IRENA INNOVATION WEEK 2025

Digitalisation for the energy transition:

Case Studies

Organised in partnership with

METI
Ministry of Economy, Trade and Industry

12 June 2025 | 15:30-17:00

#IIW2025

IRENA INNOVATION WEEK 2025

Opening remarks

Yoshiomi Yoshino

Director
Ministry of Economy, Trade and Industry (METI)
Japan

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IRENA INNOVATION WEEK 2025

Moderator

Yasuhiro Sakuma

Program Officer Technology and Innovation
IRENA

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Agenda: Show-casing digital solutions for energy transition

Session 1: Digitalisation for Optimising System Operation with High Share of Renewables

Session 2: Digitalisation for Demand Side Management and Renewables Integration

Join at slido.com
#1053254

IRENA INNOVATION WEEK 2025

Session 1:

Digitalisation for Optimising System Operation with High Share of Renewables

Fernando Llaver
SPLIGHT

Rafael San Juan
Iberdrola

Kosuke Yamamoto
NEDO

#IIW2025

IRENA INNOVATION WEEK 2025

Presentation

Fernando Llaver

CEO
SPLIGHT

#IIW2025

SPLIGHT

IRENA
International Renewable Energy Agency

Fernando Llaver

CEO, Co-Founder

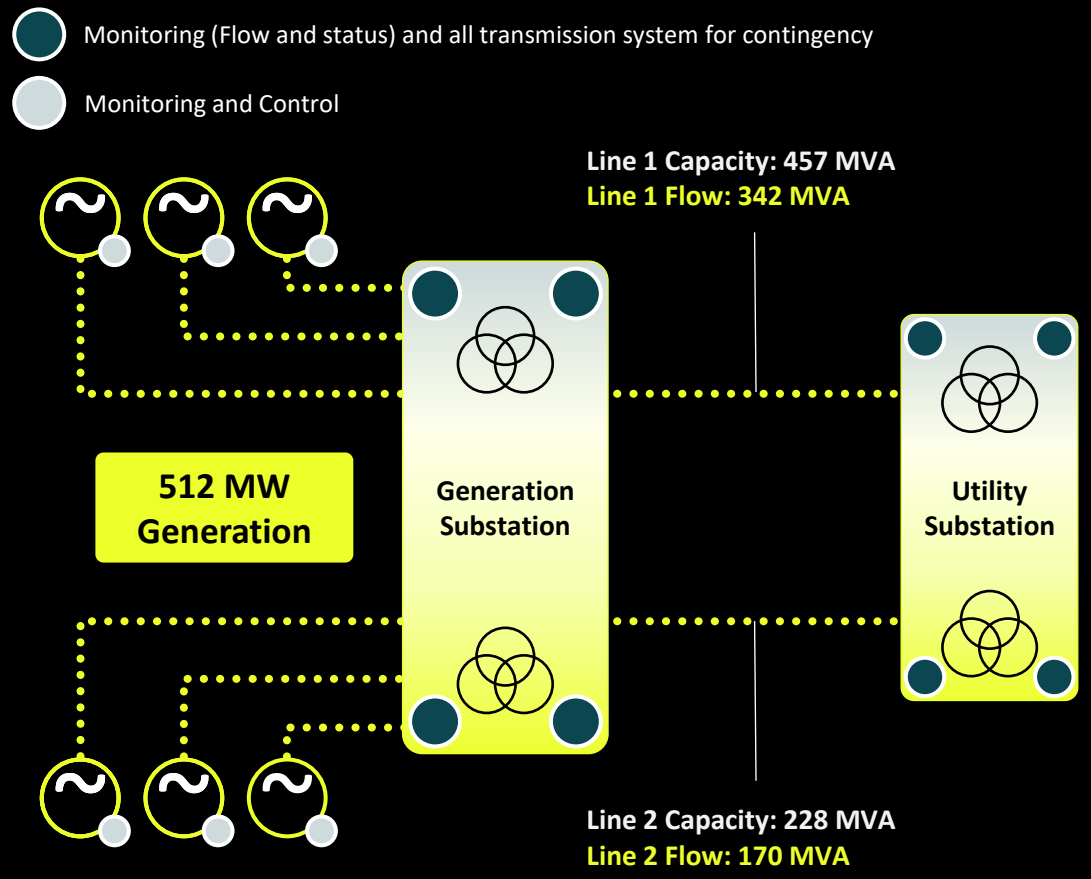
SCALABLE GRID TECHNOLOGY

SPLIGHT

SPLIGHT CONNECTS DIRECTLY WITH FAST-RESPONDING:

- **CLEAN ENERGY RESOURCES LIKE SOLAR, WIND & STORAGE**
- **LARGE LOADS LIKE DATA CENTERS**

TO TURN THEM INTO **SOURCES OF RELIABILITY** TO **DOUBLE THE TRANSMISSION CAPACITY** THAT RENEWABLES AND LARGE LOADS CAN UTILIZE



