Como diseñar y construir solar con almacenamiento en LATAM

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FLUENCE
A Siemens and AES Company

El uso de solar con almacenamiento se puede dividir en tres aplicaciones

Cumplimiento con códigos de red y estabilidad de planta

Aplicación
- Control de rampa y regulación de frecuencia en redes que requieren un apoyo para manejar la intermitencia

Mercados
- Redes aisladas
- Puerto Rico, Mexico, El Salvador

Incrementar energía solar dentro de la interconexión

Aplicación
- Incrementar capacidad DC sin incrementar potencia de interconexión

Mercados
- Limitación de potencia de interconexión con costos altos de generación
- Brasil, Puerto Rico, Mexico, Caribe

Acceso a ingresos adicionales a la venta de energía

Aplicación
- Añadir servicios a la planta, como capacidad y servicios conexos

Mercados
- Sofisticados con servicios además de energía
- Chile

Solar + storage can help solar developers comply with local grid interconnection requirements

CASE STUDY 1:

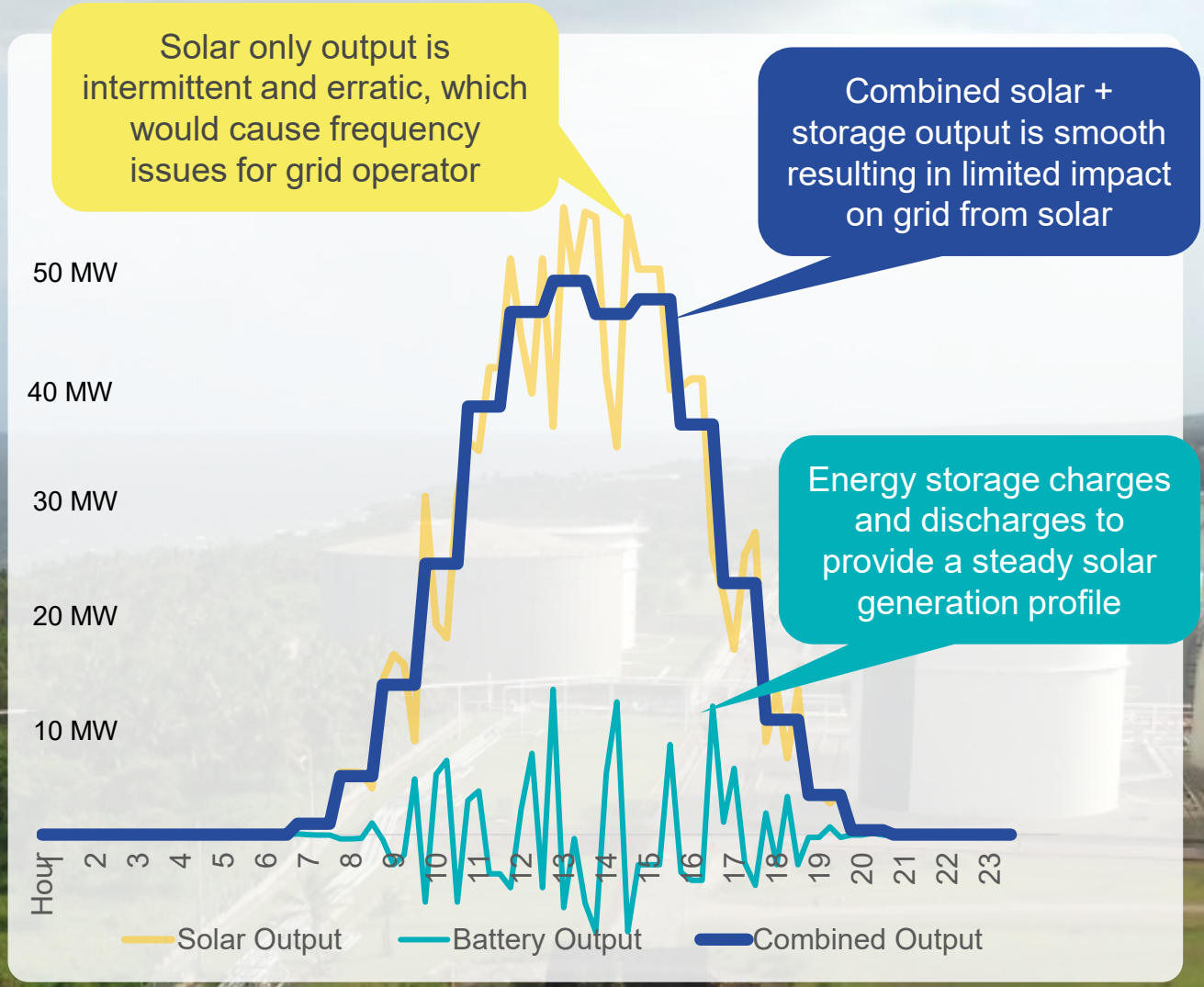
Renewable Plant Stability

CHALLENGE:

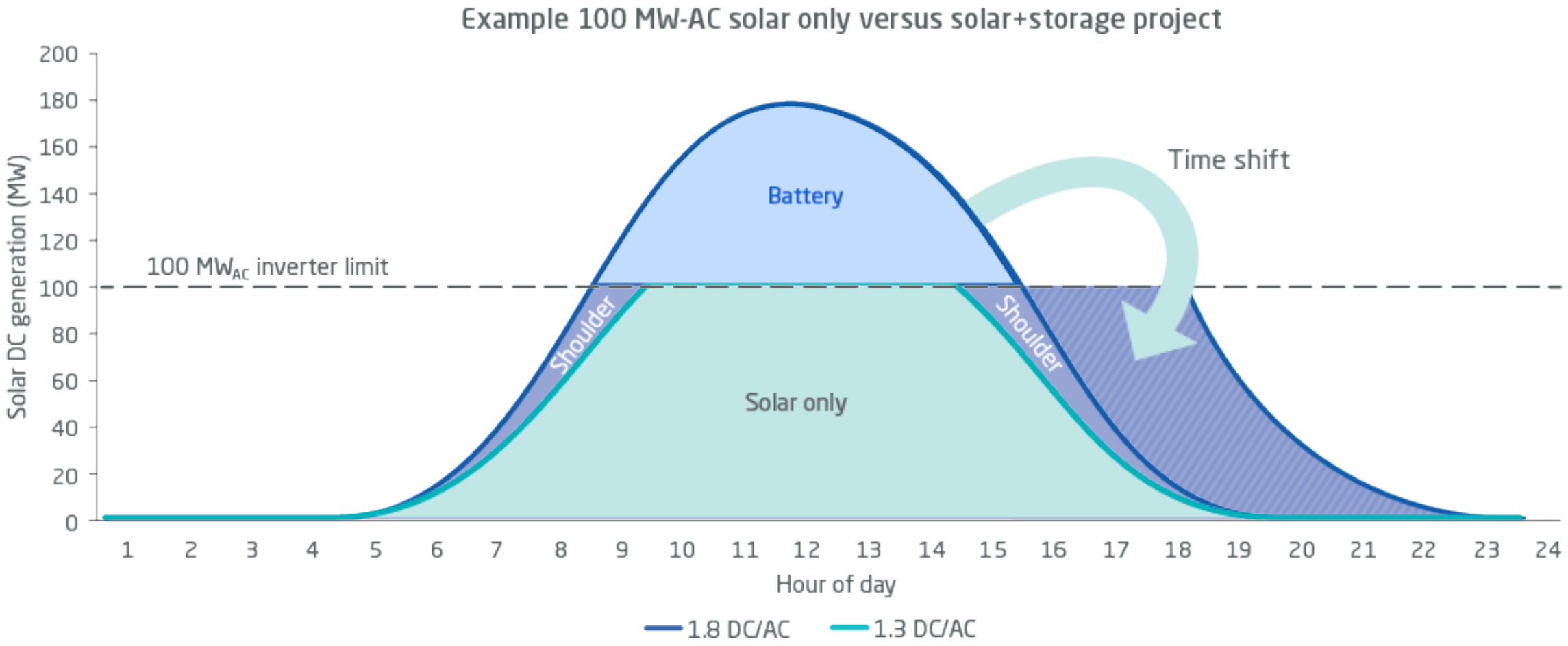
A Caribbean island utility is experiencing increasing levels of renewable energy penetration and will not approve new solar PV park interconnections unless solar plants have ramping controls.

SOLUTION:

A 15 MW 30 minute energy storage system to smooth the solar generation of the plant so that it complies with utility's interconnection process.



