

Appendix: Key highlights of the new draft of national power development plan (Draft PDP8)

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Table I: In the base-load scenario

Item/year	2020	2025	2030	2035	2040	2045
Load demand (MW)	38,706	59,389	86,493	113,952	135,596	153,271
Total installed capacity (MW)	69,258	102,193	137,662	190,391	233,816	276,601
Raw backup rate (wind and solar not included) (%)	34.3	24.0	16.1	11.8	6.9	4.6
In which:						
Domestic coal-fired thermal power	14,281	16,841	16,961	17,451	16,391	14,726
Import coal-fired thermal power	6,150	12,682	20,362	26,392	31,992	35,192
Combined cycle gas turbine + domestic gas-fired thermal power	7,097	9,054	10,636	7,900	7,900	7,900
Currently available combined cycle gas turbine switching to using LNG	0	803	4,147	4,569	4,104	4,854
Combined cycle gas turbine utilizing new LNG	0	2,700	12,550	27,650	32,900	38,150
Flexible source running on LNG (internal combustion engine (ICE) + SCGT)	0	600	1,400	4,900	10,800	15,600
Thermal power + diesel turbine	1,933	898	138	0	0	0
Hydropower	17,085	19,697	19,792	19,792	19,792	19,792
Small-scale hydropower (under 30 MW)	3,600	4,800	5,000	5,300	5,500	5,900
Wind power	630	11,320	16,010	23,110	30,910	39,610

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Offshore wind power ¹	0	0	2,000	9,000	15,000	21,000
Solar power (MW)	16,640	17,240	18,640	30,290	42,340	55,090
Biomass power and other renewables	570	2,050	3,150	3,860	4,510	5,310
Pump-storage hydropower + battery energy storage	0	0	1,200	4,500	6,000	7,800
Import from China	700	700	700	700	700	700
Import from Laos	572	2,808	4,977	4,977	4,977	4,977

Unit: MW

Source: Draft PDP8, MOIT, 22 February 2021

Table II: In the high-load scenario

Item/year	2020	2025	2030	2035	2040	2045
Load demand (MW)	38,706	61,357	93,343	128,791	162,904	189,917
Total installed capacity (MW)	69,258	103,733	147,522	218,511	286,026	342,816
Raw backup rate (wind and solar not included) (%)	34.3	21.0	15.4	10.8	6.1	2.3
In which:						
Domestic coal-fired thermal power	14,281	16,841	16,961	17,451	17,121	14,961
Import coal-fired thermal power	6,150	12,682	22,822	33,052	39,512	43,512
Combined cycle gas turbine + domestic gas-fired thermal power	7,097	9,054	10,636	7,900	7,900	7,900
Currently available combined cycle gas turbine switching to using LNG	0	803	4,147	4,569	4,104	4,854
Combined cycle gas turbine utilizing new LNG	0	2,700	17,100	32,300	42,850	49,600
Flexible source running on LNG (ICE + SCGT)	0	900	1,600	8,100	17,300	23,600
Thermal power + diesel turbine	1,933	898	138	0	0	0
Hydropower	17,085	19,697	19,792	19,792	19,792	19,792
Small-scale hydro (under 30 MW)	3,600	4,800	5,000	5,300	5,500	5,900
Wind power	630	12,280	16,080	25,880	34,680	40,080
Offshore wind power ²	0	0	3,000	11,000	23,000	36,000
Solar power (MW)	16,640	17,240	20,140	38,290	54,840	71,890
Biomass power and other renewables	570	2,330	3,230	3,800	4,450	5,250
Pump-storage hydropower + battery energy storage	0	0	1,200	5,400	9,300	13,800
Import from China	700	700	700	700	700	700
Import from Laos	572	2,808	4,977	4,977	4,977	4,977

Unit: MW

Source: Draft PDP8, MOIT, 22 February 2021

¹ The offshore wind power in this table under Draft PDP 8 are those which are located in areas with seabed depth over 20 meters, with development scale until 2045 selected at the southern central Region.