SPLIGHT

Problem

Splight's Solution

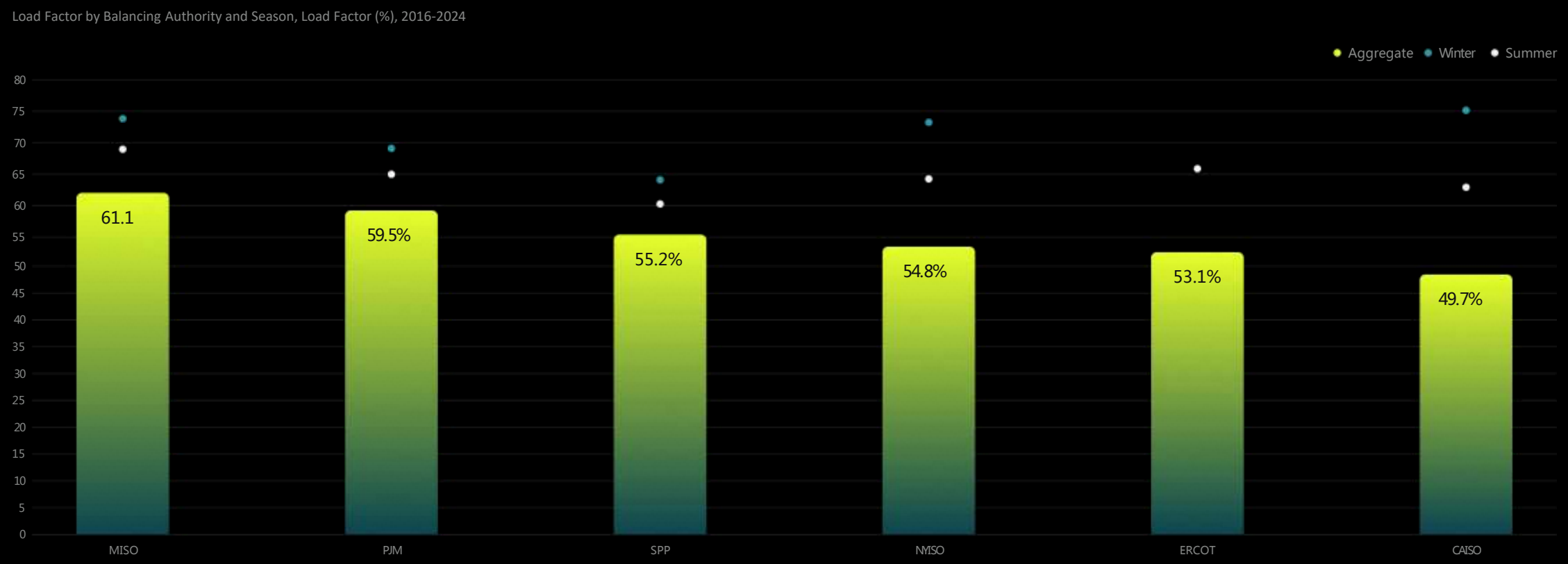
Commercial Experience

Process

Problem

CAUSE OF THE PROBLEM

System Utilization in major US system operators



Problem

Renewable Generators & Large Loads Are Constrained

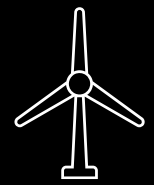
Generation

- Renewable energy is being curtailed
- New generation sits in years-long interconnection queues
- Existing projects are not providing expected financial returns

Load

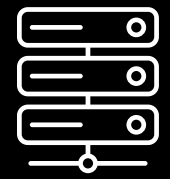
- Interconnection requests are being rejected
- Expanding data center sites is becoming impossible
- Millions of dollars are lost due to transmission shortages

