

Wind Power Profile of Gujarat State

Gujarat State Profile

Gujarat State has an international boundary and has a common border with the Pakistan at the north-western fringe. The two deserts, one north of Kachchh and the other between Kachchh and the mainland Gujarat are saline wastes. The State has a long coast-line of about 1600 kms and is the longest among all States of country with geographical area of 1.96 lakh sq. kms. Gujarat is situated between 20°1' and 24°7' north latitudes and 68°4' and 74°4' east longitudes. Gujarat elevation is a 9 meters height that is equal to 30 feet.

Wind Speed in Gujarat

As per National Renewable energy Laboratory (NREL) the wind resource estimates show regions with average annual wind speeds of more than 8 m/s. These areas are concentrated in the Gulf of Kutch and on the south coast of the peninsula. Previous literature found that the highest wind energy potentials are concentrated in the north-western part of the state, north of the Gulf of Kutch. In NREL analysis, the yearly average for 2011 shows the highest potential at the same location but also shows a similarly high potential along the south coast of the peninsula (offshore and on the coast between Sarakhadi Gam and Gadhula). Likewise, the International Renewable Energy Agency identified the highest wind speeds to be in the Gulf of Kutch and the southern tip of the peninsula. They also identified the Gulf of Khambhat to have average wind speeds of 9 m/s, which is higher than our estimate. Conforming with the usual seasonal cycle that can be expected in India and with validation results at five measurement sites, the wind speed is highest in the summer from May to August, with maximum average wind speeds of higher than 10 m/s, especially along the coast lines during these months. The wind speeds are lowest in October and November with average wind speeds not exceeding 7 m/s at coastal sites.

First Wind Power Project in Asia and India at Gujarat

India was the first country in Asia Continent and the Gujarat was the first state in India to commission a wind power project on 15th January 1986 at Mandvi with 55kW & 110kW Micon make wind energy generators of demonstration project.

The Installed power generation capacity of the State as on 31.03.18: 27357 MW

The installed capacity of GSECL: 5541 MW (as on 31.03.18).

The per capita energy consumption of power in Gujarat State in 2016-17: 1916 kwh.

Generation of Electricity in 2016-17: 6769 MUs.

Installed Capacity of Power Utilities (MW)

(Including Allocated Shares in Joint & Central Sector Utilities)

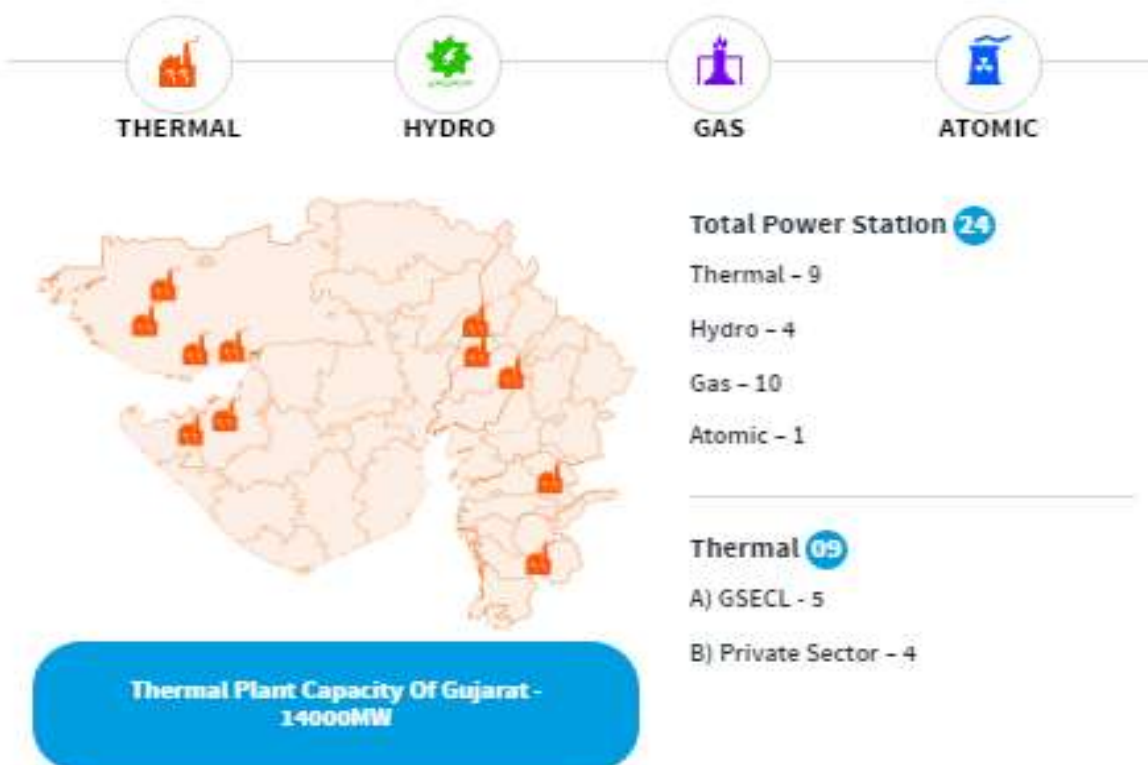
Source	31.03.2018	31.03.2019
Coal/Lignite	15606.18	15758.10
Gas	6561.82	6561.82
Diesel	0.00	0.00
Nuclear	559.00	559.00
Hydro	772.00	772.00
Renewable	7295.32	8639.80
Total	30794.32	32290.72

