



CLEANHORIZON

Detect, analyze, monetize

Financing hydrogen: focus on an additional value stream

Michael Salomon
Clean Horizon Consulting

IPHE – Sevilla - November 16th 2012



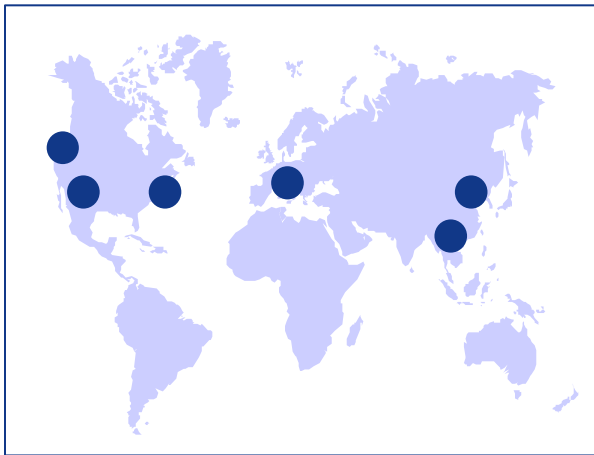
Financing hydrogen... through a favorable regulation

- Hydrogen: multiple revenue streams
- **First, use the hydrogen molecule!**
- Then, find additional revenue...
- What about grid support through fast responding systems?

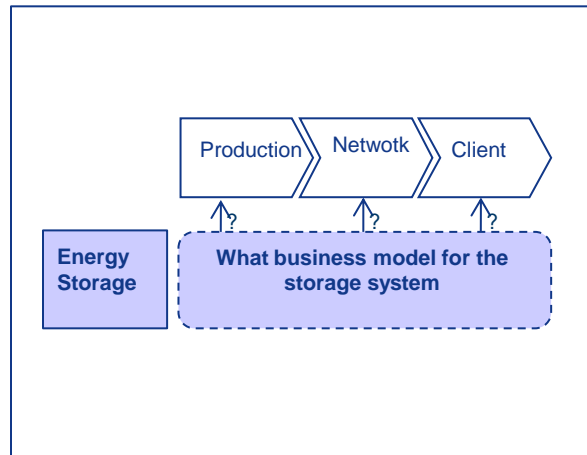
**Regulatory change:
providing incentives...without spending money?**

Our approach to energy storage

1 Detect

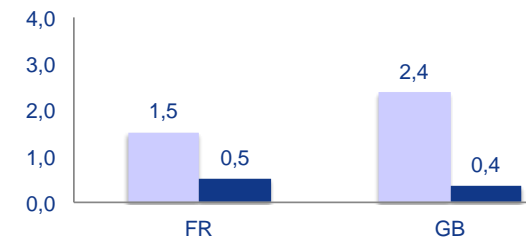


2 Analyze



3 Monetize

Revenue and Gross margin: European benchmark
M€/year



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Our UPDATE FROM THE FIELD report (2nd Edition) is available

Update from the Field 2nd Edition

**STATIONARY ELECTRICITY STORAGE:
AN EMERGING BUSINESS
IN THE USA AND IN EUROPE**
FOCUS ON REGULATIONS
AND BUSINESS MODELS

