

EDF-SEI

- BESS use cases :
 - Fast frequency regulation
 - Arbitrage and VRES energy shifting
 - Voltage control
 - Compensation of fast and pronounced RES fluctuations (~intra hour balancing) → [ongoing assessment of needs \(see Annex\)](#)
 - Other considered use cases : Grid Forming, black start, resorption of grid congestions ...
- Future BESS strategy
 - Recommendation of multiservices approach to assess the need of BESS and pumping storage
 - Centralized control of the BESS to select the best use on the right time (depending on the system conditions)

Isolated System	$\frac{P_{BESS}}{P_{peak}}$
Guyane	7%
Martinique	7,5%
Guadeloupe	2%
Réunion	2%
Corse	1%

Decentralized BESS not included

Storage to compensate very large VRES fluctuations

Clean energy for EU islands
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What are we talking about ?

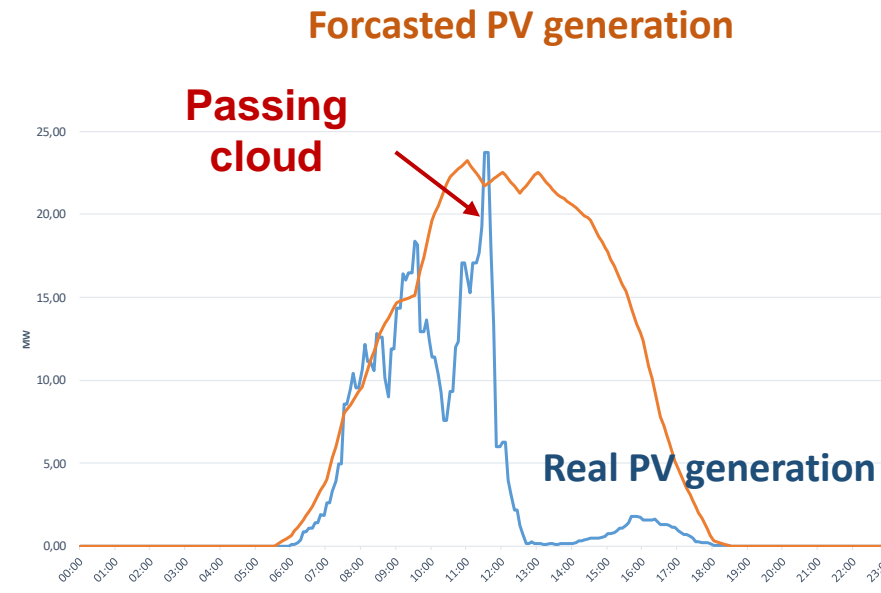
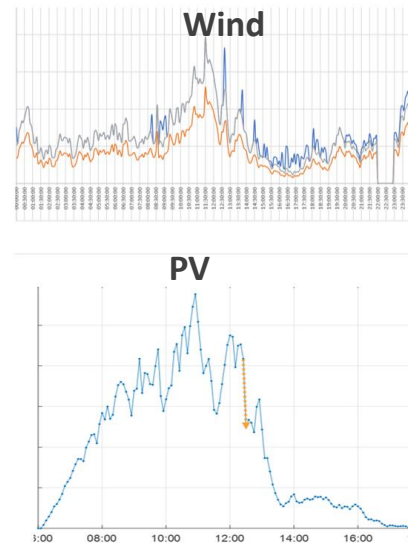


Illustration of PV variability, Martinique, 2022

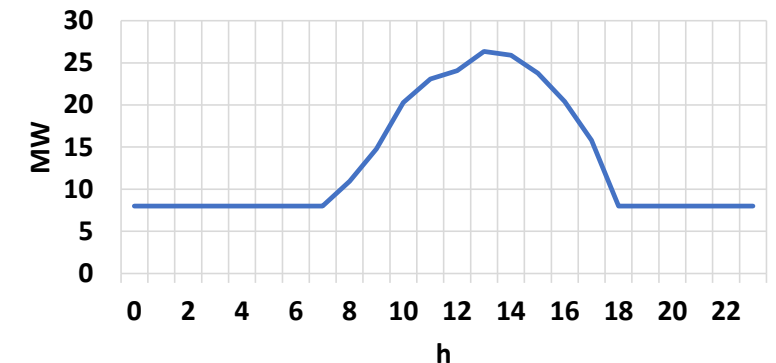
Loss of almost all PV output in ~15 min !

