



## Distribution Efficiency Project (P125996)

EAST ASIA AND PACIFIC | Vietnam | Energy & Extractives Global Practice |  
IBRD/IDA | Investment Project Financing | FY 2013 | Seq No: 11 | ARCHIVED on 12-Jun-2018 | ISR32604 |

Implementing Agencies: Electricity Regulatory Authority of Vietnam (ERAV), Electricity of Vietnam, Electricity of Vietnam

### Key Dates

#### Key Project Dates

Bank Approval Date:11-Sep-2012

Effectiveness Date:07-Feb-2013

Planned Mid Term Review Date:26-Oct-2015

Actual Mid-Term Review Date:19-Oct-2015

Original Closing Date:31-Dec-2018

Revised Closing Date:31-Dec-2018

### Project Development Objectives

Project Development Objective (from Project Appraisal Document)

The project development objective is to improve the performance of Vietnam's Power Corporations in providing quality and reliable electricity services, and to reduce greenhouse gas emissions through demand side response and efficiency gains.

Has the Project Development Objective been changed since Board Approval of the Project Objective?

No

### Components

Name

Component (A): System Expansion and Reinforcement:(Cost \$355.50 M)

Component (B): Introduction of Smart Grid Technologies in Distribution:(Cost \$23.90 M)

Component (C): Technical Assistance and Capacity Building:(Cost \$10.50 M)

### Overall Ratings

Name	Previous Rating	Current Rating
Progress towards achievement of PDO	● Satisfactory	● Satisfactory
Overall Implementation Progress (IP)	● Satisfactory	● Moderately Satisfactory
Overall Risk Rating	● Moderate	● Moderate

### Implementation Status and Key Decisions



The implementation progress of subprojects under Component A (System Expansion and Reinforcement) and Component B (Introduction of Smart Grid Technologies) has remained on track with 96% and 98% of total work volume of Component A and B completed, respectively. Ausaid-funded technical assistance (TA) activities under Component C have been successfully completed by the Trust Fund Closing Date of June 30, 2016. The two Power Corporations of Hanoi and Hochiminh City are implementing a few remaining IDA-funded TA activities that are expected to be completed by Quarter III of 2018.

## Risks

### Systematic Operations Risk-rating Tool

Risk Category	Rating at Approval	Previous Rating	Current Rating
Political and Governance	--	● Moderate	● Moderate
Macroeconomic	--	● Moderate	● Moderate
Sector Strategies and Policies	--	● Moderate	● Moderate
Technical Design of Project or Program	--	● Moderate	● Moderate
Institutional Capacity for Implementation and Sustainability	--	● Moderate	● Moderate
Fiduciary	--	● Moderate	● Moderate
Environment and Social	--	● Moderate	● Moderate
Stakeholders	--	● Low	● Low
Other	--	--	--
Overall	--	● Moderate	● Moderate

## Results

### Project Development Objective Indicators

#### ► Avoided GHG (3) - Northern Power Corporation (NPC) (Tones/year, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	32,616.00	118,015.00
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

#### ► Indicator on Total Distribution Losses: 3. Hanoi Power Corporation (HNPC) Losses in project areas (Percentage, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target



Value	19.00	9.90	9.90	12.00
Date	31-Dec-2011	31-Oct-2017	31-Oct-2017	31-Dec-2018

► Avoided GHG (3) - TOTAL Northern Power Corporation (NPC), Ho Chi Minh City Power Corporation (HCM PC), Hanoi Power Corporation (HN PC) and Central Power Corporation (CPC) (Tones/year, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	145,057.00	269,148.00
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► Avoided GHG (3) - Central Power Corporation (CPC) (Tones/year, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	36,953.00	38,425.00
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► Avoided GHG (3) - Ho Chi Minh City Power Corporation (HCM PC) (Tones/year, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	65,476.00	67,818.00
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► 4. Indicator consumption reduction for AMI consumers (2) - Central Power Corporation (CPC) (Gigawatt-hour (GWh), Custom)



	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	45.32	59.10
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► Indicator on Total Distribution Losses: 3. Southern Power Corporation (SPC) - Losses in project areas (Percentage, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	10.24	5.19	4.44	7.60
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► 4. Indicator consumption reduction for AMI consumers (2) - Total Northern Power Corporation (NPC), Ho Chi Minh City Power Corporation (HCM PC), Hanoi Power Corporation (HN PC) and Central Power Corpor (Gigawatt-hour (GWh), Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	177.92	414.10
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► 4. Indicator consumption reduction for AMI consumers (2) - Hanoi Power Corporation (Gigawatt-hour (GWh), Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	52.30	69.10
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► 4. Indicator consumption reduction for AMI consumers (2) - Northern Power Corporation (NPC) (Gigawatt-hour (GWh), Custom)



