Plan VII emphasizes a balanced development of power sources in each region of the country to ensure a sustainable power supply. Thermal coal-fired power, currently accounting for 15 percent, will play an increasingly important role in the medium and long term. Power generation capacity will rise from 21,000 MW in 2010 (that produced 100 billion kWh) to 43,000 MW in 2015 (that produces 200 billion kWh) to 70,000 MW in 2020 (330 billion kWh), and to 137,700 MW in 2030 (695 billion kWh).

While still considering thermo-power very important in securing the energy for nation development, GVN has a plan to develop clean renewable energy and nuclear power. Up to 2020, the overall capacity of gas-fired thermo-power (combined/open cycle plant) will reach 10,400 MW, producing about 66 billion kWh and accounts for 20 percent of the total output of the electric industry. The overall capacity of coal-fired thermal power shall be 36,000MW, producing 156 billion kWh and accounts for 46.8 percent of total output for the electric industry.

	Targeted Capacity by 2020	Targeted Capacity by 2030
Wind Power	1,000 MW	6,200 MW
Biomass Power	500 MW	2,000 MW
Hydropower	17,400 MW	/
Pumped Storage Hydropower	1,800 MW	5,700 MW
Gas-fired Thermal Power	10,400 MW (with electricity production of about 66 billion kWh)	11,300 MW (with electricity production of about 73.1 billion kWh)
Coal-fired Thermal Power	36,000 MW (with electricity production of about 156 billion kWh)	75,000 (with electricity production of about 394 billion kWh)
Nuclear Power	First nuclear power plant to be put into operation.	10,700 MW (with electricity production of about 70.5 billion kWh)
LNG Power	2,000 MW	6,000 MW

Source: Mayer Brown JSM

Renewable Energy: Master Plan VII prioritizes developing renewable energy resources such as wind power, solar power, and biomass power. Projections are to increase the percentage of renewable energy power to 4.5 percent by 2020 and 6 percent by 2030.

Specifically, the plan aims to increase the combined capacity of all wind power plants to about 1,000 MW by 2020 and 6,200 MW by 2030 so as to raise the percentage of wind power from almost zero percent at present to 0.7 percent by 2020 and 2.4 percent by 2030.

Recently, the Government promulgated Decision 37/2011/QD-TTg regarding incentives for wind power development, to which EVN will pay US$6.8 cents per KWh and the State will contribute US$1 cent per KWh to investors (investors get total US$7.8 cents per KWh) currently. At this moment, there have been 50 wind power projects in 15 provinces with total capacity of 5,000 MW which have been registered. However, only three projects with a total of 50 MW have been put into the national grid due to a lack of appropriate feed-in-tariffs and investment capital.

GVN has recently increased the feed-in-tariff for renewable power generated from solid waste power plants to US$10.5 cents per KW/h, effective from June 2014.

Nuclear Power: In June 2008, the National Assembly adopted the Atomic Energy Law to regulate the safe, secure, and peaceful use of atomic energy, which include participation in and implementation of international nuclear treaties, as well as strengthen international cooperation. In 2009, the National Assembly approved the construction of two nuclear power plants in Ninh Thuan province. GVN awarded the construction of Vietnam's first nuclear power plant to Rosatum of Russia (2,000MW); and the second one to a Japanese consortium (2,000MW). Vietnam's goal is to have the first nuclear power plant to be put into operation by 2020.

However, with a high concern on the safety of nuclear power, GVN has delayed the construction of the first nuclear power plant until 2020 (instead of 2014).

FDI Encouragement and Challenges: The Government of Vietnam's policies are to diversify investment sources, encourage foreign investors in power development with BOT, BOO, PPP and other related schemes. However, Vietnam has faced a number of challenges. For instance, (i) electricity prices are still low. Therefore, existing thermal power plants are unable to buy coal at a competitive price, leading to unattractiveness of new power plant projects; (ii) the procedures for investors under the scheme of BOT are still complicated, with insufficient guidelines; and (iii) equipment prices have sharply increased, leading to increased production cost and thereby reducing the financial attractiveness of power generation projects.

Investment Requirements: According to EVN's estimates, around $123.8 billion will be channeled into national power system development within the next two decades. Spending will average $6.8 billion per year. From 2013-2015, this amount will average nearly $5 billion per year. Of this, 66 percent will be spent on power plants and the remaining 33.4 percent on network development.

In detail, Vietnam plans to invest in up to 98 power plants with total capacity of 59,444 MW, of which EVN would build 48 power plants with 33,245 MW, with an estimated total investment of $39.6 billion (including $26.8 billion for power generation.)

