

Asia Clean Energy Forum (ACEF) 2022



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FLUENCE

Battery-based Energy Storage System (BESS): Grid Flexibility Asset of Today

Unmatched Global experience and focus to Grid scale storage



 **15+**
YEARS

 **150+**
PROJECTS

 **30**
COUNTRIES
AND TERRITORIES

 **3,600+**
TOTAL MW
CONTRACTED

 **7,600+**
GW-HOURS OF DELIVERED
SERVICE GLOBALLY



The Battery Storage industry has come a long way.....

2008

1st lithium-ion battery to connect to the electric grid
INDIANA, US



2009

1st commercial grid-scale battery
CHILE



2014

Contracted first 100 MW/400 MWh energy storage peaker
ALAMITOS, CA, US



2015

First grid-scale battery project in Finland
HELSINKI, FINLAND



2017

Build largest energy storage project in the world, for the 5th time
ESCONDIDO, CA, US



2018

Bringing market participants across grid value chain together to max asset value
VIC, AUSTRALIA



2019

Largest portfolio contracted in the region with 500+MW from 20+ projects
SOUTHEAST ASIA



2020

Delivered fastest response time for grid-scale battery – within 150 ms
IRELAND



2022

Building the largest privately funded grid-connected BESS.
AUSTRALIA



Industry Firsts

From 2008-2022, the Fluence team designed and delivered the first battery-based energy storage systems in 18 markets



Typical 8 primary battery energy storage applications

TRANSFORM YOUR NETWORK

T&D Enhancement

TRANSFORM YOUR GENERATION

Frequency Regulation (FR)

Capacity Peak Power

Generation Enhancement

Renewable Integration

Microgrids & Islands

TRANSFORM YOUR ENERGY USE

Critical Power

Energy Cost Control



How can BESS support FR in Asia?

We don't
have a A/S
market



Our
Frequency
is okay



What will
happen to Freq
deviations with
more RE?



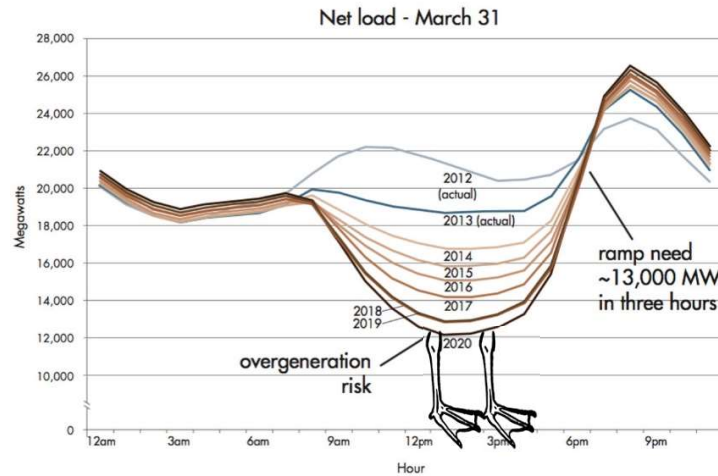
How are you currently
supporting FR?
What's the cost to do
that? Can we reduce
that expense? Do a
system wide review.



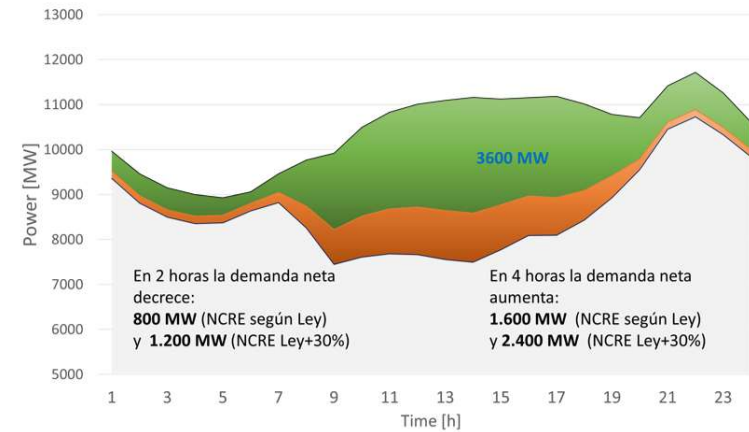
Need is becoming clearer

Ducks, kangaroos, condors, and elephants – strong peaking capacity needs showing up globally; Will Taiwan, Thailand and Vietnam be next?