² The offshore wind power projects in this table under Draft PDP 8 are those which are in areas with seabed depth over 20 meters, with development scale until 2045 selected at the southern central region.

Table III: Scale of power sources in the PDP8 and the amended PDP7

Source	2020	Draft PDP8		Amended PDP7 (approved in 2016)	
		2025	2030	2025	2030
Coal-fired thermal power	20,431	29,523	37,323	47,877	55,477
Gas-to-power and oil/diesel-fired thermal power	9,030	14,055	28,871	15,016	19,016
Hydropower + pumped-storage hydropower (including small-scale hydropower)	20,685	24,497	25,992	24,611	27,871
Wind power	630	11,320	18,010	2,030	5,990
Solar power	16,640	17,240	18,640	3,935	11,765
Biomass and other renewable power	570	2,050	3,150	1,844	3,444
Power import	1,272	3,508	5,677	1,436	1,508
Nuclear power				0	4,600
Total capacity	69,258	102,193	137,663	96,749	129,671
Pmax (MW)	38,706	59,389	86,493	63,471	90,651

Unit: MW

Source: Draft PDP8, MOIT, 22 February 2021

Table IV: Potential gas-to-power projects in PDP8

No.	Potential locations and locations included in the master plan	Total capacity (MW)	Progress under the amended PDP7	Note
I.	Total potential of the north region	30,100		
	LNG Hai Phong 1 (Tien Lang)	4,500		Collected by the Institute of Energy
	LNG Hai Phong 2+3 (Cat Hai)	1,600+4,500		
	LNG Hai Phong 4 (Do Son)	4,500		Collected by the Institute of Energy
	LNG Quang Ninh 1 (Cam Pha)	1,500		Added in the amended PDP7
	LNG Quang Ninh 2 (Cam Pha)	1,500		
	LNG Quang Ninh 3 (Quang Yen)	4,500		
	LNG Quang Ninh 4 (Hai Ha)	3,000		Possibly considered to be located at Hai Ha ~ 3 GW
	LNG Thai Binh	4500		Considering a terminal in Lach Huyen (Hai Phong) with pipelines to Thai Binh
II	Total potential of the North Central region	14000		
	LNG Nghi Son (Thanh Hoa)	5,000		Nghi Son Industrial Park, Hon Me port.
	LNG Ha Tinh	6,000		Vung Ang Industrial Park, Son Duong port, considering the conversion of Formosa Ha Tinh 2 Thermal power project to using LNG
	LNG Quang Binh	3,000		Hon La seaport Industrial Park
III	Total potential of the central central region	20,200		
	LNG Hai Lang – Quang Tri	4,500	2026-2027	Added to the master plan - phase 1 of 1,500 MW
	LNG Hai Lang 1 - Quang Tri	1,500		
	LNG Chan May - Hue	4,000		
	LNG Phong Dien – Hue	3,000		
	LNG Quang Nam	4,000		
	LNG Nui Thanh (Quang Nam)	3,200		

IV	Total potential of the south central region	28,100		
	LNG Binh Dinh	5,000		
	LNG Van Phong	3,000		My Giang. There is potential for large-scale construction in Hon Heo,
	LNG My Giang	6,000		Van Phong Economic zone, My Giang, Ninh Phuoc, Ninh Hoa district, Khanh Hoa province
	LNG Ca Na I	1,500	2025-2026	Added to the amended PDP7, In the process of preparing Pre-FS
	LNG Ca Na II+III	4,500		
	LNG Mui Ke Ga	3,600		
	Son My II CCGT	2,250	2023-2024	
	Son My I CCGT	2,250	2026-2028	
V	Total potential of the South region	49,150		
	Nhon Trach 3&4	1,500	2021-2022	Investor: PV Power
	CCGT (TBKHH) Kien Giang	1,500	2021-2022	PVN has prepared Pre-FS, the amended PDP7 plans to use Block B gas.
	CCGT (TBKHH) Bac Lieu	3,200	2025-2027	Added to the amended PDP7, in the process of preparing Pre-FS
	LNG Hiep Phuoc I+II	2,700	2021-2022	Approved by the prime minister for including additional capacity of 825 MW in the master plan; the plant currently has 375 MW switched to use LNG.
	LNG Phu My 3.1	850		
	LNG Ba Ria 2	1,200		
	LNG Long Son I	1,200	2025-2026	Added to the amended PDP7
	LNG Long Son II+III	3,200		
	LNG Long Son IV (West location)	3,600		
	LNG Cai Mep Ha	6,000		
	LNG Long An	3000+3000	Long An I – 1,500 MW in 2025 - 2026 and Long An II – 1,500 MW before 2035	Approved in the master plan for 3 GW
	LNG Tan Phuoc	4,500		
	LNG Ca Mau 1,2,3	3,000+1,500		
	LNG Tan Thuan – Dam Doi, Ca Mau	3,200		
	LNG Song Doc (Ca Mau)	3,000		
	LNG Ben Tre	3,000		

