



Renewable energy: the inconvenient intermittency?

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Renewable energy in Flanders and Belgium

2009/28/EC Renewable energy directive: 20-20-20

- Belgium: 13% RES in final energy consumption by 2020



Solar energy

Biomass

Windpower

Heat pumps

District Heating



Renewable energy: the inconvenient intermittency?

- Intermittency of wind and solar, an inconvenience or an opportunity?
- The intermittency of wind and solar in the European context
- The intermittency of wind and solar and security of supply, analysis of peak demand in Belgium
 - Strategic reserve volume estimation
 - Impact of wind energy production on peak demand
 - Conclusions
- Available solutions
- Conclusions



The intermittency of wind and solar, an inconvenience or an opportunity?

High production

Who benefits from it?

- *Big consumers (potentially)*

Who pays the bill?

- *Producers (cannibalisation effect)*
- *Non flexible production units*
- *BRP's*
- *Consumers*

Low production

Who benefits from it?

- *Baseload and peak units*

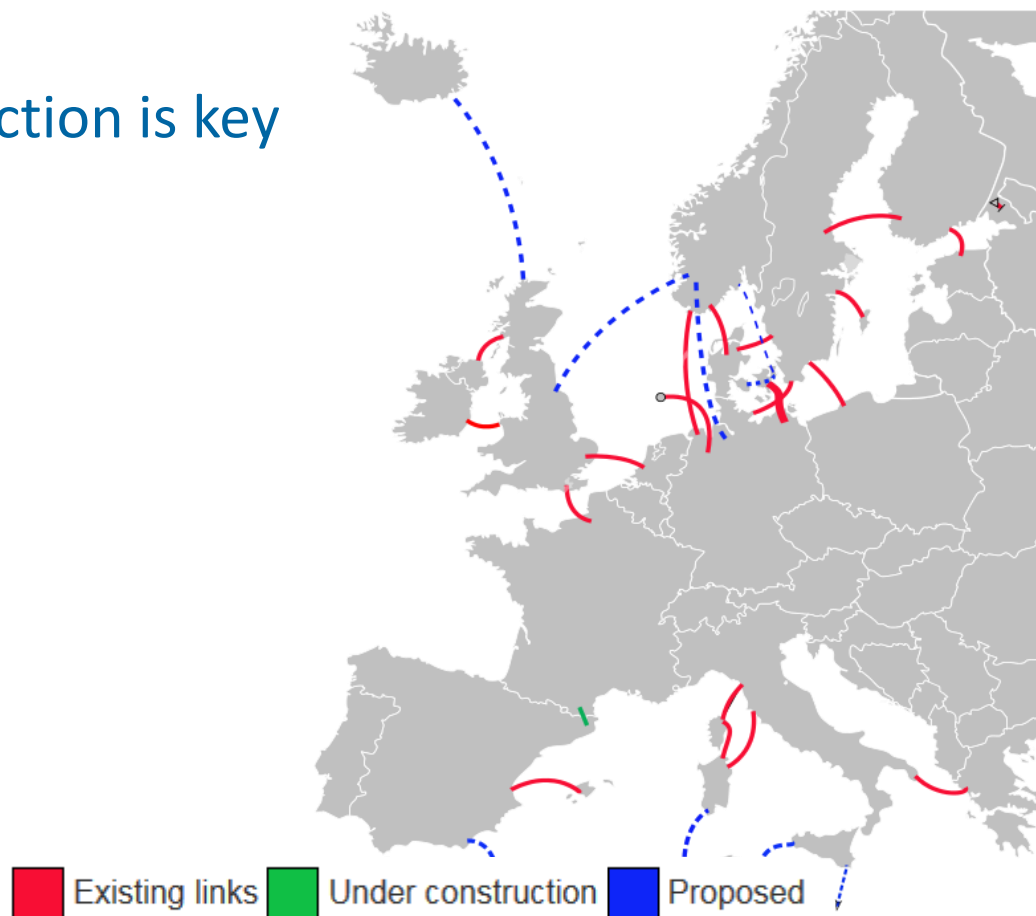
Who pays the bill?

- *Consumers*
- *BRP's*



The intermittency of wind and solar in the European context

Interconnection is key



The intermittency of wind and solar and security of supply

Energy transition, intermittency of wind and solar and the planned nuclear phase out challenges the security of supply in Belgium.

