

Methodology for Vietnam Renewable Profiles

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Overview

These datasets contain Hourly Capacity Factors for Wind & Solar by Zone.

- **Project:** Vietnam Open Power Data (OPD)
- **Period:** 5-year average (2016–2020), hourly resolution (8,760 h/yr)
- **Zones:** 6 PDP8 planning zones (BB, BTB, TTB, TN, NTB, NB)

Wind

Data: ERA5 3D model-level wind fields (0.25° grid, hourly, levels at ~79 m and ~106 m).

Method: Power Law interpolation to 100 m hub height → IEC-class turbine assignment (Vestas V80/V100/V150) → power curve interpolation → hourly CF per cell → 5-year average.

Zone aggregation:

- Zones 3–6: 113 existing generators (6,466 MW total), capacity-weighted average
- Zones 1–2: No existing generators — top-20 eligible cells by mean CF, simple average (best-site representation, not zone-wide average).

Solar

Data: Renewables.ninja API with MERRA-2 reanalysis. 3,080 grid cells, 2016–2020.

PV parameters: Fixed-tilt crystalline silicon, tilt 35°, azimuth 180°, system loss 10%.

Method: Hourly CFs from Renewables.ninja → leap year correction → 5-year average per cell.

Zone aggregation:

- Zones 2–6: 143 existing generators (11,083 MW total), capacity-weighted average
- Zone 1: No existing generators — top-20 eligible cells by mean CF, simple average

Annual mean CFs

Zone	Wind	Solar
Z1 — North (BB)	0.178 *	0.157 *
Z2 — North Central (BTB)	0.210 *	0.133
Z3 — Central (TTB)	0.240	0.142
Z4 — Central Highlands (TN)	0.223	0.158
Z5 — South Central (NTB)	0.255	0.165
Z6 — South (NB)	0.347	0.161

* Best-site average (top 20 of eligible cells). Zone-wide eligible average is much lower.

Data Fields

Dataset: vn_wind_zonal_hourly_cf_2016_2020_avg.csv

Field	Description
zone_1, zone_2, zone_3, zone_4, zone_5, zone_6	Average hourly wind capacity factor for each zone

Dataset: vn_solar_zonal_hourly_cf_2016_2020_avg.csv

Field	Description
zone_1, zone_2, zone_3, zone_4, zone_5, zone_6	Average hourly solar capacity factor for each zone