	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	0.40	181.60
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► Indicator on Total Distribution Losses: 3:Central Power Corporation (CPC) - Losses in project areas (Percentage, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	13.58	5.33	4.87	10.39
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► Indicator on Power Quality: 2 : Ho Chi Minh City Power Corporation and Hanoi Power Corporation - Voltage excursion outside +/-5% at 110kV/MV transformers, in project areas (Years, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	0.00	0.00
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2011

► Indicator on Power Quality: 2. Central Power Corporation (CPC) - Voltage excursion outside +/-5% at 110kV/MV transformers, in project areas (Years, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	0.00	0.00
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► Indicator on Total Distribution Losses: 3. Ho Chi Minh City Power Corporation (HCMPC) - Losses in project areas (Percentage, Custom)



	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	7.86	3.64	3.72	5.50
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► Indicator on Power Quality: 2. Northern Power Corporation (NPC) - Voltage excursion outside +/-5% at 110kV/MV transformers, in project areas (Years, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	60.00	50.00	42.00	40.00
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► 1.2 Hanoi Power Corporation (HNPC)- System Average Interruption Frequency Index (SAIFI) in project areas calculated as in Distribution Code (1). (Number, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	1.73	1.63	1.63	1.67
Date	31-Dec-2011	31-Dec-2016	31-Dec-2017	31-Dec-2018

► 1.2 Ho Chi Minh City Power Corporation (HCMPC) - System Average Interruption Frequency Index (SAIFI) in project areas calculated as in Distribution Code (1). (Number, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	7.62	2.60	0.93	2.50
Date	31-Dec-2011	31-Dec-2016	31-Dec-2017	31-Dec-2018

► Avoided GHG (3) - Hanoi Power Corporation (HNPC) (Tones/year, Custom)



	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	42,645.00	44,890.00
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► 4. Indicator consumption reduction for AMI consumers (2) - Ho Chi Minh City Power Corporation (HCMPC) (Gigawatt-hour (GWh), Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	0.00	80.30	104.30
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► 1.1 Ho Chi Minh City Power Corporation (HCMPC) - System Average Interruption Duration Index (SAIDI) in project areas, calculated as in Distribution Code (1) (Minutes, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	1,682.00	339.00	130.00	384.00
Date	31-Dec-2011	31-Dec-2016	31-Dec-2017	31-Dec-2018

► 1.1 Southern Power Corporation (SPC) - System Average Interruption Duration Index (SAIDI) in project areas, calculated as in Distribution Code (1) (Minutes, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	6,958.00	1,496.00	777.35	5,525.00
Date	31-Dec-2011	31-Dec-2016	31-Dec-2017	31-Dec-2018

► 1.1 Central Power Corporation (CPC) - System Average Interruption Duration Index (SAIDI) in project areas, calculated as in Distribution Code (1) (Minutes, Custom)



	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	3,631.00	3,151.00	2,117.00	3,234.00
Date	31-Dec-2011	31-Dec-2016	31-Dec-2017	31-Dec-2018

► Indicator on Total Distribution Losses: 3. Northern Power Corporation (NPC) - Losses in project areas (Percentage, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	24.38	6.09	11.06	11.39
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► Indicator on Power Quality: 2. Southern Power Corporation (SPC) - Voltage excursion outside +/-5% at 110kV/MV transformers, in project areas (Years, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	25.00	6.00	4.00	4.00
Date	31-Dec-2011	31-Oct-2017	31-Dec-2017	31-Dec-2018

► 1.2 Southern Power Company (SPC) - System Average Interruption Frequency Index (SAIFI) in project areas calculated as in Distribution Code (1). (Number, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	24.30	5.09	3.24	21.60
Date	31-Dec-2011	31-Dec-2016	31-Dec-2017	31-Dec-2018

► 1.2 Central Power Corporation (CPC) - System Average Interruption Frequency Index (SAIFI) in project areas calculated as in Distribution Code (1). (Number, Custom)





	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	23.53	11.80	5.72	20.95
Date	31-Dec-2011	31-Dec-2016	31-Dec-2017	31-Dec-2018