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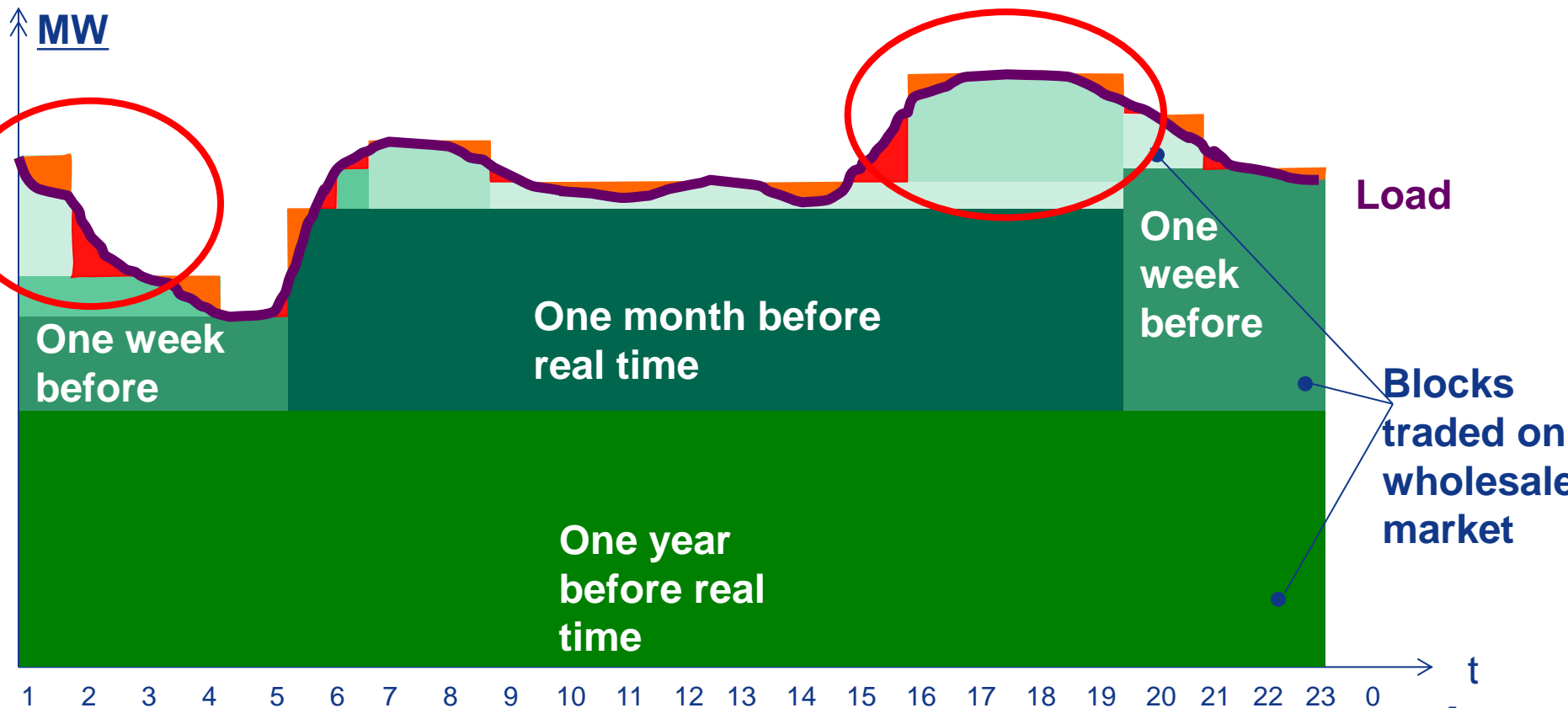


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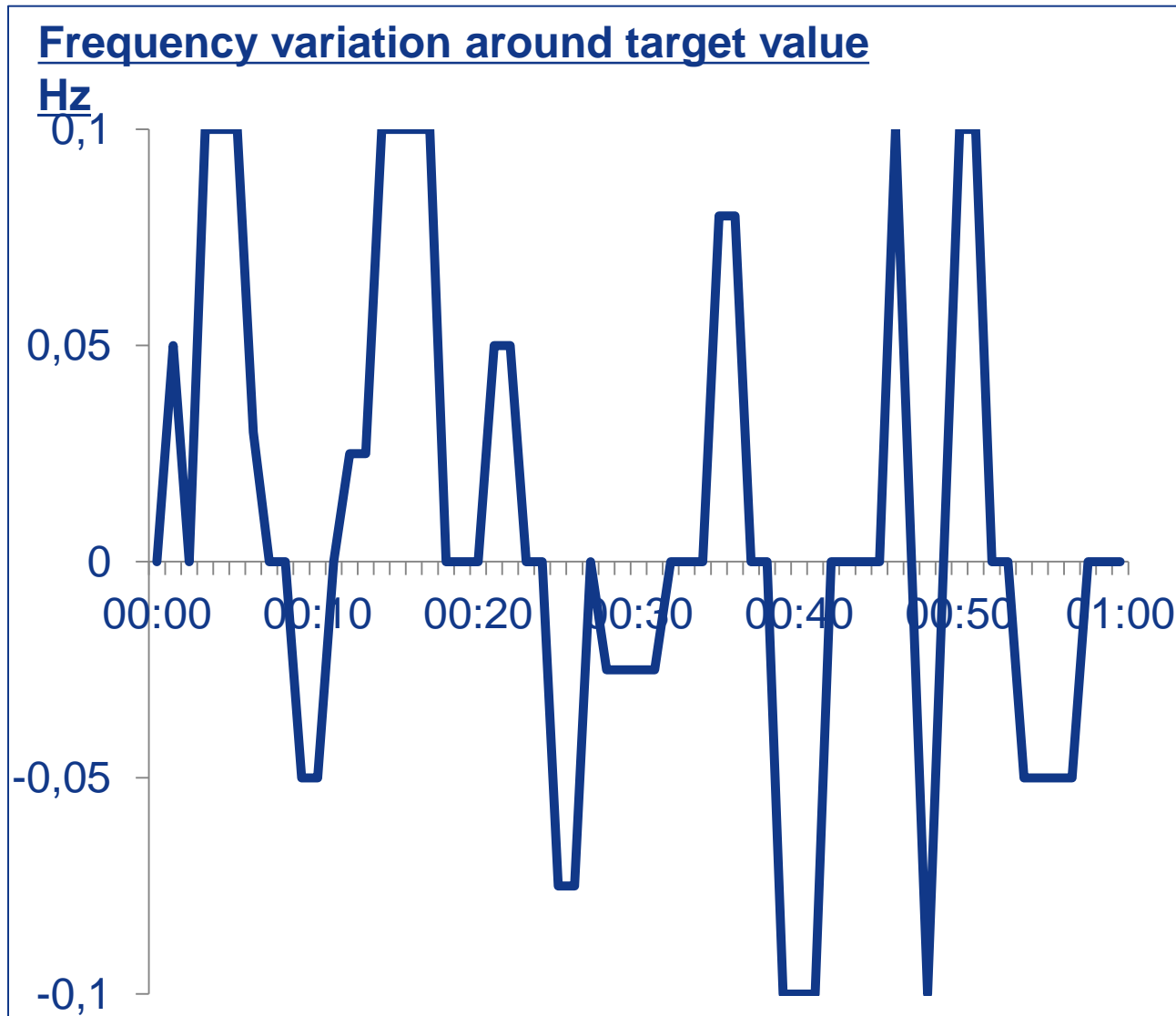
Balancing energy and ancillary services

