

New Mexico Future Energy Production Forecast



Brandon Smith & Jeremiah Baker, Dr. Satyajayant Misra



Introduction

In 2019 Michelle Lujan Grisham signed the Energy Transition Act. It set the goals needed to bet met by different times.

50% RE by 2030

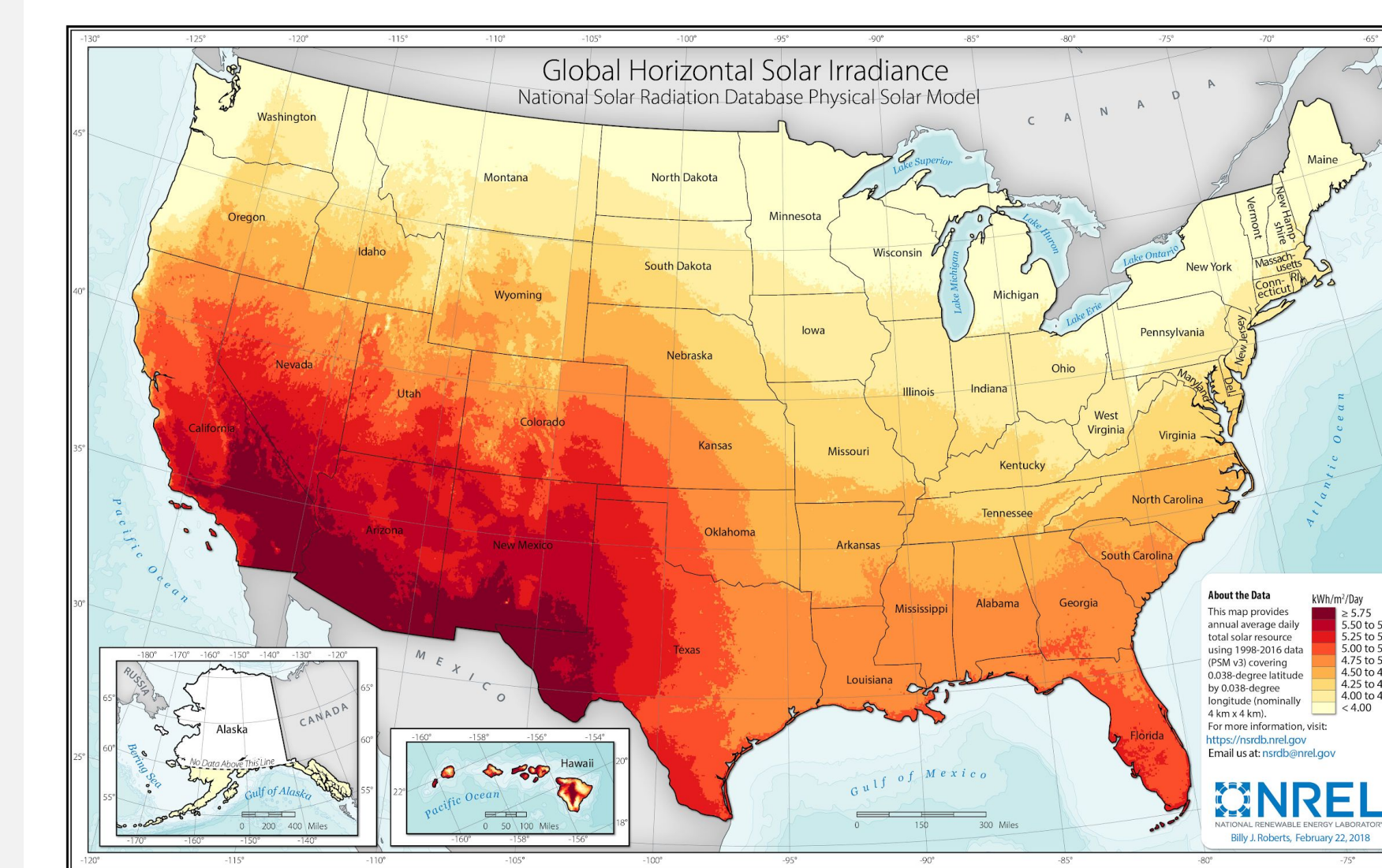
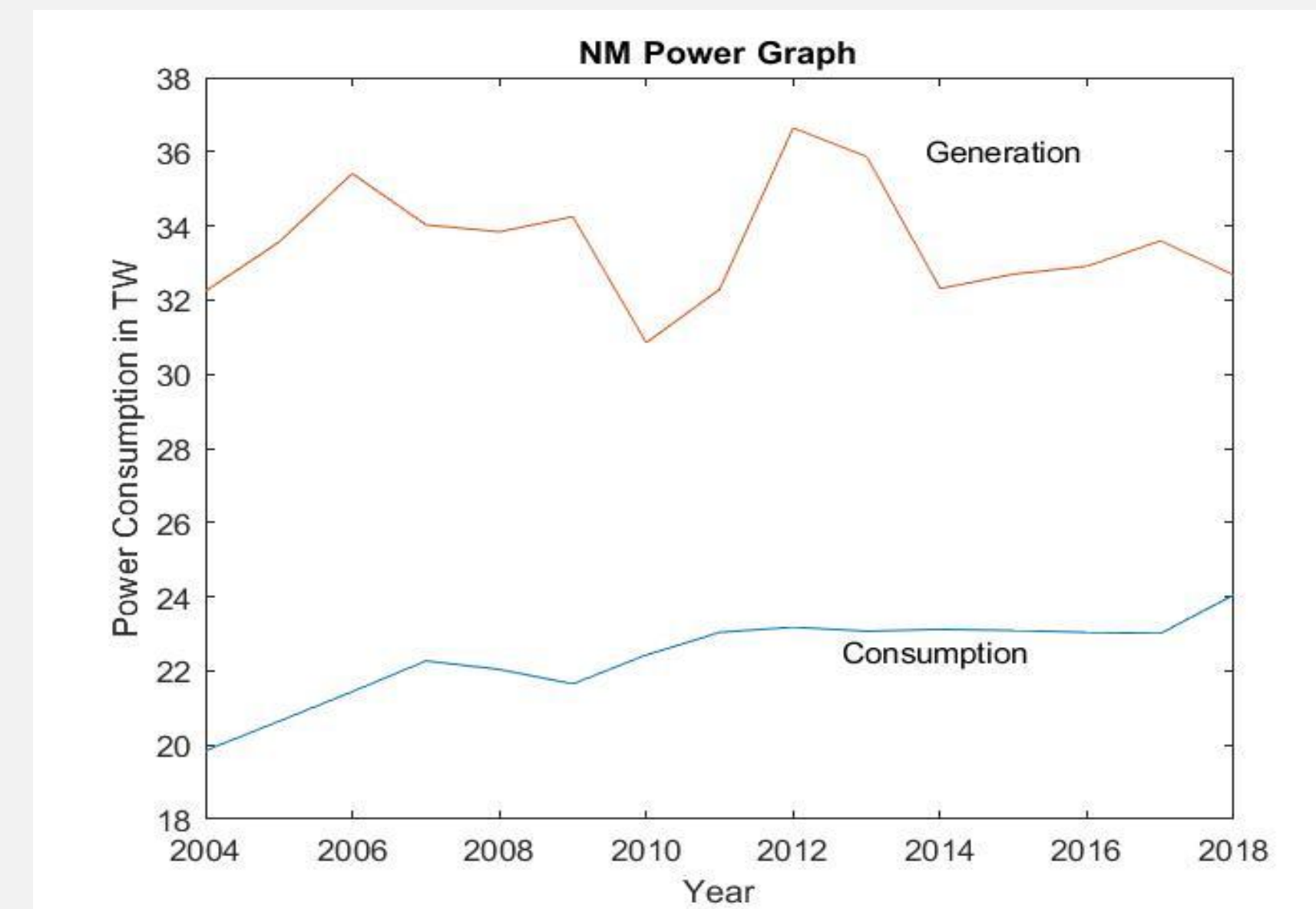
80 % RE by 2040