Best Prospects/Services

The power generation market may be divided into five main segments: (1) consulting and engineering services, including project management, (2) installation and construction services, (3) machinery, equipment and materials, (4) supply of equipment, spare parts, materials, consumables, and overhaul and maintenance services (aftermarket), and (5) investment in new IPP power projects in the form of BOT, BT, BTO and JV.

The power transmission and distribution market may be divided into four main areas: (1) consulting and engineering services, project management, (2) installation and construction services, (3) high, medium, and low voltage electrical equipment for the national grid, and (4) medium and low voltage electrical equipment for industrial, institutional and household users.

According to *Renewable Energy Top Markets for U.S. Exports 2014-2015* report, Vietnam's wind power generation market ranks in the top ten. The country is regarded to have an unmatched supply of wind resources in Southeast Asia.

Opportunities

U.S. companies will find significant business opportunities in the above market segments, including:

- Equipment sales opportunities for ongoing and upcoming power generation projects, especially gas-fired and renewable power**(*)**

- Investment opportunities in IPP projects (in the form of BOT, BT, BTO and JV) [(*)]
- EVN/NPT-funded power transmission and distribution projects[(*)]

Ongoing and upcoming thermal power projects

NO.	PROJECT NAME	OWNER/DEVELOPER	PROFILE	CONST_START	CONST_END
1	**NAM DINH THERMAL POWER PLANT**	1. Hashinco - Hoang Anh Shipbuilding Industry JSC 2. Tae Kwang Vina Industrial JSC	2 x 600 MW, coal	2014	2020
2	**KIM SON THERMAL POWER PLANT - NINH BINH**	KOWEPO - Korean Western Power Co., Ltd	2 x 600MW, coal	2014	2020
3	**THAI BINH 2 THERMAL POWER PLANT - THAI BINH**	PV Power - PetroVietnam Power Company Limited	2 x 600 MW, coal	2011	2014
4	**MONG DUONG NO 1 THERMAL POWER PLANT - QUANG NINH**	EVN - Vietnam Electricity Corporation	1080 MW, coal	2011	2016
5	**DUYEN HAI 2 THERMAL POWER PLANT - TRA VINH**	Janakuasa Sdn Bhn - Vietnam Reprentative Office	2 x 600 MW, coal	2013	2016
6	**LONG PHU 1 THERMAL POWER PLANT - SOC TRANG**	Project Management Board Of Long Phu - Song Hau Petro	2 x 600 MW, coal	2014	2018
7	**SONG HAU 2 THERMAL POWER PLANT - HAU GIANG**	Toyo Ink Group Berhad	2,000 MW, coal	2014	2019
8	**THERMAL POWER PLANT HAI DUONG**	1. EVN - Electricity of Vietnam Corporation' 2. VINACOMIN - Vietnam National Coal - Mineral Industries Group 3. JAKS Resources Berhad 4. Wuhan Kaidi Electric Power Engineering Co.,Ltd	2 x 600 MW, coal	2011	2017
9	**DUYEN HAI THERMAL POWER PLANT 3 - TRA VINH**	EVN - Vietnam Electricity Corporation	1,244 MW, coal	2012	2015

10	**NGHI SON 1 THERMAL POWER PLANT - THANH HOA**	1. EVN - Vietnam Electricity Corporation 2. Project Management Board of Thermal Power No.2	600 MW, coal	2010	2014
11	**VUNG ANG 1 THERMAL POWER PLANT - HA TINH**	PVN - PetroVietnam	2 x 600 MW, coal	2009	2013
12	**THAI BINH 1 THERMAL POWER PLANT - THAI BINH**	EVN - Vietnam Electricity Corporation	600 MW, coal	2010	2014
13	**VUNG ANG 2 THERMAL POWER PLANT - HA TINH**	VAPCO	2 x 660 MW, coal	2012	2015
14	**VINH TAN 2 THERMAL POWER PLANT - BINH THUAN**	EVN - Vietnam Electricity Corporation	1,244 MW, coal	2010	2014
15	**VINH TAN 1 THERMAL POWER PLANT - BINH THUAN**	1. Southern Power Network Co 2. China International Power Company. 3. Vinacomin	1,200 MW, coal	2014	2019
16	**THANG LONG THERMAL POWER PLANT - QUANG NINH**	Thang Long Thermal Power JSC	2 x 300 MW, coal	2011	2015
17	**VINH TAN 4 THERMAL POWER PLANT - BINH THUAN**	EVN - Vietnam Electricity Corporation	2 x 600 MW, coal	2013	2017
18	**CONG THANH THERMAL POWER PLANT - THANH HOA**	1. Cong Thanh Cement JSC 2. GE Energy Vietnam Co., Ltd.	2 x 300 MW, coal	2011	2014
19	**VINH TAN 3 THERMAL POWER PLANT - BINH THUAN**	1. Pacific Services & Investment Corporation 2.EVN - Vietnam Electricity Corporation	2 x 1,000 MW, coal	2013	2016
20	**DUNG QUAT THERMAL POWER PLANT - QUANG NGAI**	SembCorp Industries Pte Ltd	1,200 MW, coal	2013	2016
21	**MONG DUONG THERMAL POWER PLANT 2 - QUANG NINH**	1. VINACOMIN - Vietnam National Coal - Mineral Industries Group 2. AES Power Corporation - Vietnam Representative Office 3.Posco Power	1,240 MW, coal	2011	2015
22	**DUYEN HAI 1 THERMAL POWER PLANT - TRA VINH**	EVN - Vietnam Electricity Corporation	2 x 622 MW, coal	2011	2014