- Upward energy: energy *injected* on the grid
- Downward energy: energy *withdrawn* from the grid

Load profile and generation blocks: example

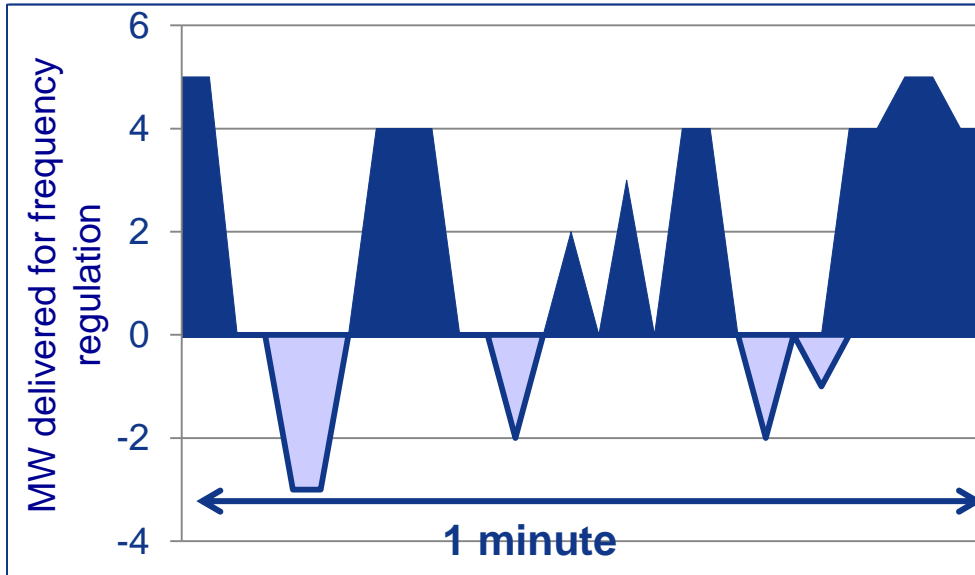


Typical frequency variation on the electric grid

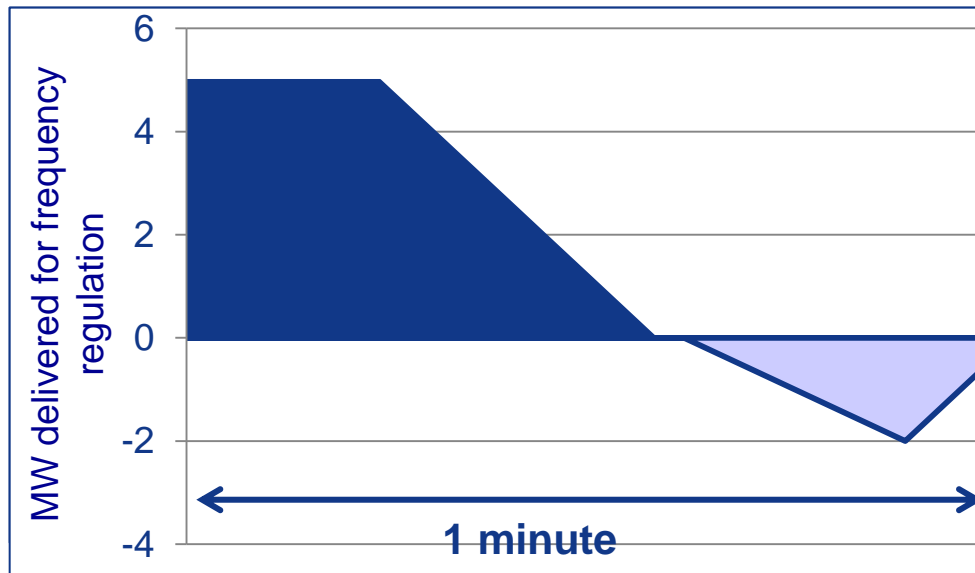


Which one of these two assets brings the best frequency regulation to the grid?