Solutions should be found both at the Belgian and at the European (CWE) level to enshure the security of supply and to reduce costs for all parties involved.



Peak demand

Strategic reserve volume estimation

The strategic reserves volume is evaluated for Belgium in order to satisfy the following criteria (according to the law):

Average LOLE < 3 hours
LOLE P95 < 20 hours



LOLE = Loss of Load Expectation. It is the expected total duration in hours of unserved energy over the winter.

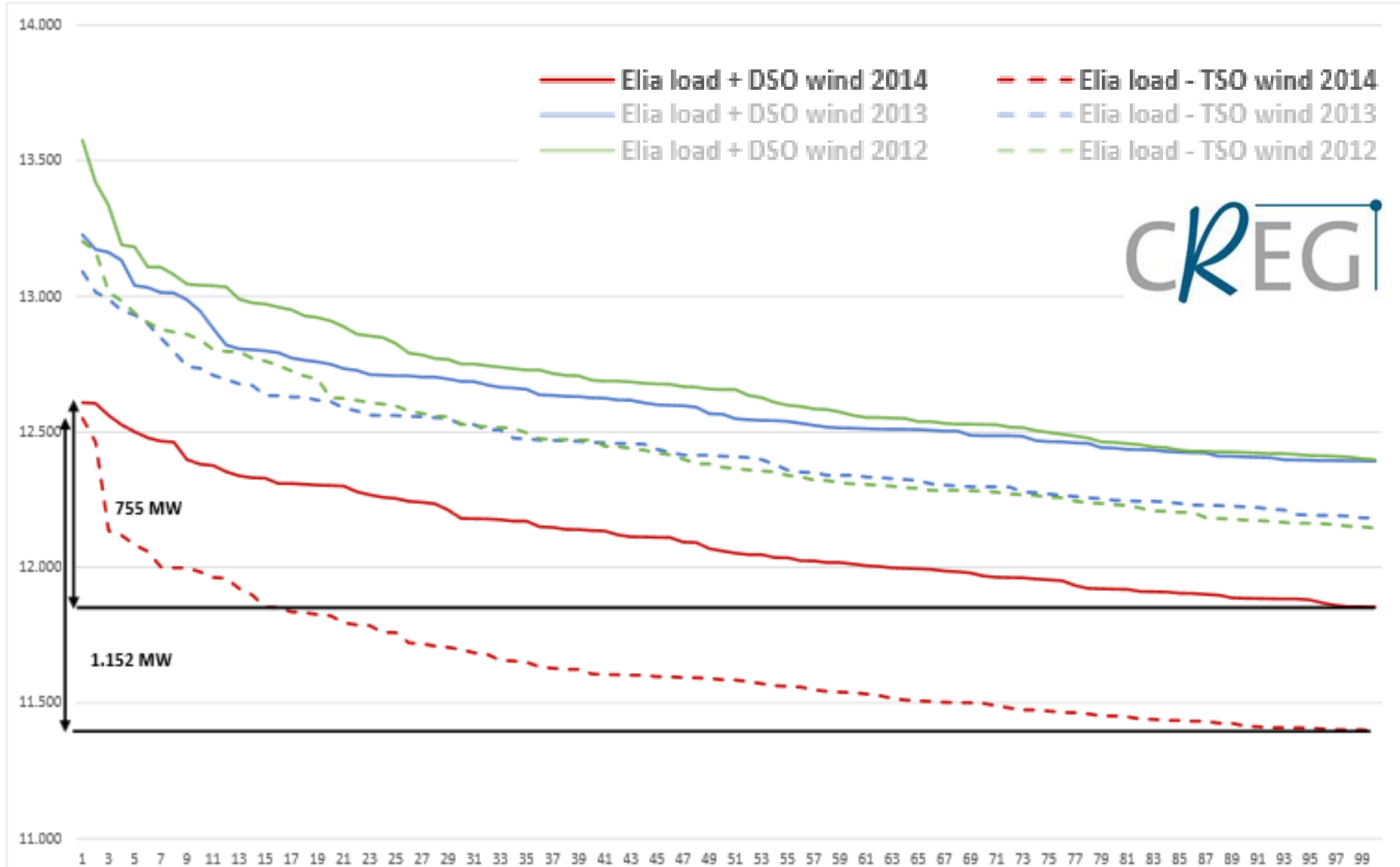
Average LOLE = it is the average value over the future states simulated.