► 1.2 Northern Power Corporation (NPC) - System Average Interruption Frequency Index (SAIFI) in project areas calculated as in Distribution Code (1). (Number, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	19.80	18.00	14.91	18.65
Date	31-Dec-2011	31-Dec-2015	31-Dec-2017	31-Dec-2018

► 1.1 Hanoi Power Corporation (HNPC) - System Average Interruption Duration Index (SAIDI) in project areas, calculated as in Distribution Code (1) (Minutes, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	299.00	268.00	268.00	291.00
Date	31-Dec-2013	31-Dec-2016	31-Dec-2017	31-Dec-2018

► 1.1 Northern Power Corporation (NPC) - System Average Interruption Duration Index (SAIDI) in project areas, calculated as in Distribution Code (1) (Minutes, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	5,145.00	1,866.00	1,826.00	4,656.00
Date	31-Dec-2011	31-Dec-2016	31-Dec-2017	31-Dec-2018

**Overall Comments**

- The reliability and quality indicators are measured and calculated in a yearly basis, data is updated at the end of the year
- The unit of measurement for the indicator on power quality which currently reads "years, custom" actually means "times per year, custom".
- The PDO indicators for Avoided GHG and consumption reduction for AMI consumers of NPC are the figures of the last 3 months of 2017.
- Reduction of consumption compared to business as usual (without the project scenario) will be calculated as actual annual PC sales to AMI targeted customers minus business as usual consumption for that year. Business as usual scenario is determined from a baseline corresponding to actual 2011 PC sales to the customers where AMI will be implemented, plus forecasted demand growth at the time of appraisal.
- Avoided GHG is calculated for PCs with AMI using Vietnam generation conversion factor (indicators in the results framework have been



calculated with current 0.8154 tCO<sub>2</sub>/MWh), estimating avoided power generation equal to demand reduction.

### Intermediate Results Indicators

► Intermediate Result indicator for Component B: Implementation progress of SCADA system - NPC, CPC, SPC, HCM PC, HN PC (Percentage, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	10.00	100.00	100.00	100.00
Date	31-Dec-2011	30-Oct-2017	15-Apr-2018	31-Dec-2018

► Intermediate Result indicator for Component A: Implementation progress of 35/22/0.4 kV Lines - NPC, CPC, SPC, HCM PC, HN PC (Percentage, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	10.00	99.00	100.00	100.00
Date	31-Dec-2011	30-Oct-2017	15-Apr-2018	31-Dec-2018

► Intermediate Result indicator for Component A: Implementation progress of 110 kV substations - NPC, CPC, SPC, HCM PC, HN PC (Percentage, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	10.00	89.00	95.00	100.00
Date	31-Dec-2011	30-Oct-2017	15-Apr-2018	31-Dec-2018

► Intermediate Result indicator for Component C: PCs & ERAV (Percentage, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	30.00	100.00	100.00	100.00
Date	31-Dec-2011	30-Oct-2017	30-Oct-2017	31-Dec-2018



► Intermediate Result indicator for Component B: Implementation of progress of AMI System - NPC, CPC, SPC, HCMPC, HNPC (Percentage, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	0.00	96.00	98.00	100.00
Date	31-Dec-2011	30-Oct-2017	15-Apr-2018	31-Dec-2018

► Intermediate Result indicator for Component A: Implementation progress of 110 kV lines - NPC, CPC, SPC, HCM PC, HN PC (Percentage, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	10.00	89.00	95.00	100.00
Date	31-Dec-2011	30-Oct-2017	15-Apr-2018	31-Dec-2018



► Intermediate Result indicator for Component A: Implementation progress of 35/22/0.4 substations - NPC, CPC, SPC, HCM PC, HN PC (Percentage, Custom)

	Baseline	Actual (Previous)	Actual (Current)	End Target
Value	10.00	99.00	100.00	100.00
Date	31-Dec-2011	30-Oct-2017	15-Apr-2018	31-Dec-2018

## Overall Comments

## Data on Financial Performance

### Disbursements (by loan)

Project	Loan/Credit/TF	Status	Currency	Original	Revised	Cancelled	Disbursed	Undisbursed	Disbursed
P125996	IDA-51560	Effective	USD	448.90	448.90	0.00	419.16	14.44	 97%
P125996	TF-13456	Closed	USD	5.63	5.09	0.54	5.23	0.00	 100%