23	**QUYNH LAP 2 THERMAL POWER PLANT - NGHE AN**	Song Da Corporation	2 x 600 MW, coal	2014	2017
24	**QUANG TRI THERMAL POWER PLANT - QUANG TRI**	EGAT - Electricity Generating Authority of Thailand	2 x 600 MW, coal	2014	2019
25	**O MON 1 THERMAL POWER PLANT - CAN THO**	EVN - Electricity of Vietnam Corporation'	600 MW, gas	2006	2015
26	**O MON 4 THERMAL POWER PLANT - CAN THO**	EVN - Vietnam Electricity Corporation	750 MW, gas	2013	2016
27	**SON MY THERMAL POWER PLANT 1**	1. GDF (France) 2. Sojitz (Japan)	2,000 MW, gas	2015	2019
28	**DOOSAN BIOMASS THERMAL POWER PLANT - BINH PHUOC**	DOOSAN VINA - Doosan Heavy Industries & Construction Co., Ltd	19 MW	2013	2015

EVN's higher priority transmission and distribution projects for Period 2013-2016*

No	List of projects	Capacity	Total Investment (mil. USD)	Equipment (mil. USD)	Commence time	Complete time
I	**500kV network**					
1	The 500kV Western Hanoi - Thuong Tin	2x24 km	39	5	2014	2016
2	500kV Dong Anh SS	900MVA	32	14	2014	2016
3	500kV Western Hanoi	900MVA	60	26	2014	2016
4	500kV My Phuoc SS and connection of 220kV-110kV behind SS	1x900MVA	65	25	2014	2016
5	500kV Viet Tri and connection	2x450 MVA & 2x1,3km	44	17	2015	2017
II	**220kV Nerwork**					
1	220kV Western Hanoi	250MVA	30	8	2013	2014
2	220kV Dong Anh SS	250MVA	14	8	2013	2014
3	220kV Long Bien SS and connection	2x250MVA	19	9	2013	2014
4	220kV Bac Ninh 2SS (Tien Son)	250MVA	14	6	2013	2014

5	220kV Bac Ninh 3 SS (Yen Phong)	250MVA	19	5	2013	2014
6	220kV Hoa Binh TL - Western Hanoi	2x65km	40	1	2013	2014
7	220kV TL Branch of 220kV Western Hanoi SS	6x4,76km + 4x8km	27		2013	2014
8	220kV ground cable Mai Dong - Tay Ho TL	2x15km	65	1	2014	2016
III	**Other**					
1	Improvement of experiment capacity of Power Transmission Companies		19	19		
	Total		**487**	**144**		

Source: Vietnam National Power Transmission Corporation (NPT)

(*)List of power projects potential for U.S. exports are available upon request.

Resources

The following Web sites may be valuable resources for U.S. companies interested in exploring business development opportunities in Vietnam's electric power industry.

Ministry of Industry and Trade (MoIT)
http://www.moit.gov.vn

Electricity of Vietnam Group (EVN)
http://www.evn.com.vn

PetroVietnam Power Corporation (PV Power)
http://www.pv-power.vn

Vinacomin
www.vinacomin.vn

Vietnam National Power Transmission Corporation (NPT)
http://www.npt.com.vn

For more information about Vietnam's electric power industry, please contact:

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