



Administración del Mercado Eléctrico (ADME)

ADME is the Independent System Operator and the Commercial Administrator of the wholesale electricity market of Uruguay.

Our main functions are:

Schedule the use of generation resources and carry out centralized dispatch at the minimum cost.

Sanction the Spot price and carry out the commercial settlement of the market.

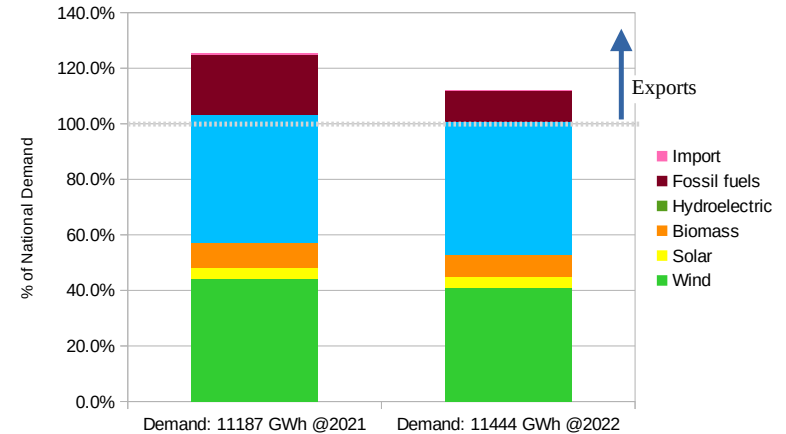
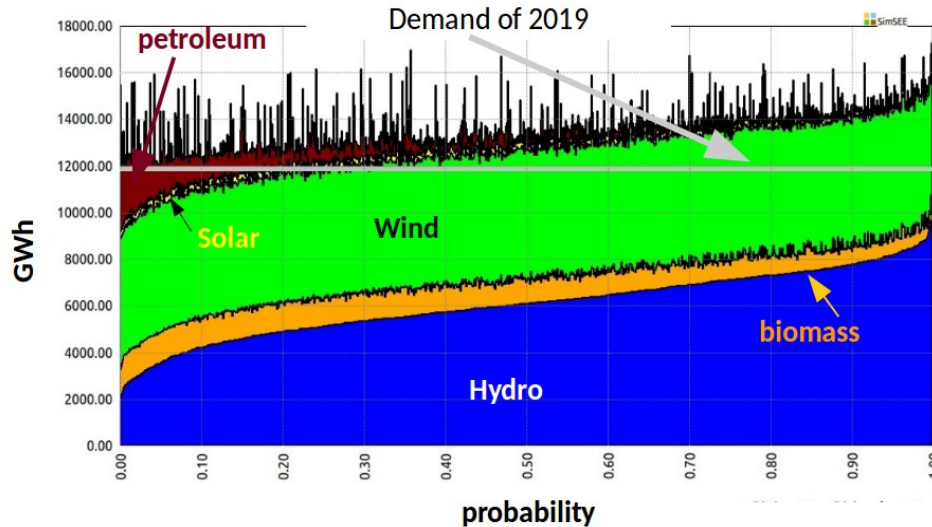
Our guiding principles are:

Transparency

Open access to information

Non-discriminatory treatment of Market Participants

The Uruguayan electricity market in one page. (February 2023)



Installed generation capacity @ February 2023						
	Wind	Solar	Biomass	Hydro	Fossil fuel	Total
Plants	41	18	12	4	5	80
MW	1484	238	481	1573	1174	4951

White paper: "Optimum operation of electric power generation resources"



Vates_MP and Vates_CP Robots.

Artificial Intelligence applied to the optimal operation of the electric power generation system of Uruguay. (February 2023)

The Vates_MP and Vates_CP Robots assimilate the information from the Demand and Wind and Solar generation forecasts continuously and publish the optimal probabilistic dispatch for the next 90 days and the next 168 hours, respectively.

Vates_MP and Vates_CP use the classical Bellman recursion to obtain the Optimal Operation Policy. This limits them in the number of state variables to be represented by the effect of Bellman's Curse of Dimensionality.

The second generation of Robots, called VatesIA_MP and VatesIA_CP perform the same task as the Vates but they are constantly learning, they are improving their Operation Policies based on modifying the parameters of a Neural Network arrangement.

By using machine learning techniques, these VatesIA manage to defeat Bellman's Curse, which has allowed us to:

Incorporate a detailed hourly model of the new Combined Cycle plant, which allows us to dispatch the system more economically, taking into account the restrictions imposed by the steam cycle combination process.[1]

Simulate the optimal operation of the whole Argentina, Brazil, Paraguay and Uruguay, which allows a better forecast of the possible exchange opportunities between the countries.[2]

References

[1] V. Camacho and R. Chaer, "Hourly model of a Combined Cycle Power Plant for SimSEE," in *2020 IEEE PES Transmission & Distribution Conference and Exhibition - Latin America (T&D LA)*, Montevideo, Uruguay, Sep. 2020, pp. 1–5. doi: 10.1109/TDLA47668.2020.9326149.

[2] R. Chaer, I. Ramirez, V. Camacho, X. Caporale, and G. Casaravilla, "Learning the optimal joint operation of the energy systems of Uruguay, Brazil, Paraguay and Argentina," in *2022 IEEE PES Generation, Transmission and Distribution Conference and Exposition - Latin America (IEEE PES GTD Latin America)*, La Paz, Bolivia, Oct. 2022, pp. 1–6. doi: 10.1109/IEEEPESGTDLatinAmeri53482.2022.10037786.