Maximizing Solar with DC-Coupled Energy Storage



Solar + storage can reduce electricity costs for grids with expensive generation

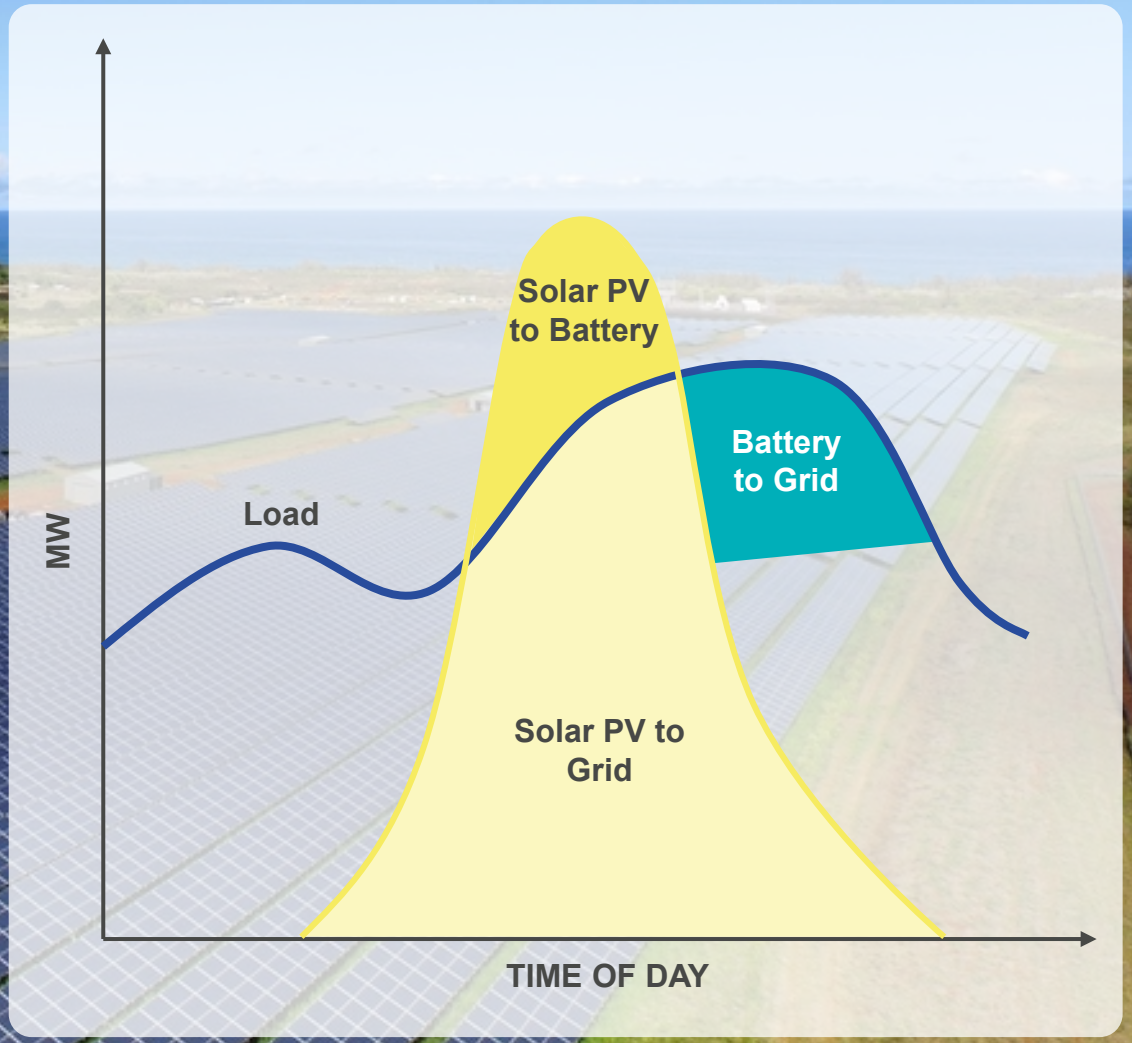
CASE STUDY 2:

Renewable firm energy

BACKGROUND:
The island of Kauai in Hawaii has a population of 66,000 and a 80 MW peak demand.

PROBLEM:
The average household pays about 33 cents per kWh, or $330/MWh, and the utility often uses expensive fossil fuel generators to cover peak load

SOLUTION:
A 28 MW solar + 20 MW, 5 hour (100 MWh) energy storage solution provides power during the peak demand from 5 pm to 10 pm each day. The PPA is $110/MWh, which is significantly less than the cost of oil-fired power and should help stabilize and even reduce electric rates to ratepayers.



Virtual Dam

AES Gener

Run-of-the-River Hydro Plant Alfalfal

Cajon del Maipo, Chile

10 MW / 50 MWh

Services:

- Peaking Capacity
- Frequency Regulation
- Renewables Integration

Impact:

- Mimics the water reservoir that the plant does not have
- Minimal environmental impact
- Provides firm power to the grid

Storage can help renewable energy projects earn additional revenue streams from ancillary services

98 MW Laurel Mountain Wind Farm with 64 MW Storage Resource West Virginia, USA (operational since 2011)

CASE STUDY 3:

Grid Services

BACKGROUND:
IPP was operating a wind farm in a wholesale market in the United States.

PROBLEM:
Because of intermittency of wind, IPP was limited in its ability to monetize wind farm in ancillary services market.

SOLUTION:
Using existing land and interconnection, IPP attached an energy storage system to allow wind farm to provide frequency regulation with greater than 95% availability, adding an important revenue stream to the plant.

Solar + storage system configuration depends on use case

DC-coupled system is the optimal system configuration for providing firm renewable energy for long blocks of time