Building new transmission lines in time is impossible



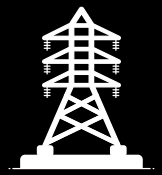
Renewables are being curtailed

Large Loads can't interconnect



Interconnect requests are delayed or rejected

Why it Happens



Limited by physical infrastructure that has very long build cycle

Limited by operating constructs and planning criteria

SPLIGHT

Problem

Splight's Solution

Commercial Experience

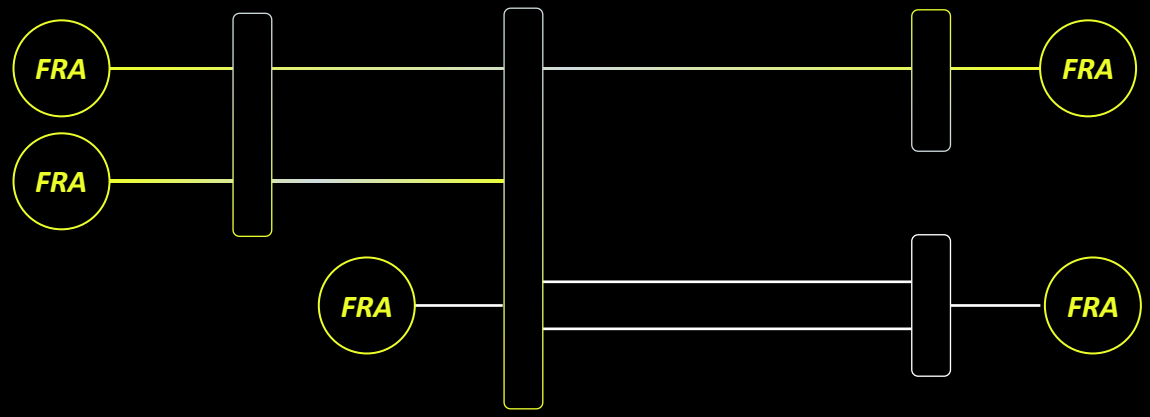
Process

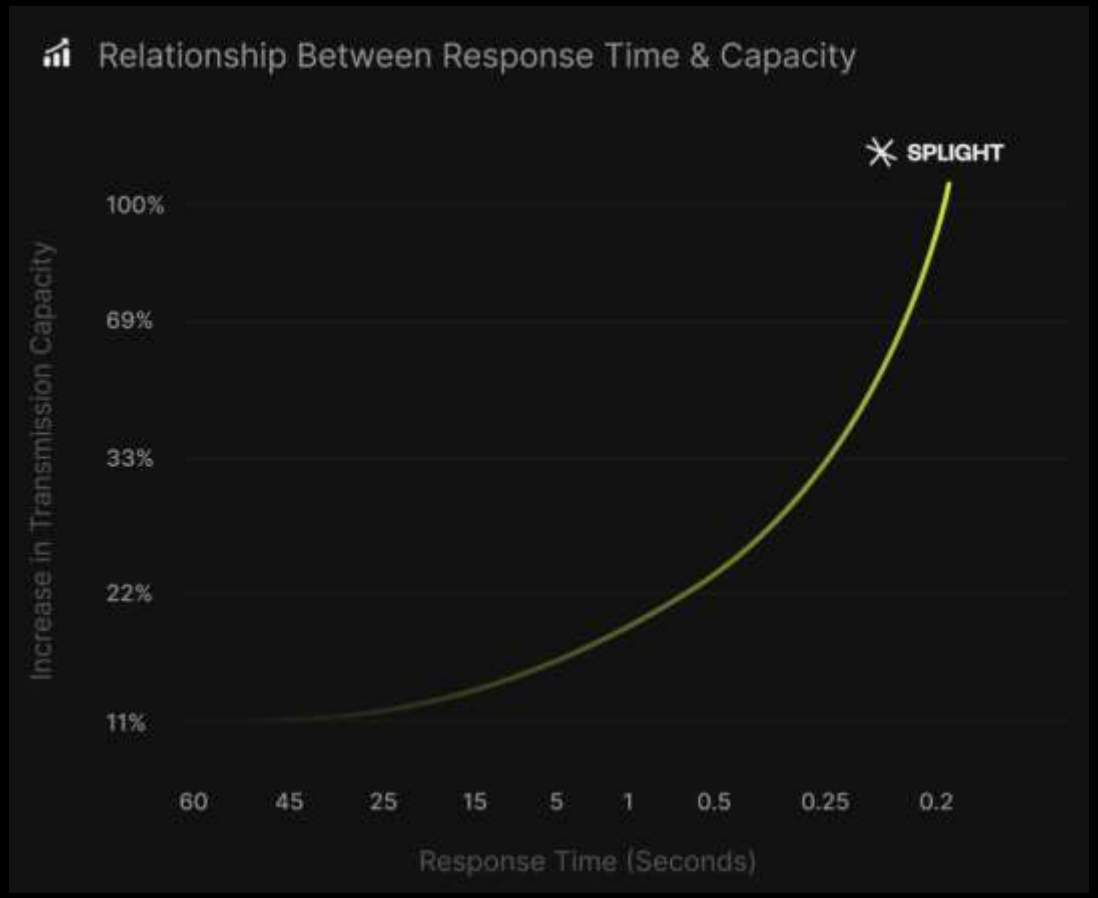
Splight's Solution

A New Tool to Increase Grid Reliability

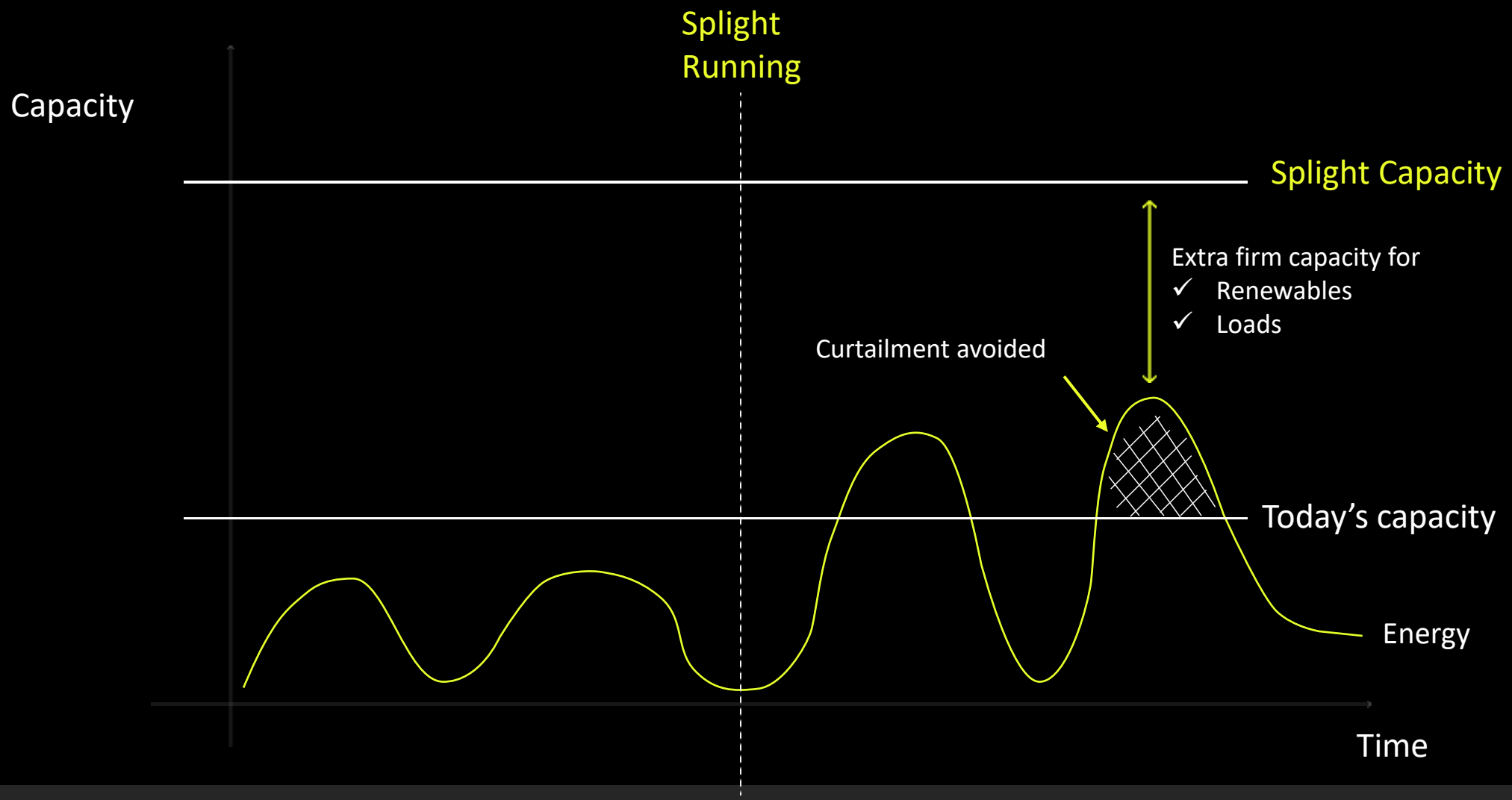
By regulating or disconnecting Fast Responding Assets (FRA) in milliseconds when required by a grid event, Splight's new digital safety layer allows utilization of up to 100% of the grid's physical capacity (2X more than current utilization) while also increasing reliability

Fast Responding Assets (FRA) = Renewable Generators, Batteries, Data Centers





Splight's Solution



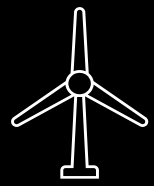
Splight's Solution

Renewables

- ✓ Renewable Generation will see significantly less curtailment and price suppression
- ✓ Profitability will increase and bring on new investments
- ✓ Utilities can still plan and build upgrades to meet future needs

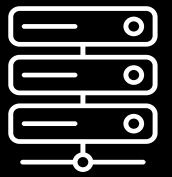
Large Loads

- ✓ Turning Large Loads into grid assets will allow them to expand current sites and speed up getting new projects energized
- ✓ Profitability will increase and bring on new investments
- ✓ Utilities can still plan and build upgrades to meet future needs



Renewables
Are being curtailed

Site expansions are being delayed or rejected



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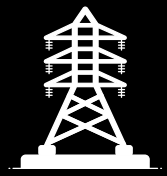