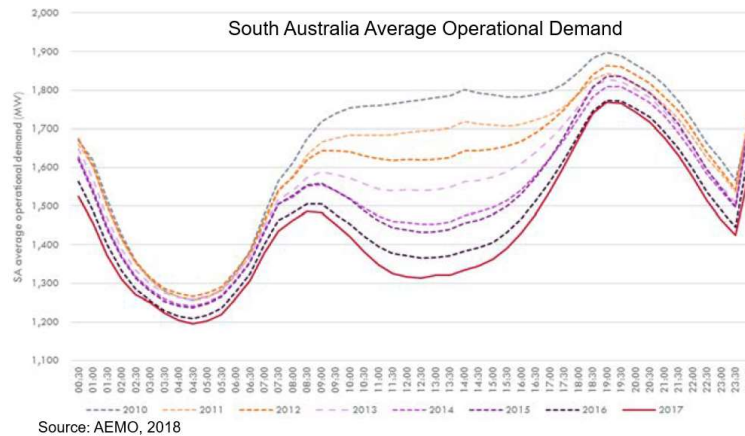
California



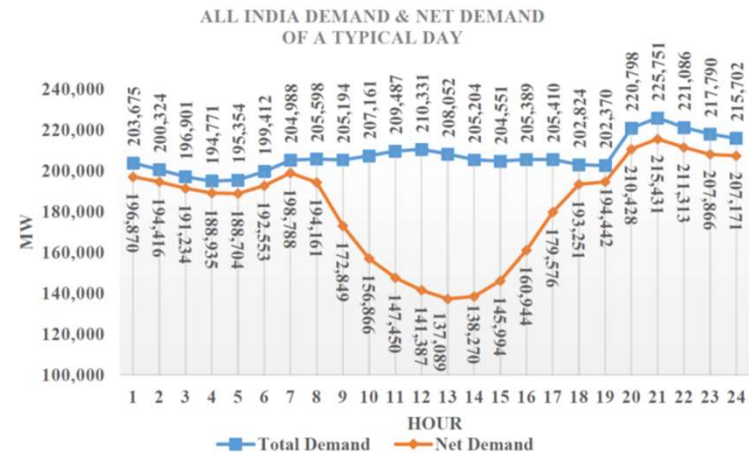
Chile



Australia

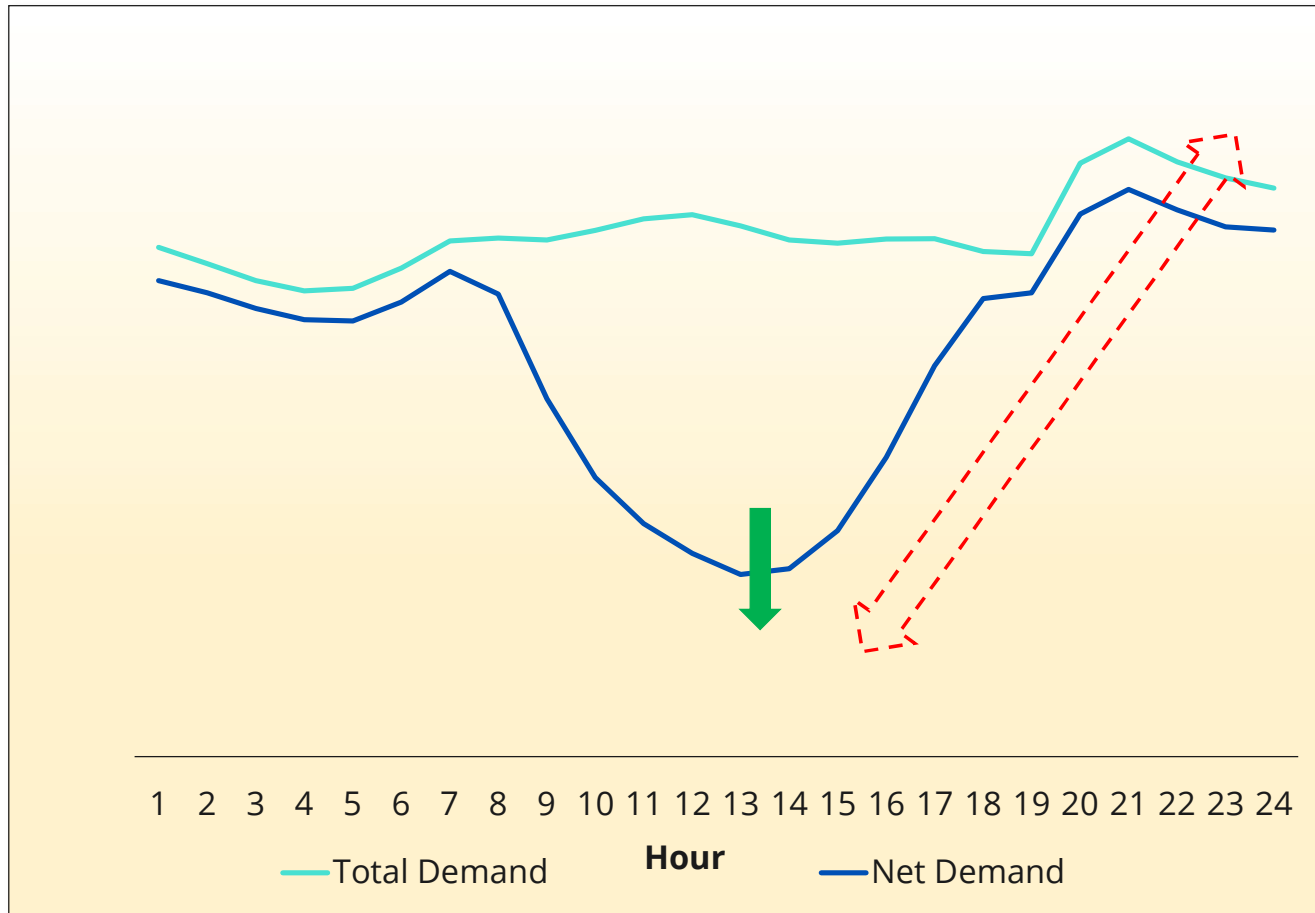


India



Need is becoming clearer

We would be painting a grim picture if we don't move fast!



- ⚡ RE deployment will not be supported by adequate grid support/flexibility
- ⚡ Overall system cost increase
 - ⚡ Need for flexibility and transmission will push procurement of high capex assets that will be under-utilized in the future;
- ⚡ Curtailment



Three characteristics used to justify peaking capacity:

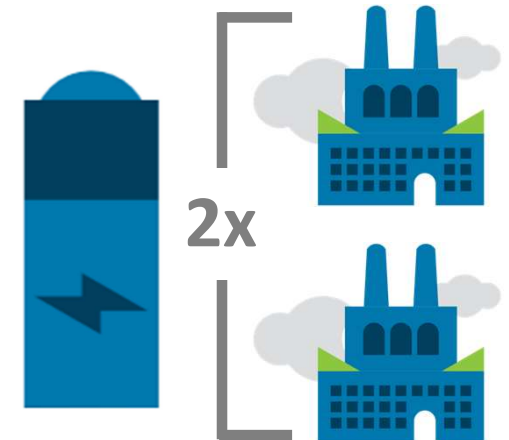
Availability



Reliability



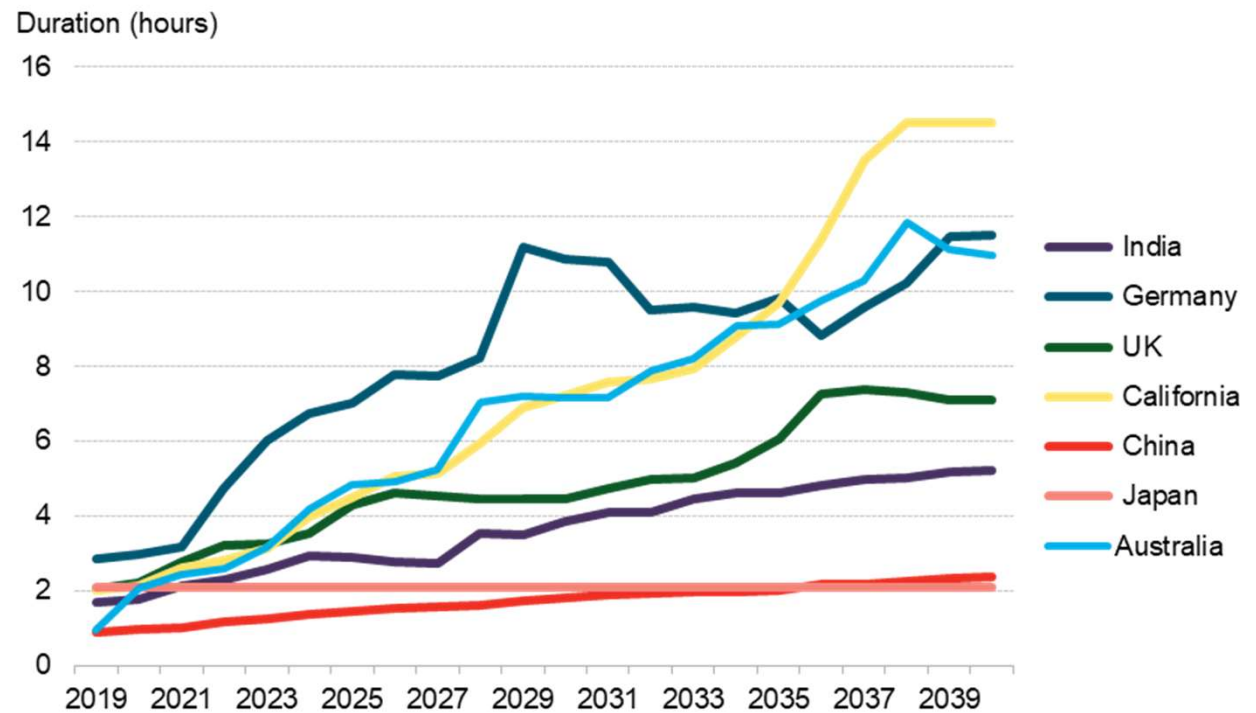
Flexibility



Need is becoming clearer

Bloomberg New Energy Finance has found deep needs for 6-hour duration across the globe; similar discussions have shown needs in other parts of ASIA

Country	GWs of <= 6 hour duration
China	119+
India	40+
UK	19
Australia	6
Japan	4+
Germany	4



BESS adoption for Flexibility?

We have
enough Gas
or can build
more
capacity



Our Coal
plants can
ramp easily
and if
needed we
can curtail



Why create
system
inefficiencies –
run a study with
right inputs to see
how you can
lower the overall
cost

