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ETIP SNET
EUROPEAN TECHNOLOGY AND INNOVATION PLATFORM
SMART NETWORKS FOR ENERGY TRANSITION

Flexibility at the level of the network and for conventional generation technologies

Short presentation of the project (1)

Name :

- ✓ SoFlex'hy (Solar-Wind-Hydro Virtual power Plant)

Consortium :

- ✓ EDF SA (Ltd Company) – EDF Subsidiaries and spin off and Indepedant PV farm owner

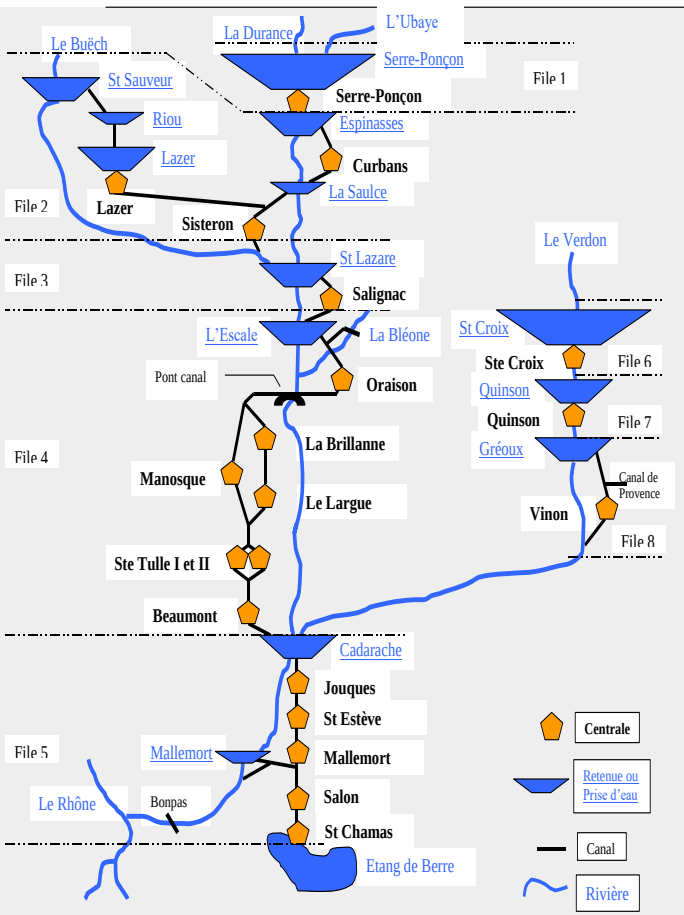
Budget :

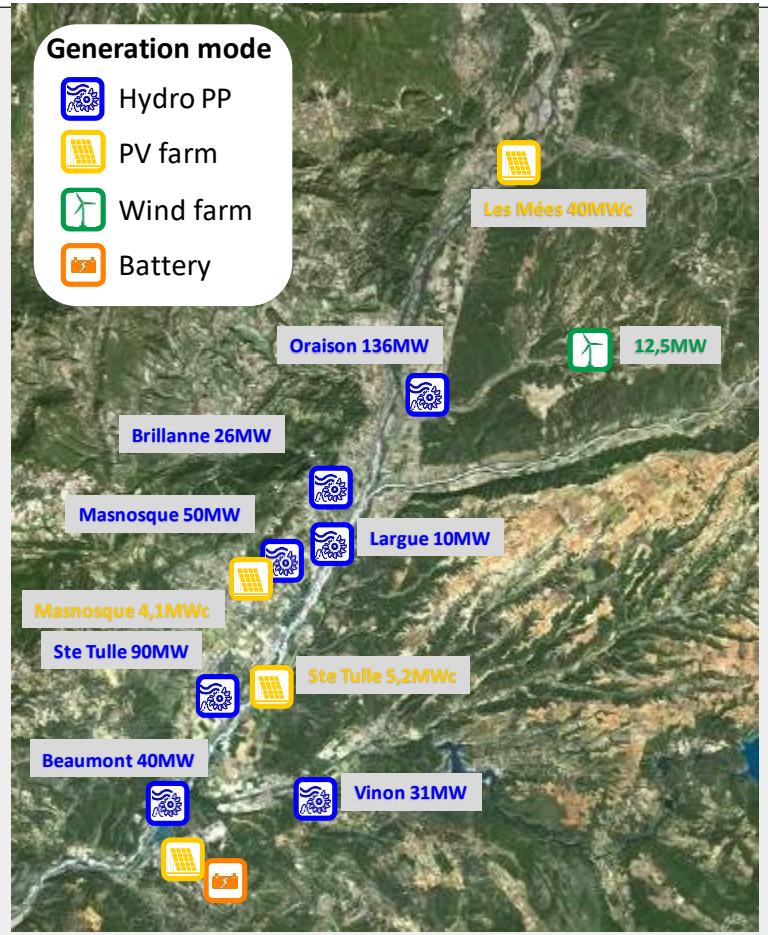
- ✓ Several hundred of thousand of euros