Limited by physical infrastructure that has very long build cycle

Limited by operating constructs and planning criteria

SPLIGHT SOLUTION

Replaces physical redundancy

Super-fast computing and real-time controls

SPLIGHT

Problem
Splight's Solution
Commercial Experience
Process

Commercial Experience

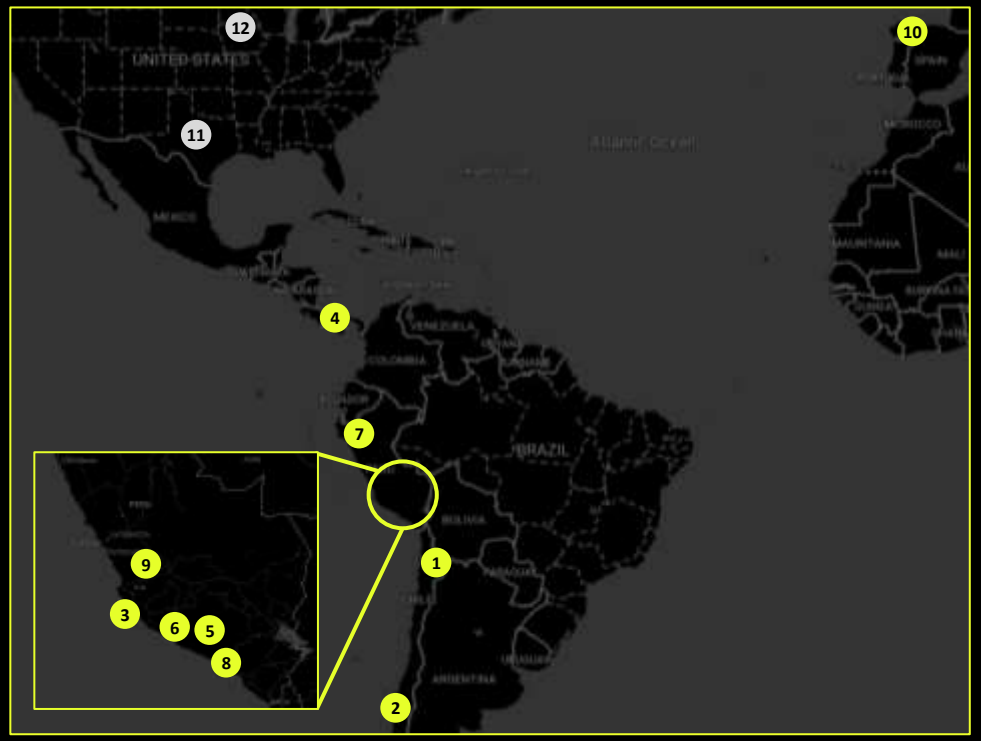
30+ Customers

6 GWs on our DCM technology

1,300+ miles of transmission

Including

edp · ENGIE · enel · CPS ENERGY · LS POWER GRID · red eléctrica · acciona · aes · Naturgy · amazon · ABENGOA · Atlantica Sustainable Infrastructure



SPLIGHT

Problem
Splight's Solution
Commercial Experience
Process

Process - DCM

Pre-Operation Step Through Operations

1. Pre-Operational Studies

- ✓ Solution Screening
- ✓ Basic Electrical Studies
- ✓ Quantification of Benefits
- ✓ Indicative Solution Design
- ✓ Product Roadmap
- ✓ Total Cost

2. Operational Studies

- ✓ Advanced Electrical Studies
- ✓ Full Solution Engineering & Design
- ✓ Detailed Philosophy of Solution (Monitoring & Controls)
- ✓ Detailed Project Roadmap

3. Implementation

- ✓ Solution Controls Integration
- ✓ Solution Communications Integration
- ✓ Software-in-the-loop testing
- ✓ Hardware-in-the-loop testing
- ✓ Assistance with Regulatory Filings and Compliance as Needed

4. Operations

- ✓ Ongoing Monitoring, Testing, and Control
- ✓ Assistance with Compliance as Needed

Solution Segmentation

A Solution for Every Grid Participant

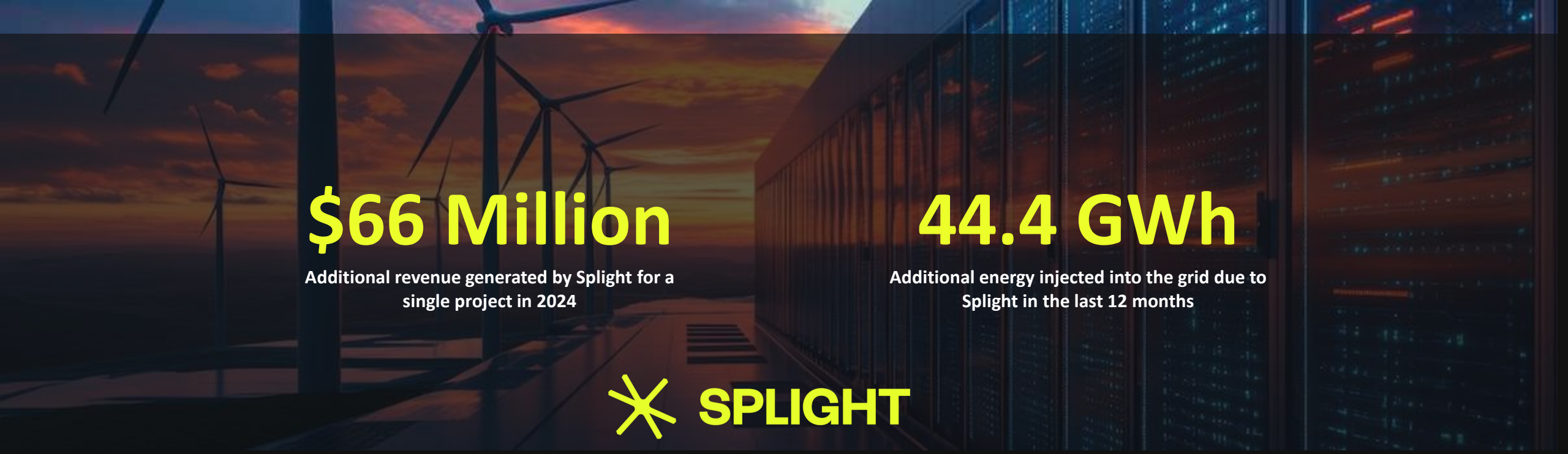
Set of Solutions	Customer Type				
	Renewables	Batteries	Large Loads	Utilities	System Operators
Operational DCM	**DCM** *As an addition to the technology stack*	**DCM** *As an addition to the technology stack*	**DCM** *As an addition to the technology stack*	**DCM** *As a replacement for Remedial Action Schemes*	**DCM** *As an extreme contingency defense scheme*
Pre-Operational DCM	Real-time Simulation	Real-time Simulation	Real-time Simulation	Real-time Simulation & Dynamic Line Rating	Real-time Simulation & Dynamic Line Rating
Pre-DCM Intelligence	Intelligent Grid Visualization	Intelligent Grid Visualization	Intelligent Grid Visualization	Grid Planning Intelligence with DCM	Grid Planning Intelligence with DCM