Power delivered by FAST asset



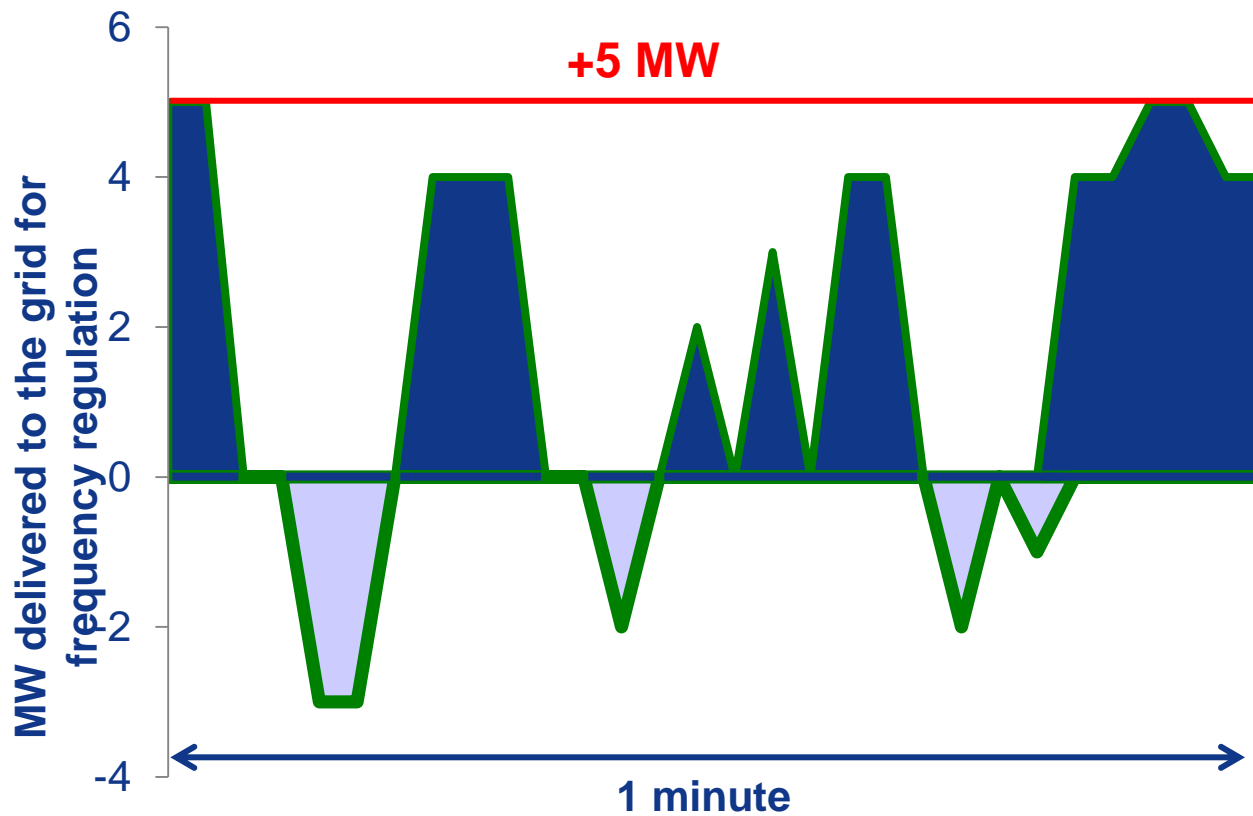
Power delivered by REGULAR asset



Who is the most helpful ?

A « mileage » payment is being set up in the United States – beginning in October 2012 with PJM

The mileage concept



The « mileage » payment allows a monetization of flexibility

Regulation and investment

- New philosophy: from *indemnification* to *compensation*
- More appropriate regulatory scheme can open niches for fast storage assets... A good start ?
- Reserve, mileage...short-term, uncertain revenues ! Niche market !
Subject to regulatory change ! → **Unsafe for an investor**

Thank you for your attention!

michael.salomon@cleanhorizon.com

www.cleanhorizon.com

+33 1 78 76 57 03