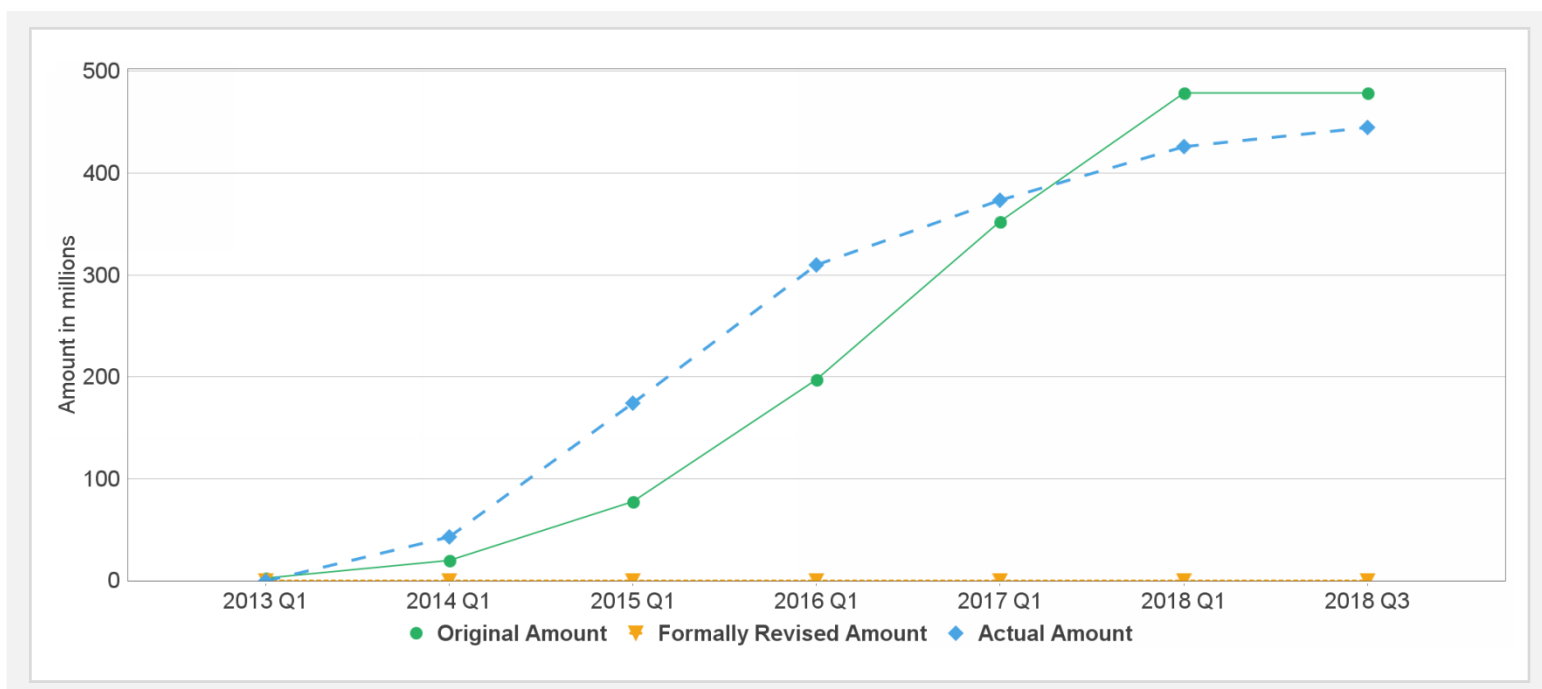


P125996	TF-13468	Effective	USD	30.00	30.00	0.00	20.84	9.17	<div style="width: 69%; height: 15px; background-color: #4CAF50;"></div>	69%
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**Key Dates (by loan)**

Project	Loan/Credit/TF	Status	Approval Date	Signing Date	Effectiveness Date	Orig. Closing Date	Rev. Closing Date
P125996	IDA-51560	Effective	11-Sep-2012	08-Nov-2012	07-Feb-2013	31-Dec-2018	31-Dec-2018
P125996	TF-13456	Closed	08-Nov-2012	08-Nov-2012	07-Feb-2013	30-Jun-2016	30-Jun-2016
P125996	TF-13468	Effective	11-Sep-2012	08-Nov-2012	07-Feb-2013	31-Dec-2018	31-Dec-2018

**Cumulative Disbursements**



**Restructuring History**

Level 2 Approved on 22-Jun-2016

**Related Project(s)**

There are no related projects.