Enel Green Power North America

Renewable Energy for a Sustainable Future.


RIVERVIEW WIND FARM, CANADA


AURORA SOLAR FARM, MN

Enel Green Power is a leading developer, owner and operator of renewables in the US and Canada.

ROADRUNNER SOLAR, TEXAS

Our history

Enel Green Power has been present in the U.S. for 20 years

261 MW

Enel makes its first international acquisition in North America of 261 MW hydropower from CHI Energy, Inc.

570 MW

Enel Green Power is born and it expanded its portfolio to include wind, biomass and geothermal energy

800 MW

EGP expands in Canada and grows its portfolio and geographical diversification

2,000 MW

The company grows significantly its wind portfolio, enters new states and cerates the first of its kind hybrid power plants

4,000 MW

Over 1,200 MW constructed in 2017, an increased solar portfolio, the largest wind project worldwide and new C&I customers

5,000 MW

Growth continues with 830 MW of additional capacity

6,000+ MW

EGP fully integrates Tradewind Energy, starts construction on first RE + storage project

1GW+ annual growth in North America through 2023

2000 → 2008 → 2010 → 2014 → 2017 → 2018 → 2020

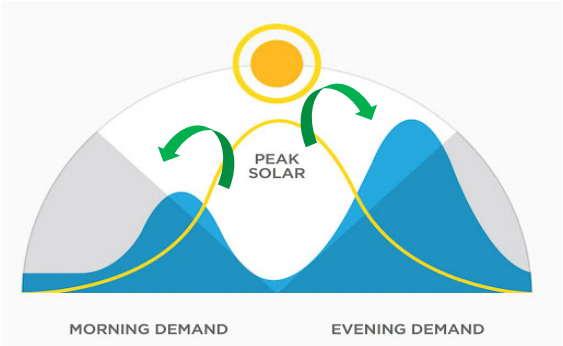
Long Duration Energy Storage

Seeking for disruptive technologies beyond lithium

Green Power

Today, lithium batteries represent the state of art for current needs of energy storage: they're fast, flexible, modular, and getting cheaper and cheaper (cost in 10 years is almost reduced by a 10x factor!)

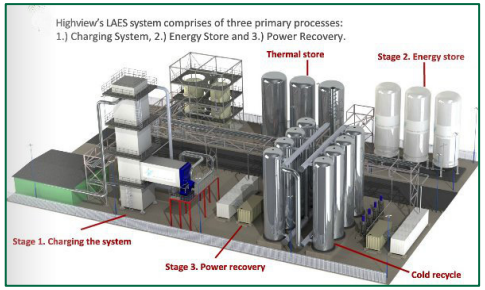
As non-programmable renewables increase, the need for long duration (>4-6 hours) is becoming a critical topic for the balancing of electric systems



Need for competitive solutions that are safe for people and environmental friendly

…& more!

…Liquid Air..

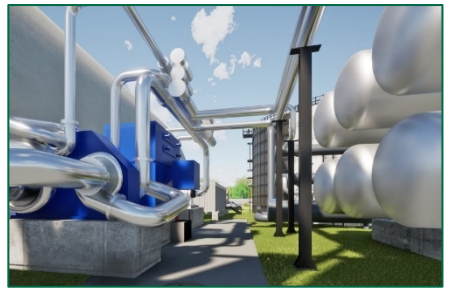


…Flow Batteries...

…Thermal Storage…

…Gravitational...

…Liquid CO_2...



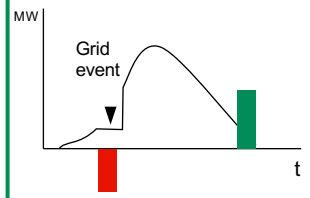
Thanks to our scouting activities, feasibility studies, proof on concepts on-field, lead with technological-agnostic approach, we're developing a portfolio of solutions ready to face the future challenges in 100% green electric system!

Energy Storage Technologies

Focus on RES + BESS applications

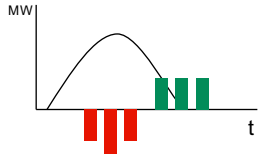
Storage coupled with Renewable Plants is able to provide a wider range of services, both to plant and to the grid

Applications for: **Power Plant** | **Power plant and Grid** | **Grid**



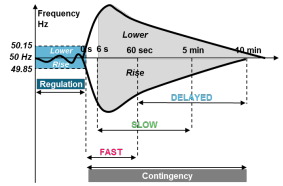
Curtailment reduction

Recovery of power plant production (otherwise lost) due to **grid curtailment**



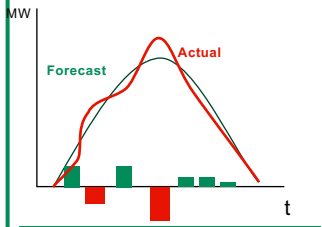
Energy Shifting / Arbitrage

To charge and discharge battery in order to **move plant production** in hours where **energy has more value**



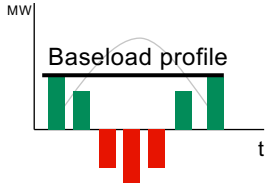
Spin/Non spin reserve

To help **grid stability** following a **grid event** in order to bring back system *frequency* within safe parameters



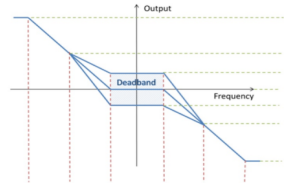
Imbalance costs savings

Battery charge and discharge in order to **nullify differences** between power plant **production forecast** and **actual real time** production, so **avoiding balancing costs**