Source: CEA

Renewable Energy Installed Power Capacity of the State as on July 2019

Sl. No.	Source	Installation MW
1	Wind (June 2019)	6771.05
2	Solar July 2019	2647.71
3	Biomass	81.50

Power Station Of Gujarat



Wind Power Installable Potential as per Wind Atlas 2015 by NIWE

Gujarat has the highest wind power potential in India at @100m Hub Height among all Indian States as follows.

Wind Potential @100m Hub Height	Rank I	Rank II	Rank III	Total
Type of Land \Rightarrow	Waste Land	Cultivable Land	Forest Land	
Potential in MW	52288	32038	105	84431

Rank I	Waste Land	NRSC Level –II Classification Values	12, 13, 15, 19
Rank II	Cultivable Land	NRSC Level –II Classification Values	2, 3, 4, 5, 6, 10, 18
Rank III	Forest Land	NRSC Level –II Classification Values	7, 8, 9

Installable Potential assessed by NIWE earlier was 10609 MW at 50m Hub Height and 35071 MW at 80m Hub Height.

Wind Monitoring Stations Established in the State as on 31.03.2017: 83

Demonstration Wind power Projects Funded by the Government in the State as on 31.03.2017

Number of Wind Turbines: 124

Capacity installed: 17.84MW

Wind Power Installed capacity as on 30th June 2019: 6771.05MW

- **Gujarat Wind Power Policy-2016**
- **Gujarat Wind Solar Hybrid Power Policy 2018-19**

State Energy Agencies and Addresses

Gujarat Electricity Regulatory Commission (GERC)

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Phone: 079-23602000 ,
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Energy & Petrochemicals Department

Principal Secretary, Energy & Petrochemicals Department
Government of Gujarat,
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Gujarat Energy Development Agency

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Contact for The Director, GEDA : director@geda.org.in

Gujarat Urja Vikas Nigam Limited,

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E-mail: contactus@gebmail.com

Electricity Generation, Transmission and Distribution Companies

Gujarat Electricity Board (GEB) was reorganized from 1st April, 2005 in to Seven Companies with functional responsibilities of Trading, Generation, Transmission and Distribution etc. The Companies incorporated are as under: (please click on for details).

1	Gujarat Urja Vikas Nigam Ltd. (GUVNL)	Holding Company
2	Gujarat State Electricity Corp. Ltd.(GSECL)	Generation
3	Gujarat Energy Transmission Corp. Ltd.(GETCO)	Transmission
4	Uttar Gujarat Vij Company Ltd. (UGVCL)	Distribution
5	Dakshin Gujarat Vij Company Ltd. (DGVCL)	Distribution
6	Madhya Gujarat Vij Company Ltd. (MGVCL)	Distribution
7	Paschim Gujarat Vij Company Ltd. (PGVCL)	Distribution

Some Wind Farms in Gujarat

1. Aarvee Denims & Exports Limited, Lamba (Jamnagar), Arikhana, Kadoli, Abdasa (Kachchh) 20.5MW
2. Abs Industries, Lamba (Jamnagar), Dhank (Rajkot): 8.4MW
3. AES Saurashtra Wind farms Limited, Jamnagar District: 39.2 MW
4. Ajanta Transistor, Rajkot and Jamnagar Districts 8.35MW
5. Ansal Properties and Infrastructure Ltd., Abdasa, Kuchchh District: 12.0MW
6. Apollo Tyres Limited, Jamnagar and Kuchchh Districts: 15.5MW
7. Arvind Mills Limited, Navadra, Jamnagar: 6.2MW
8. Balaji Wafers Limited, Kuchchh and Jamnagar District: 4.6MW
9. Best Paper Mills Pvt. Ltd. Bhavnagar, Junagarh and Kuchchh Districts: 4.25MW
10. Jasdan Wind farm, Jasdan by ReNew Power
11. Lamda Danida Wind farm, Lamba by Danida India Limited
12. ONGC Wind Farm at Bhuj in Gujarat: 51MW