0% Carbon Emissions by 2045 for Investors and 2050 for Rural Electrical Cooperatives

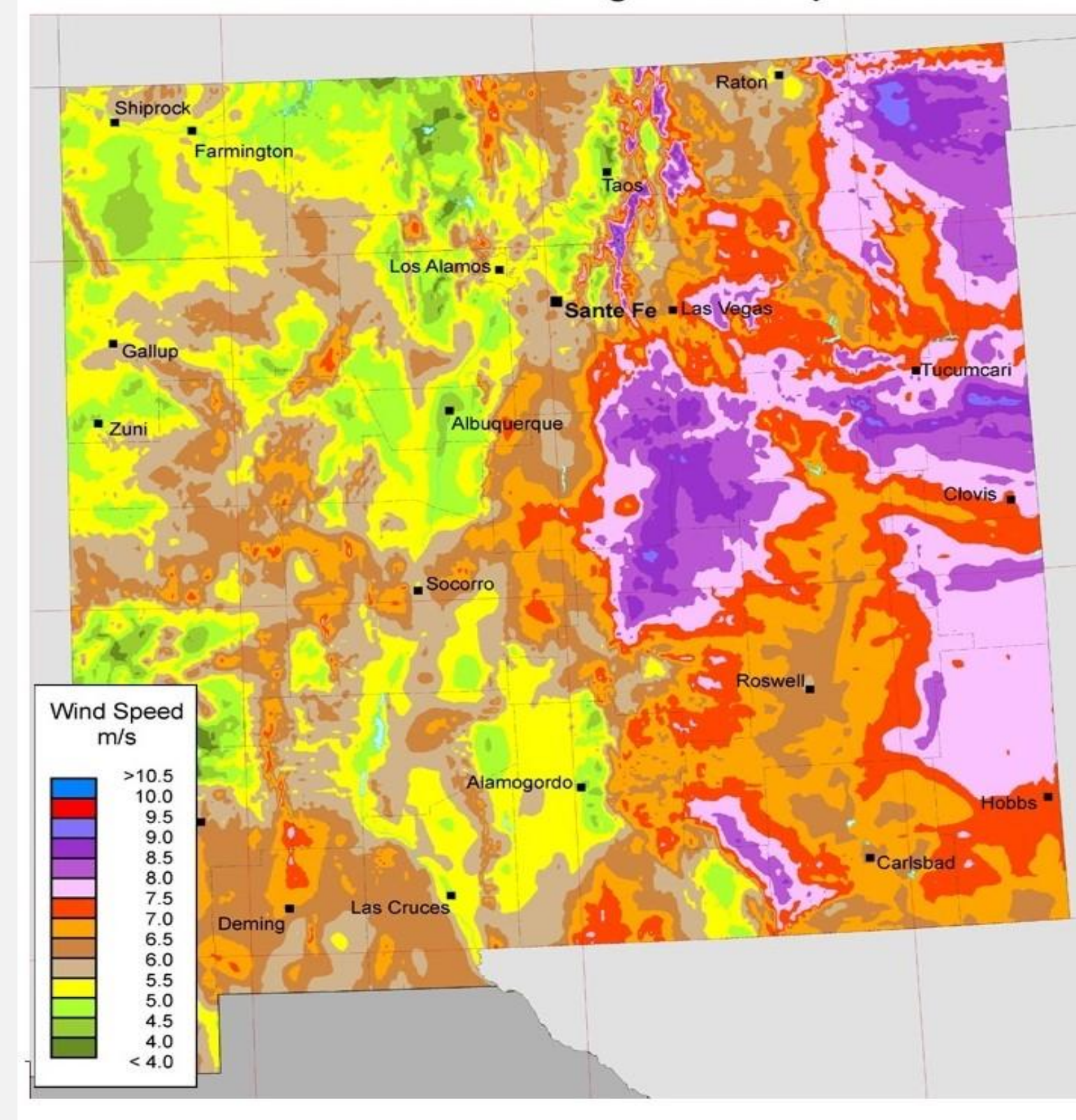
Methodology & Approach

- In order to attempt to meet those goals, we looked at figures pertaining to current and past generation and consumption of electrical energy in New Mexico.
- Using the data from 2004 to 2018, a graph was created to more easily show the capabilities and consumption of current New Mexico power grids.
- This also allowed for an estimated future energy requirements needed for New Mexico.