Source: Draft PDP8, Appendix 9.1, MOIT, 22 February 2021

Table V: Potential offshore wind projects in PDP8

No.	Project	Total capacity (MW)	Location
I.	In the central, south central and south east regions	44,612	
1.	Con Co island, Quang Tri offshore wind	1,000	Quang Tri
2.	Nhon Ly commune, Binh Dinh province offshore wind power	1,000	Binh Dinh
3.	My Cat, Binh Dinh offshore wind power	1,000	Binh Dinh
4.	PNE, Binh Dinh province offshore wind power	2,000	Binh Dinh
5.	Binh Dinh 3 offshore wind power	2,000	Binh Dinh
6.	Phu Yen 2 offshore wind power	4,500	Binh Dinh
7.	An Thuan offshore wind power	250	Phu Yen
8.	Phuoc Dinh offshore wind	502	Ninh Thuan
9.	Ninh Thuan Region 2 coastal wind power	1,600	Ninh Thuan
10.	Vinh Hai offshore wind	500	Ninh Thuan
11.	Ninh Thuan offshore wind	1,800	Ninh Thuan
12.	Ninh Thuan floating offshore wind power	2,000	Ninh Thuan
13.	La Gan offshore wind	3,500	Binh Thuan
14.	Thang Long offshore wind	3,400	Binh Thuan
15.	Macquarie offshore wind	3,000	Binh Thuan
16.	Ke Ga (Ham Thuan Nam) offshore wind	900	Binh Thuan
17.	Co Thach offshore wind	2,000	Binh Thuan
18.	Binh Thuan offshore wind	5,000	Binh Thuan
19.	Vinh Phong offshore wind	1,000	Binh Thuan
20.	AMI AC offshore wind	1,800	Binh Thuan
21.	Tuy Phong offshore wind	4,600	Binh Thuan
22.	Xuyen Moc offshore wind	760	Ba Ria - Vung Tau
23.	FECON Vung Tau offshore wind power plant	500	Ba Ria, Vung Tau
II.	In the south west region	15,108	
1.	Tra Vinh offshore wind power	1,000	Tra Vinh
2.	V4 Tra Vinh offshore wind power	2,000	Tra Vinh
3.	Gulf Tra Vinh offshore wind power	1,000	Tra Vinh
4.	Ree offshore wind power	1,000	Tra Vinh
5.	Soc Trang offshore wind power	2,000	Soc Trang
6.	Ben Tre Mainstream AIT offshore wind power	500	Ben Tre
7.	Gulf Ben Tre 3 offshore wind power	2,300	Ben Tre
8.	Ba Tri Ben Tre offshore wind power	800	Ben Tre
9.	Dong Hai 5 offshore wind	350	Bac Lieu
10.	Dong Hai 1- Phase 3 offshore wind	550	Bac Lieu
11.	Hoa Ky Bac Lieu offshore wind	608	Ca Mau
12.	Ngoc Hien offshore wind power plant	3,000	Ca Mau

Source: Draft PDP8, Appendix 9.3, MOIT, 22 February 2021