Solution Segmentation

A Solution for Every Grid Participant

The most impactful features of this technology are:

- ✓ It is extremely granular and can be deployed in a modular way without interfering with other technical or economic restrictions (Voltage, Tension, SCED, protections systems).
- ✓ Each point of deployment “watches” events on the whole grid, this modularity makes possible not only scalability to avoid overlapping and cascading effects but also brings with it one of the most important factors of network effects: every new DCM increases overall reliability in a factor greater than 1.
- ✓ Finally, it provides full online visibility and real time assessment of what is happening and what would happen “if” an event occurs.



$66 Million

Additional revenue generated by Splight for a single project in 2024

44.4 GWh

Additional energy injected into the grid due to Splight in the last 12 months

SPLIGHT

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SPLIGHT

Problem
Splight's Solution
Commercial Experience
Process
Appendix

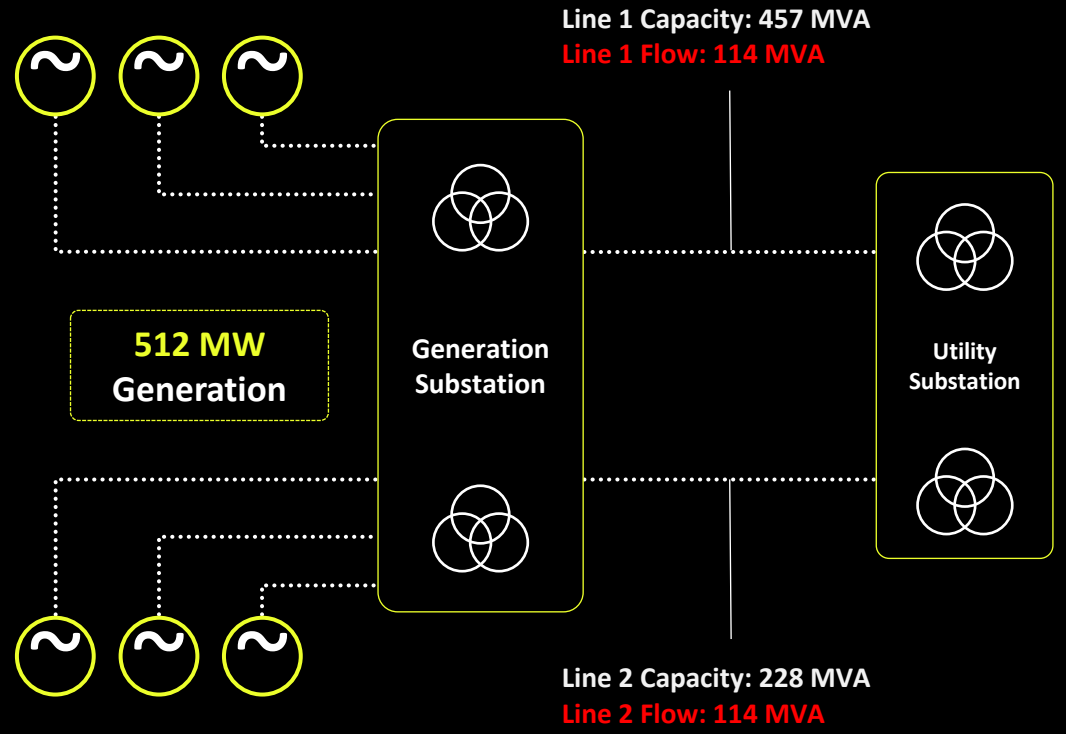
Splight's Solution

Example - Renewable Generation

Figure 1, depicts a case where **a group of inverter-based resources are operating utilizing the maximum capacity allowed under an N-1 evaluation.** Transmission owners build and maintain enough surplus transmission capacity, or cushion in the system, so that, if one element fails (i.e., N number of grid components, minus 1, remain standing) no load should even notice.

Therefore, the maximum injection capacity allocated to the generator at these delivery points will be **a total of 228 MVA.**