Wind Policies of the State (03.06.2019)

SN	Policy Parameters	Gujarat
1	Policy Date & Link	
2	Tariff Order Date & Link	As of Reverse Auction dated 21st December 2017 & 13th May 2019
	Feed in Tariff competitive Bidding in Rs./kWh	No FIT only competitive Bidding Tranche I - 2.43 to 2.45, Tranche II - 2.81 to 2.95
4	APPC Rs./kWh	3.98

RPO Compliance Report of Gujarat for FY 2017-18

Total Energy Consumed, (MU)	Solar RPO Obligation, (%)	Solar RPO Obligation, (MU)	Non Solar RPO Obligation, (%)	Non Solar RPO Obligation, (Mu)	Total Obligation, (%)	Total Obligation, (MU)
1	2	3	4	5	6	7
109973	4.75	5223.7	9.5	10447.4	14.25	15671.2

RPO Compliance Report for FY 2017-18 -Continued

Actual Compliance Of Solar RPO, (%)	Actual Compliance Of Solar RPO, (MU)	Actual Compliance Of Non Solar RPO (%)	Actual Compliance Of Non Solar RPO, (MU)	Total Compliance, (%)	Total Compliance, (MU)	Category
8	9	10	11	12	13	14
1.86	2048.8	8.83	9711.2	10.69	11759.6	75.10%

Installed Capacity of Wind Farms in Gujarat

Sr No.	Wind Plants	Installed capacity (MW)
1	Vershamedi (SUZLON)	120
2	Suthari (SUZLON)	284
3	Sindhodi (SUZLON)	312
4	Vandhiya (VESTAS)	194
5	132KV Sikharpur (VESTAS)	90
6	66KV Sikharpur (SUZLON)	56
7	Jangi (SUZLON)	107
8	Rrb(RRB)	76
9	Veer(VEER)	55
10	Navadra (GEDA)	27
11	Bhogat (GEDA)	25
12	Beta (SUZLON)	48
13	Sadodar (ENERCON)	462
14	132 KV Enercon (ENERCON)	180
15	Ukharla (SUZLON)	13
16	Gandhvi (SUZLON)	22
17	Baradiya (SUZLON)	21
18	Vasai(SUZLON)	31
19	Kuchhdi(SUZLON)	30

20	Layza(SUZLON)	38
21	Tunkar(SUZLON)	38
22	Jamanwada (SUZLON)	155
23	Tebhda (ENERCON)	278
24	Mota Gunda (ELECON)	31
25	Vinjalpar (ELECON)	9
26	Lamba (GEDA)	30
27	Changdai (SUZLON)	25
28	Vanku(SUZLON)	50
29	132 KV Mota gunda (SUZLON)	59
30	Sanodar (SUZLON)	9
31	Rajapara (SUZLON)	50
32	Balambha (SUZLON)	33
33	Gorsar(SUZLON)	26
34	Parevada(SUZLON)	25
35	Halenda(SUZLON)	40
36	Rasaliya (ENERCON)	66
37	Kotda Pitha(SH.RAM EPC)	10
38	TITHWA(AZALEA)	28
39	Jasdan Golida(GUJ FLURO)	70
40	220KV Amarapur (KINTECH)	08
41	Dhank(GEDA)	25
42	Mervadar (GEDA)	11
43	Patelka(GEDA)	18
44	Vadali(ENERCON)	53
45	Rajpara(SUZLON)	29
	Manual Wind Data	
	TOTAL	3382

Offshore Wind Power Project FOWIND (Facilitating Offshore Wind in India) in Gujarat and FOWPI (First Offshore Wind Project in India)

India started planning in 2010 to enter into offshore wind power and a 100 MW demonstration plant located off the Gujarat coast began planning in 2014. In 2013, a consortium (instead of group of organizations), led by Global Wind Energy Council (GWEC) started project FOWIND (Facilitating Offshore Wind in India) to identify potential zones for development of off-shore wind power in India and to stimulate R & D activities in this area. The other consortium partners include CSTEP, DNV GL, the Gujarat Power Corporation Limited (GPCL) and WISE. The consortium was awarded the grant of €4.0 million by the delegation of the European Union to India in 2013 besides co-funding support from GPCL. The project action will be implemented from December 2013 to March 2018.