Firming capacity

To transform plant typical profile production into **a baseload profile** or to **match offtaker load**

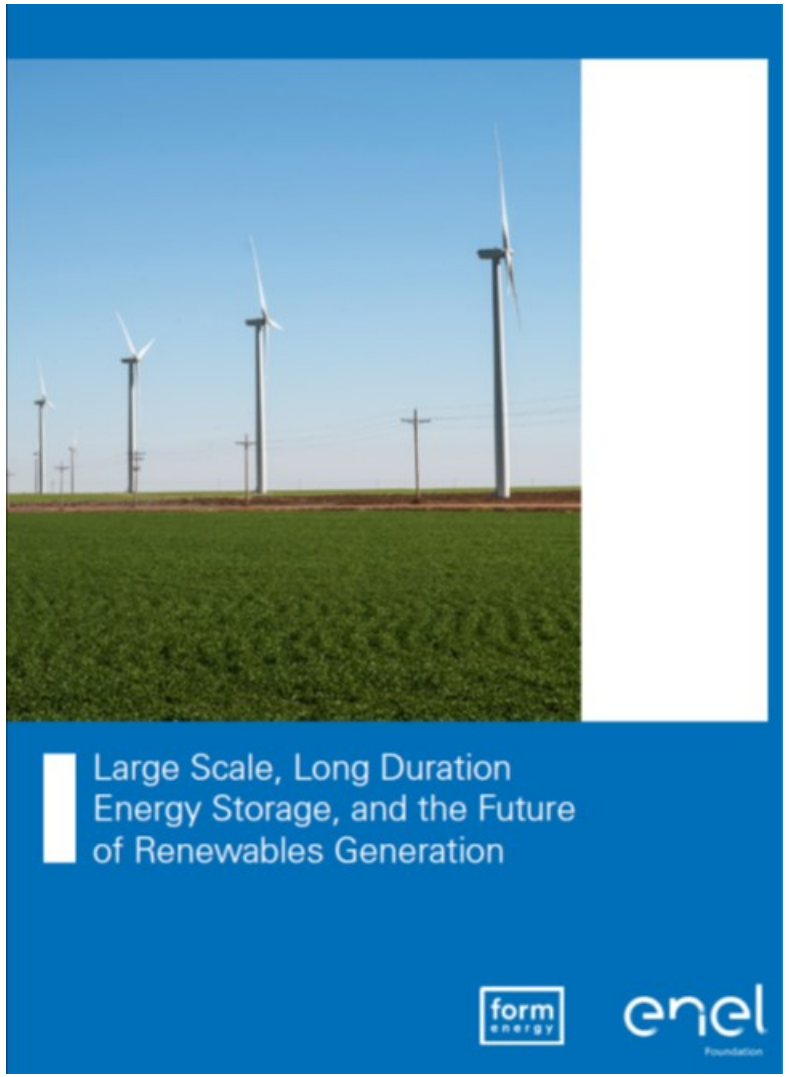


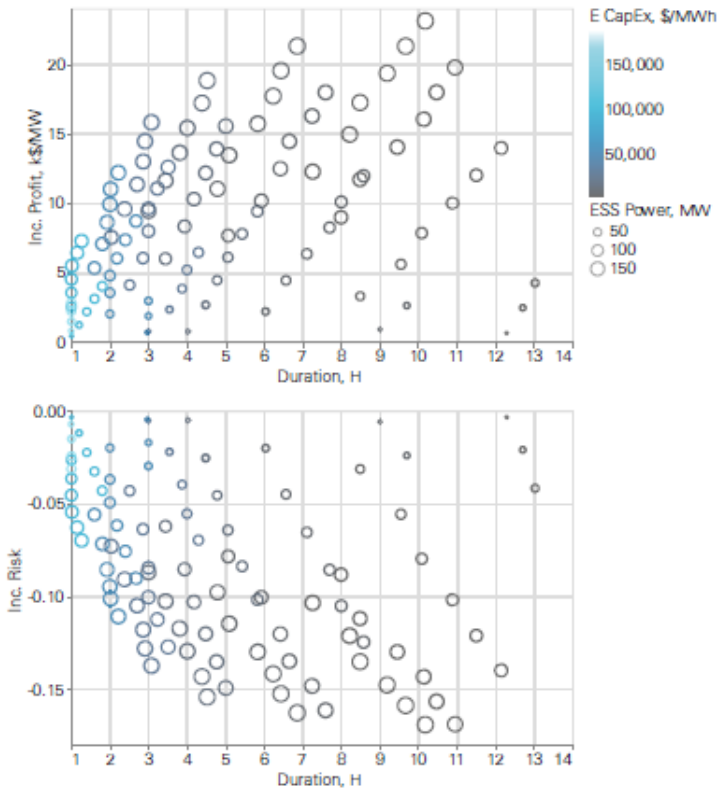
Frequency control

Service provided to the grid in order to improve **system reliability**.

LoDES + Renewables Models

White Paper with Form Energy





Released March 2020

- Evaluated interaction of Long-duration storage with wind farm returns
- Unsurprising results: LoDES has the potential to improve the value of renewables by helping mitigate risk factors:
  - Congestion/Basis Risk
  - Resource Intermittency
- Future challenge: not only getting the technology right, but also creating the right contracts and market structure.

Thank You

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