LOLE P95 = it is the percentile 0.95 (1 out of 20 probability) over the future states simulated



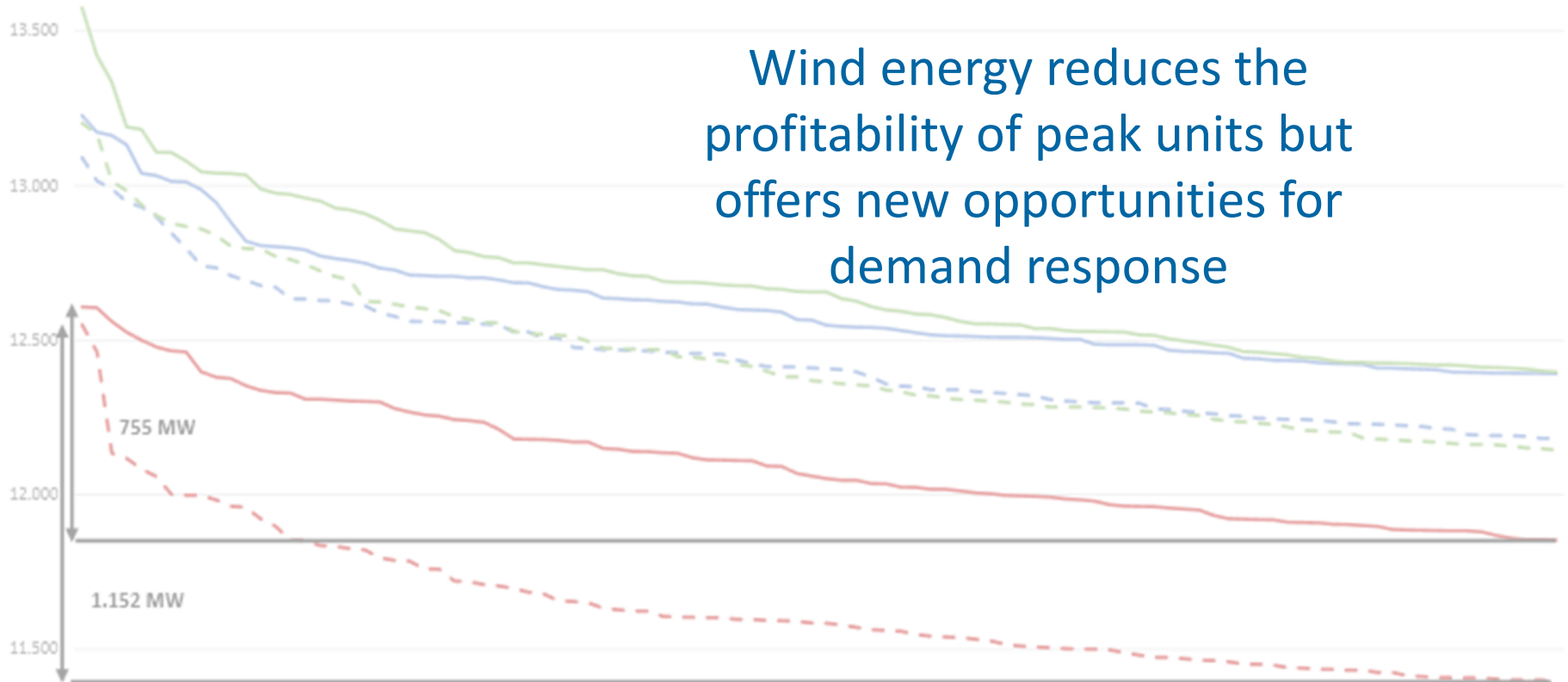
Peak demand

Impact of wind energy

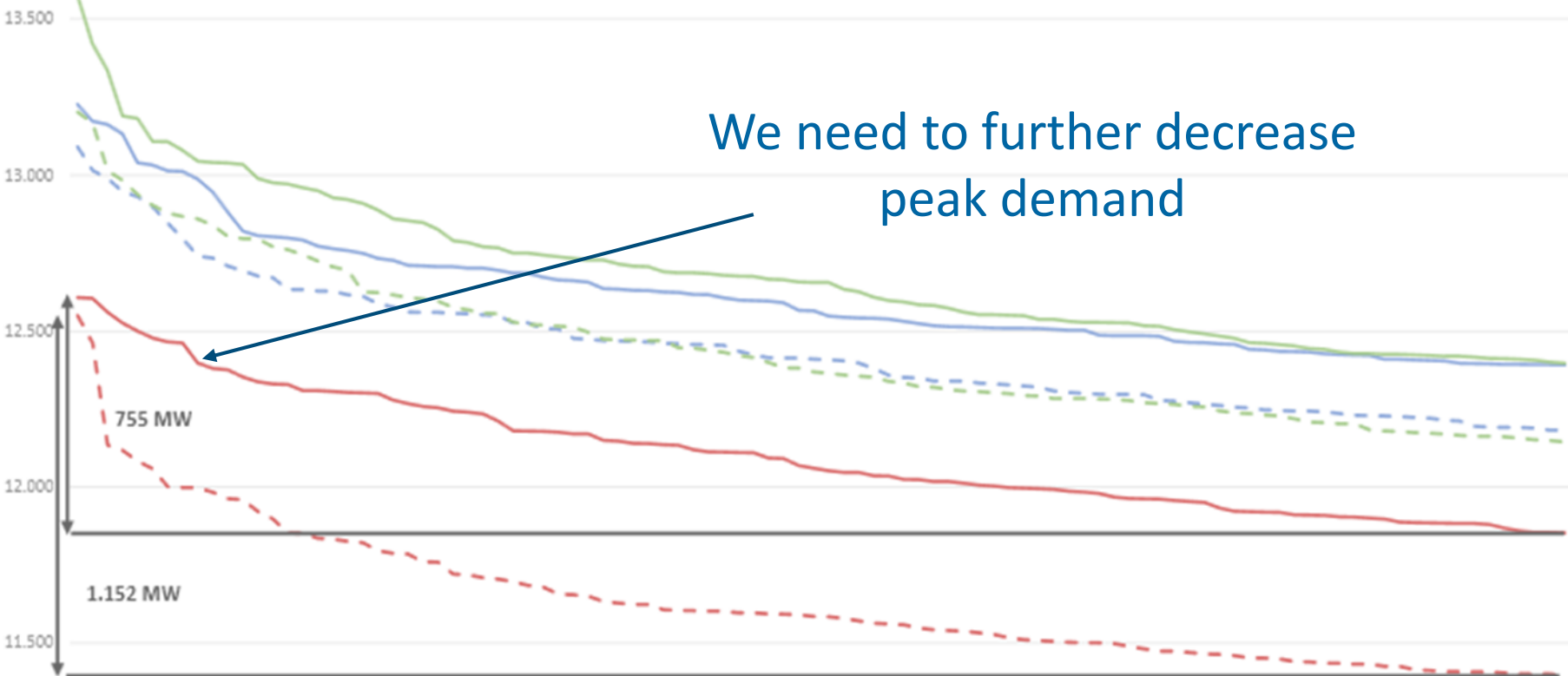


Peak demand Conclusion 1

Wind energy reduces the profitability of peak units but offers new opportunities for demand response



Peak demand Conclusion 2



Energy efficiency

Many industries have made tremendous efforts at the level of energy efficiency. Still, it is worth to invest more in energy efficiency at all levels.

Most of the current and future efforts have to be done at household level.



DSM

Demand Side Management is a win-win solution (where appropriate): it offers profits for both producers and consumers.

Consumers can buy at low prices if the demand (e.g. some parts of production processes) can be shifted to moments where production is high.

Producers can avoid negative prices if the demand is sufficient.



Storage

Storage at household and SME level are becoming more profitable (depending of non-commodity costs).

Switching from power to gas and/or heating systems is for the moment being more efficient.

Interconnection with the Scandinavian (pump)storage capacities (currently applied for 40% or less) supports the high voltage system and helps the security of supply.



Conclusions

We urgently need an energy vision that creates a stable investment climate for producers and consumers and guarantees the competition level of our industry,

Whatever the choices of energy sources are, we will need and use smart combinations of demand side management, storage, energy efficiency and interconnection. The system approach has to be European, with guarantees at national levels,

Inconveniences can become opportunities: win-win situations, prosumers. We are allies, not enemies.