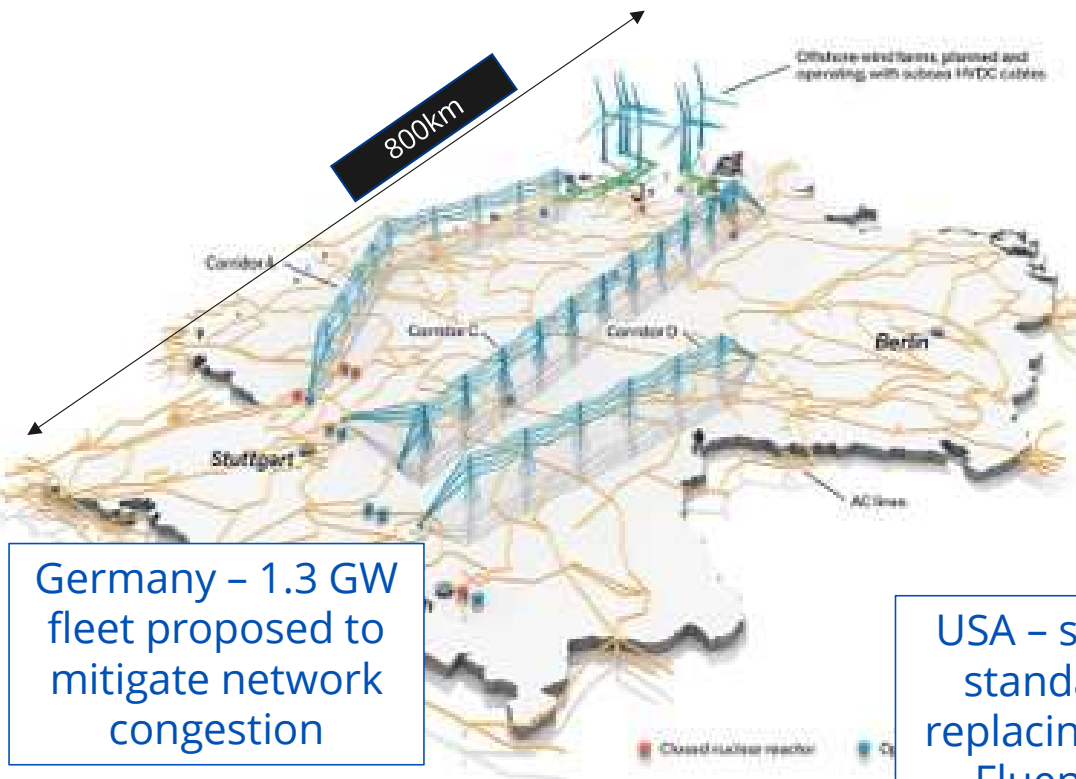


Building Gas with
LNG facilities can
be costly, maybe
optimize the
procurement ?



Industrialized nations proving concepts on business cases & technology

Fleet-scale procurements occurring in USA, Germany, UK/Ireland, China



Germany – 1.3 GW fleet proposed to mitigate network congestion



USA – solar+storage & standalone storage replacing gas peakers – Fluence delivering ~1 GW in California



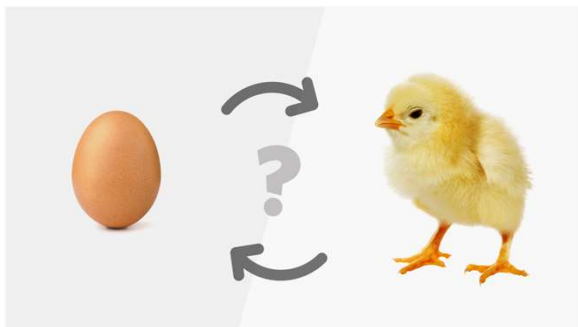
UK – fleets for flexibility (AS + capacity)



Energy storage technology is ready today

ASIA deployments waiting on market signals and not technical maturity

Developers/IPP's looking for surety to bring storage projects to ASIA nations



Regulators/policy makers looking for a replacement of thermal assets (same cost of coal/baseload)

Central utilities signal support, level playing field to encourage projects

- Show acceptance of battery energy storage: incorporate battery storage into planning processes
- Signal need to market: set a target, establish idea of revenue streams for ancillary services, capacity, etc, for particular jobs (hours, reserves, etc).

The private sector will deliver and must continue to make innovative proposals





FLUENCE

A Siemens and AES Company

THANK YOU!

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