On-going work to dimension a prescription of intra-hour reserve and integrate it in SEI operational tools

Statistical approach to capture both wind and PV variability based on historical values

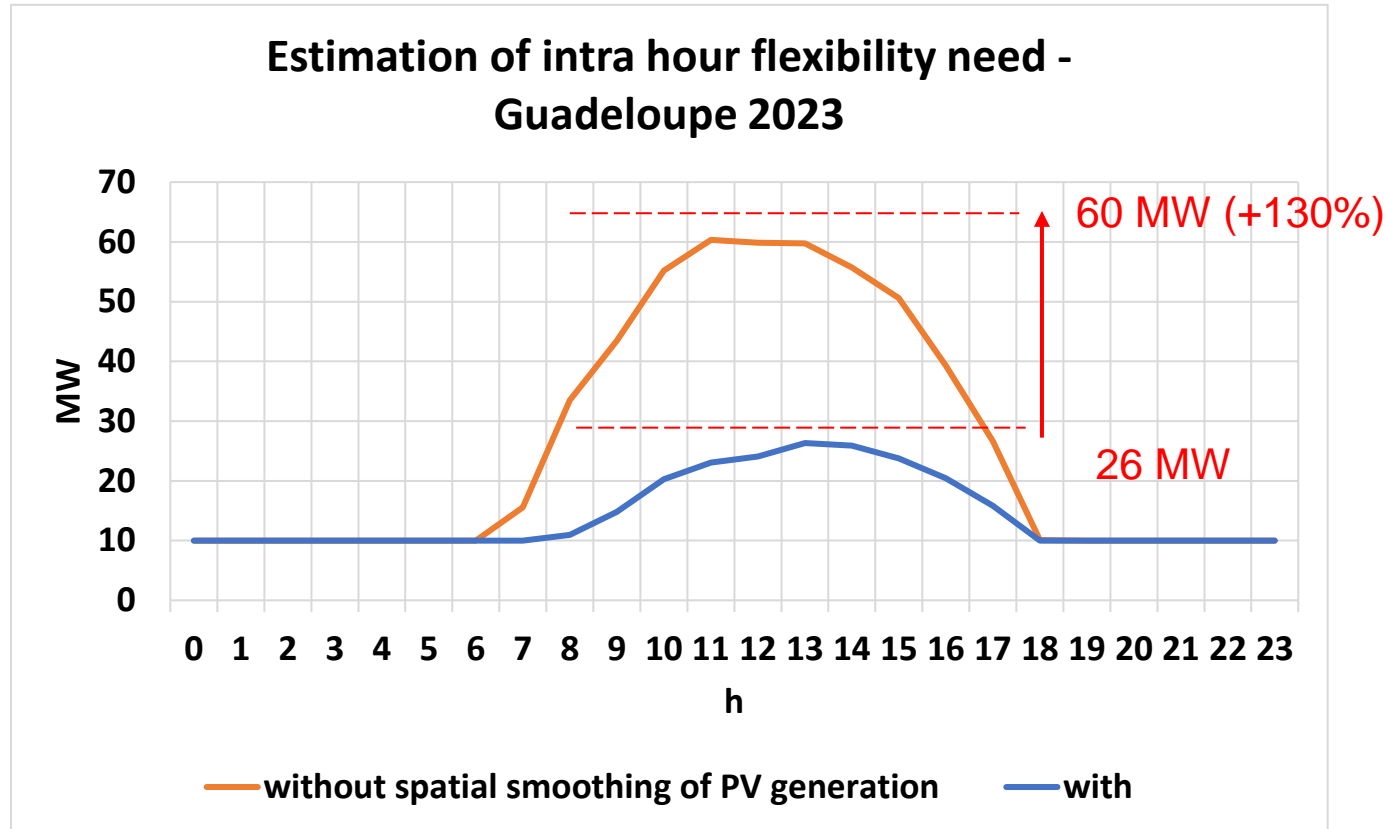


Estimation of intra hour flexibility need - Guadeloupe 2023



This need is currently provided by conventional. In the future, BESS / PSP are likely to be needed.

Illustration of the relevance of spatial PV smoothing to cope with its variability



Orange curve : flexibility need if Guadeloupean PV variability is equivalent to the one of the biggest PV farm

Blue curve : flexibility need if the spatial smoothing effect of all the PV sources is taken into account