Figure 1



Splight's Solution

Example - Renewable Generation

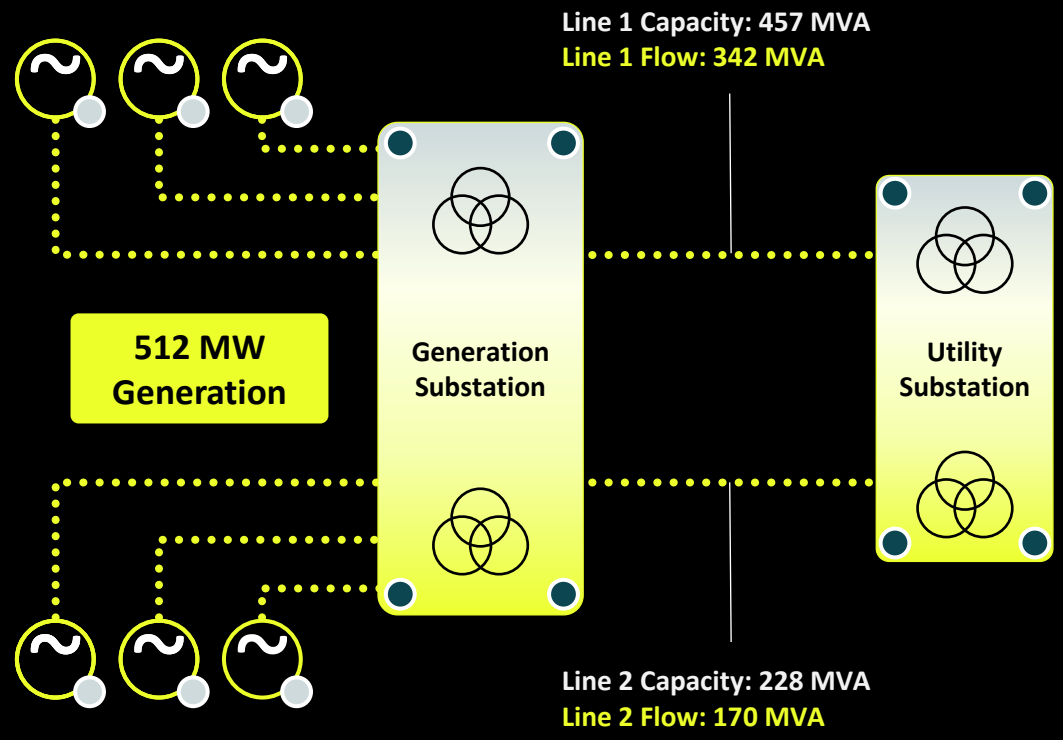
Figure 2 illustrates **Splight connecting to the transmission system** to monitor grid status and update real-time capacity.

It integrates directly with the inverter-based resource to automatically adjust injection during grid failures. Until now we have used physical redundancy of capital plant to achieve reliability; it has been the only real option for over a century. But, today, we can improve the utilization of our grid investment with "intelligence" and real-time communications and controls.

How Splight's DCM Works

- Monitors flow and status of entire transmission system to detect contingencies
- Monitors and controls fast-responding assets, disconnecting or regulating if contingency is detected

Figure 2



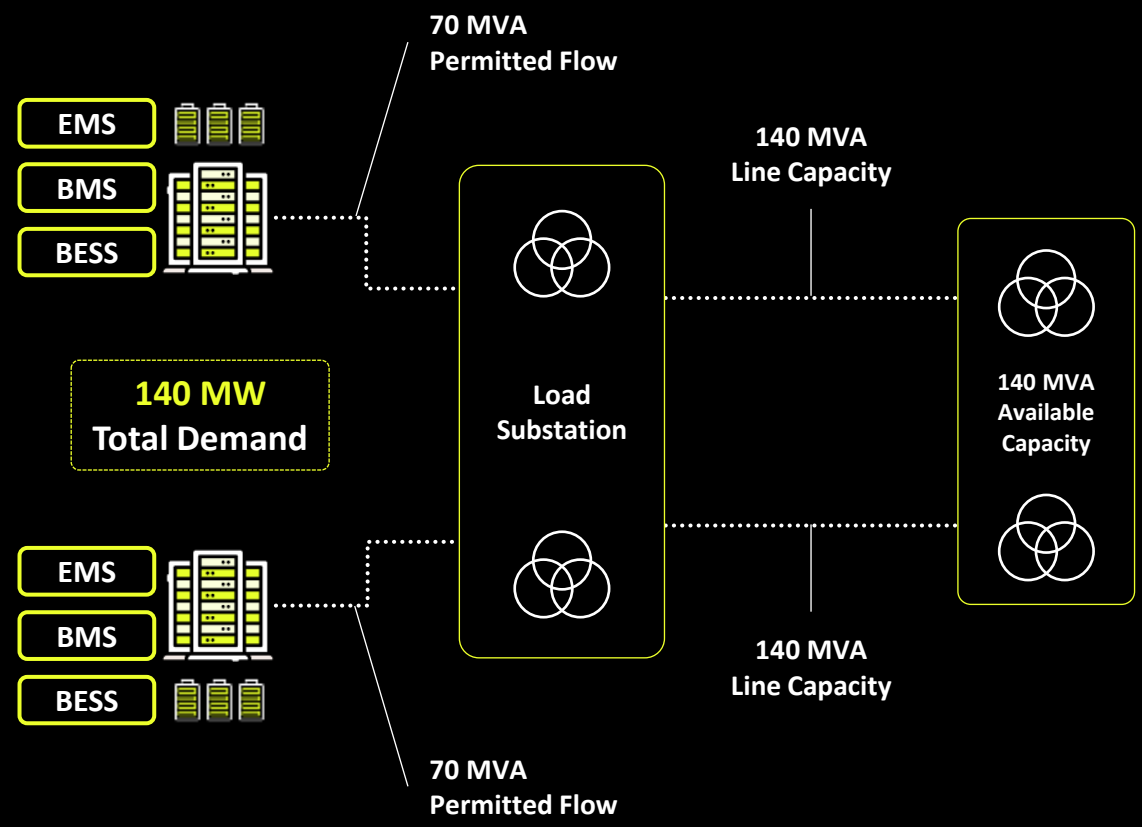
Splight's Solution

Example – Large Loads

Figure 1, depicts a case where **a large load is granted the maximum demand capacity allowed under an N-1 evaluation.** If one of the transmission lines' exiting the load's substation fails (or some element upstream with similar impact), system operators want to ensure **that the demand can be fully met.**

