

# Methodology for China Provincial Hourly Electricity Load in 2030/2035

Power Transformation Lab, UCSD  
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## Overview

To construct the hourly power demand curve, we began by synthesizing regional data from 32 provinces as documented in [1], incorporating typical weekday and non-workday load shapes along with the daily maximum and minimum loads recorded throughout 2019.

Each day's hourly demand was then adjusted by aligning these typical profiles with the specific daily load extremes, accounting for the distinction between workdays and holidays. By concatenating these daily segments, we derived a continuous hourly demand profile for the entire year.

Finally, to establish the base load factor for each power grid, these absolute demand values were normalized relative to the annual peak demand observed in 2019. We ask the users to refer to [2] for more information.

The total national electricity demand is projected to reach 12.5 PWh in 2030 and 13.5 PWh in 2035.

## Data Format

The dataset is provided in **CSV format**. Each province has a separate CSV file. Each row represents **the simulated hourly electricity load for a province**.

| Field     | Description                     |
|-----------|---------------------------------|
| hour      | Simulation hour                 |
| demand_gw | Simulated load in gigawatt (GW) |

## References

[1] National Development and Reform Commission (NDRC). Typical power load curves in each provincial power system (in Chinese). 2019.

<https://www.ndrc.gov.cn/xxgk/zcfb/tz/201912/P020191230336066090861.pdf>

[2] Zhang D, Zhu Z, Chen S, Zhang C, Lu X, Zhang X, Zhang X, Davidson MR. Spatially resolved land and grid model of carbon neutrality in China. *Proc Natl Acad Sci* 2024;121(10). <http://dx.doi.org/10.1073/pnas.2306517121>.