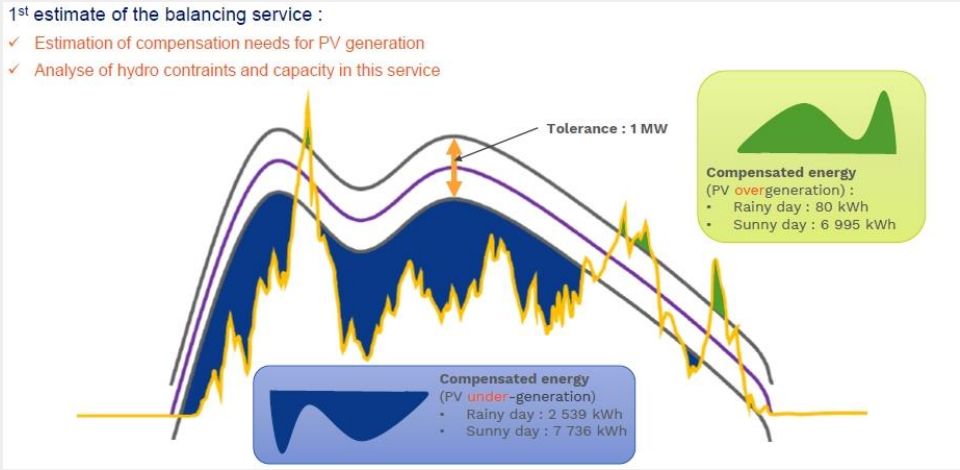
Overarching objectives :

- ✓ Proof of concept of a VPP with existing generation hydro power plants located with renewables in a same network area
- ✓ Renewables scheduling,
- ✓ Energy management System,
- ✓ Secured information system, integration of a new service with very constrained HPP in operation (in charge of irrigation, potable and industrial water delivery, tourism constraints,

Short presentation of the project (2)







250 MW run-off-river hydro - 40 MW PV

Wind Farm soon integrated

First service tested : Balancing

Use of the aFRR reserved band

Key exploitable results addressing energy system integration

Key results from the project :

- ✓ Durance Hydro Power plants are appropriate to compensate real time renewables generation gap with what has been scheduled
- ✓ It is possible to stack a new service without big investment (only new algorithms)
- ✓ Information System worked pretty good and cyber-security (between different companies) is efficient
- ✓ Telecommunications means (between different assets) have to be strengthened and made heterogeneous

Added value of the results

- ✓ Grid stability (local flexibility), balancing,

Quantifiable benefits :

- ✓ French contracted services : Balancing

Potential Final beneficiary of the results :

- ✓ Renewables farm owner (France : balancing and capacity services) and grid System Operators (Potential "network reinforcement time limit extension")

Lessons learned and barriers to innovation deployment

Lessons learned from the project :

- ✓ Be be careful with information system (data qualification, telecommunication network)
- ✓ Methodology to build a VPP (taking into account operation duties)
- ✓ HPP best typology for VPP (seasonal storage, daily or few days storage, PSP)

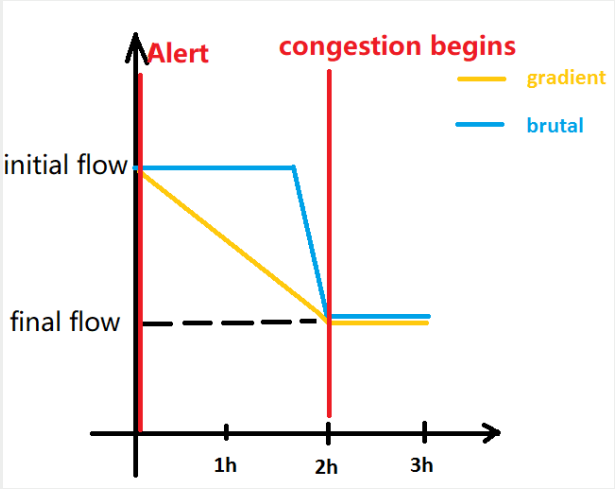
Barriers (regulation, technologies, budget,…)

- ✓ A need of storage and flexibility for renewables' mass integration but no business model associated yet (congestion , storage, ramping, load shifting, ….)
- ✓ High demand and significant waiting time for Network connection but no procedure change yet (queueing instead of optimizing the rate of use of power lines)

Deployment prospects of the most promising solutions

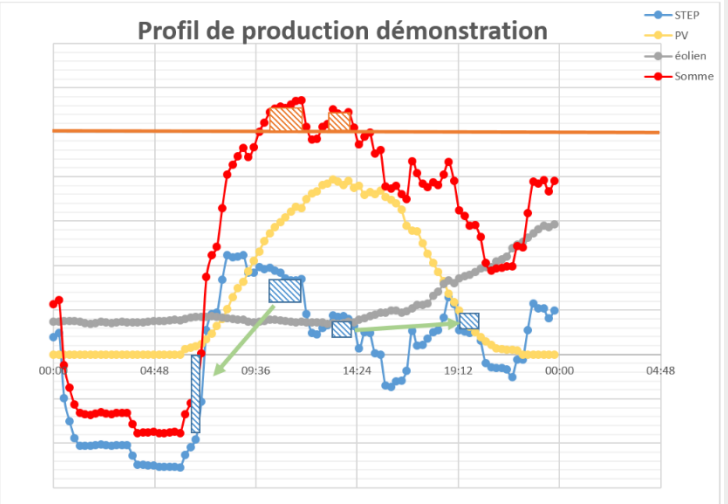
Solution1:

- ✓ Limit line congestion : prevent the power transferred from exceeding limit of the line



Solution2

- ✓ Energy shifting : transfer a certain amount of energy to another period



Replication and scaling :

- ✓ Part of information design and tools of information System as well as hydraulic energy distribution algorithm can be replicated (EDF property)

Needs for future R&I activities coming out of the project (if any !)

Further testing such as: platforms, demos, etc…

- ✓ Congestion business model review
- ✓ Waiting for the response to the European Union's call for projects on hydraulic PPVs (Service design, Business Models proposals)

An emphasis on interoperability is welcome

- ✓ Design limit of HPP can be compensate with other means of energy and storage

Use/need of an inter-regional cooperation?

- ✓ Knowledge sharing on local flexibility