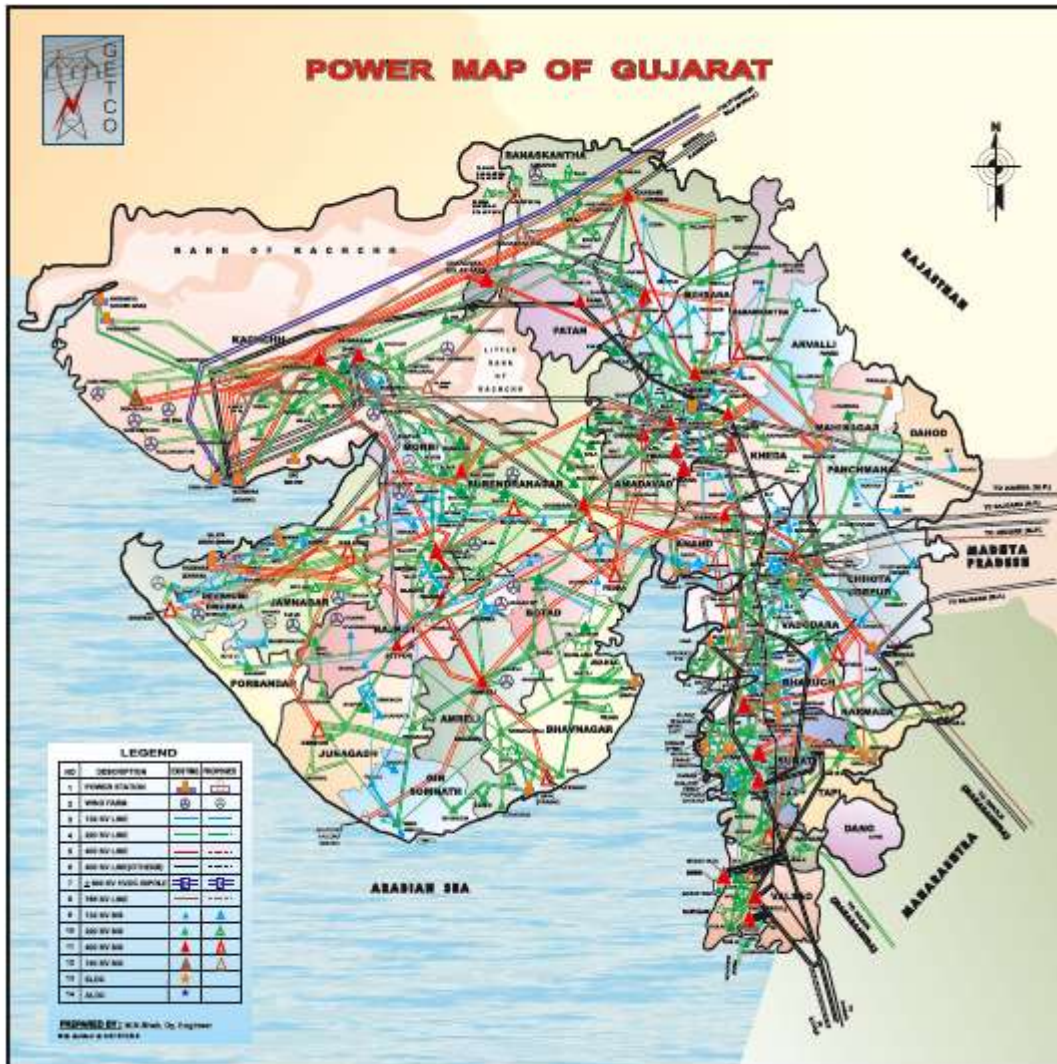
The consortium published initial pre-feasibility assessment reports for offshore wind farm development in Gujarat and Tamil Nadu on 16 June 2015. In September 2015, the India's cabinet has approved the National Offshore Wind Energy Policy.

India is pacing up rapidly towards offshore wind energy development as the MNRE & NIWE has called for the Expression of Interest (Eoi) inviting the bidders for development of first

1000MW commercial scale offshore windfarm in India, near the coast of Gujarat. The EoI was published on 16th Apr 2018, specifies the proposed area identified under the FOWIND & FOWPI study funded by European Union. The proposed location of the offshore windfarm could be 23-40km off the coast from the Pipavav port, Gulf of Khambhat. The proposed area covers about 400sq km. The wind measurements & other data collection are under progress under the supervision of NIWE.

The further work is being done by First Offshore Wind Project of India (FOWPI) in this regard.

All FOWIND reports are available [here](#).



Source: GETCO, SLDC 01.07.2019