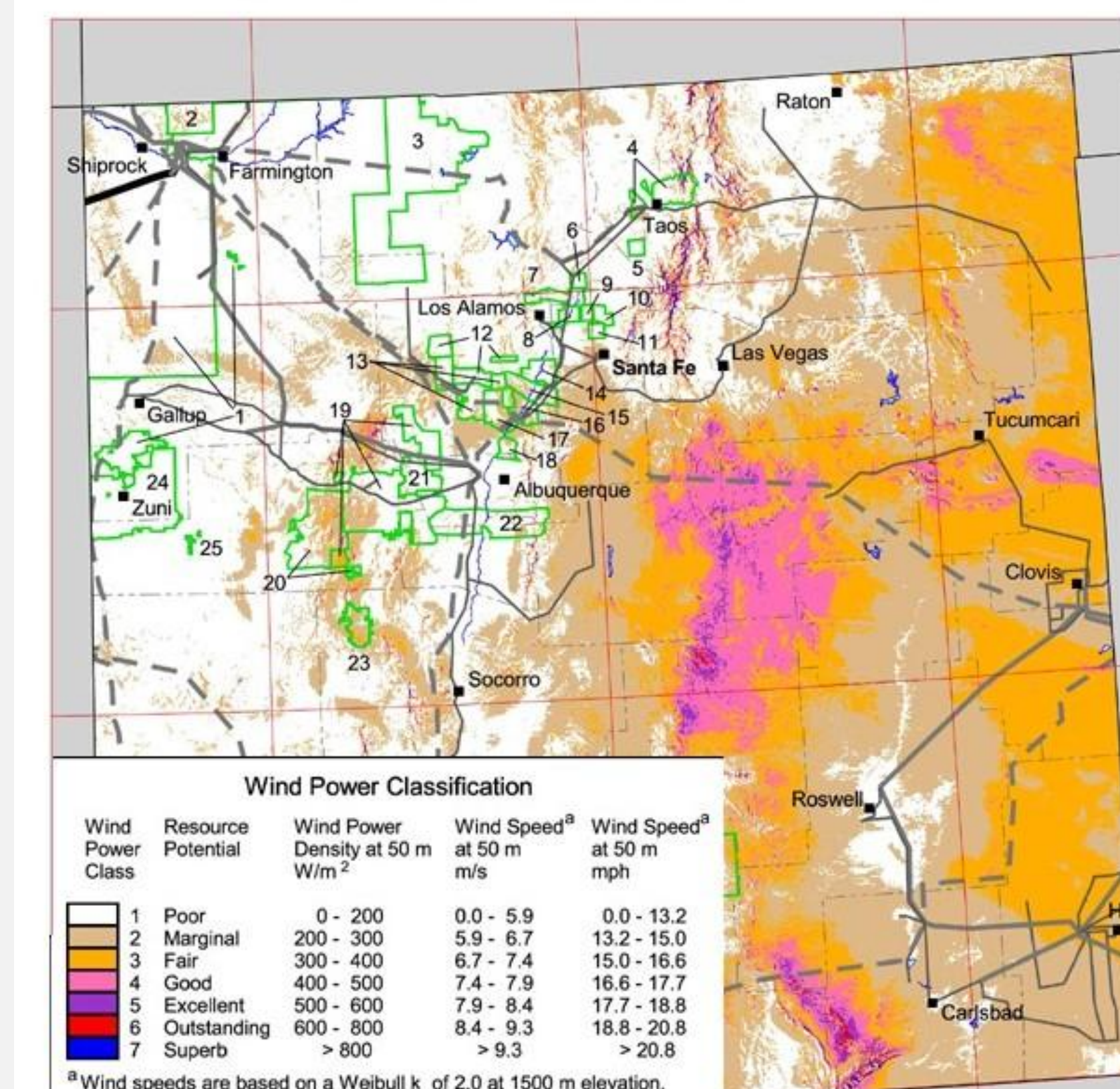
Do We Have the Energy?



New Mexico - Annual Average Wind Speed at 80 m



New Mexico - Wind Resource at 50 m



Results

In 2018 New Mexico produced 32.67 TW of electricity. 7.514 TW of that was RE, of which, 6.26 TW was wind, and 1.31 TW was solar. In order to meet our current 80% percent goals we need to add an additional 18.62TW of RE power generation.

Power consumption in New Mexico increased approx. 0.28 TW per year, while power generation year to year varied wildly.

Conclusions

New Mexico's energy requirements for the year 2045 are estimated to be around 31.61 TW based on energy consumption increase year to year. This means that in order to comply with the NMETA in 2045, RE production needs to quadruple.

Future Activities

New Mexico is ranked 11th for Wind Energy potential and 3rd for Solar potential in America.

If we continue to focus on these areas we have the necessary resources to meet our goals.

Our next steps should be to narrow down suitable areas for renewable energy grids, as well as a framework to implement them.

Acknowledgements

The numbers used for the graph and all calculations were retrieved from <https://www.eia.gov/electricity/state/NewMexico/>
<http://www.emnrd.state.nm.us/EnergyPolicy/newmexicoenergy.html>
 Other graphs pulled from <https://windexchange.energy.gov/maps-data/89>
<https://windexchange.energy.gov/maps-data/90>
<https://www.nrel.gov/gis/solar.html>