Therefore, the maximum delivery capacity allocated to a load at these delivery points will be **a total of 140 MW.**

Figure 1



Splight's Solution

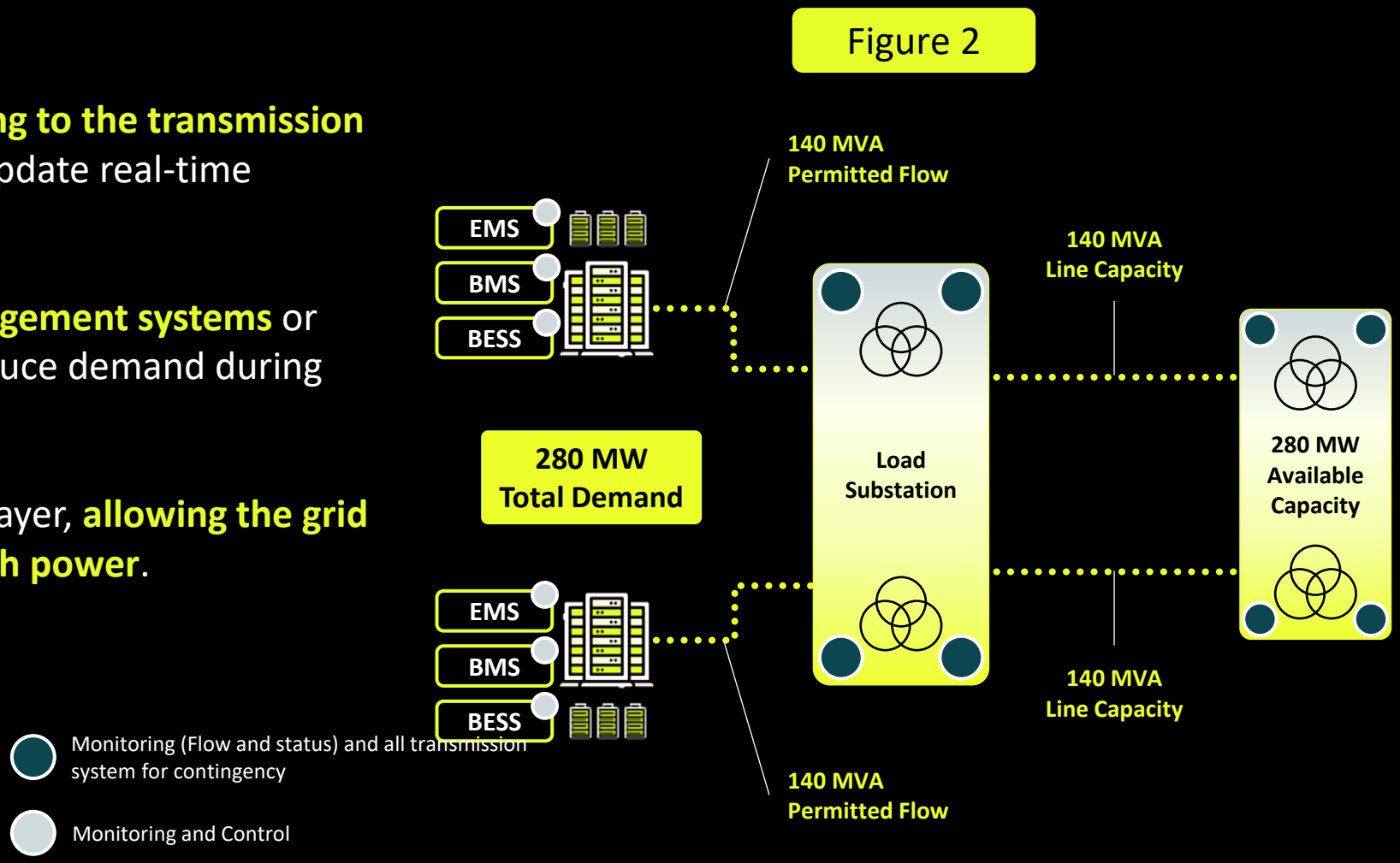
Example – Large Loads

Figure 2 illustrates **Splight connecting to the transmission system** to monitor grid status and update real-time capacity.

It also integrates with energy management systems or battery storage to automatically reduce demand during grid failures.

This smart response acts as an N-1 layer, **allowing the grid to safely deliver up to twice as much power**.

Figure 2



IRENA INNOVATION WEEK 2025

Presentation

Rafael San Juan

Global Innovation Manager
Iberdrola

#IIW2025

Rafael San Juan Moya

IRENA – Innovation Week 2025

Large scale grid optimization

i-DE Grupo Iberdrola

>99,000 transformation centres

>270,000 km of low-voltage lines

1.185 transformer substations

>11,4 million smart meters installed and operational

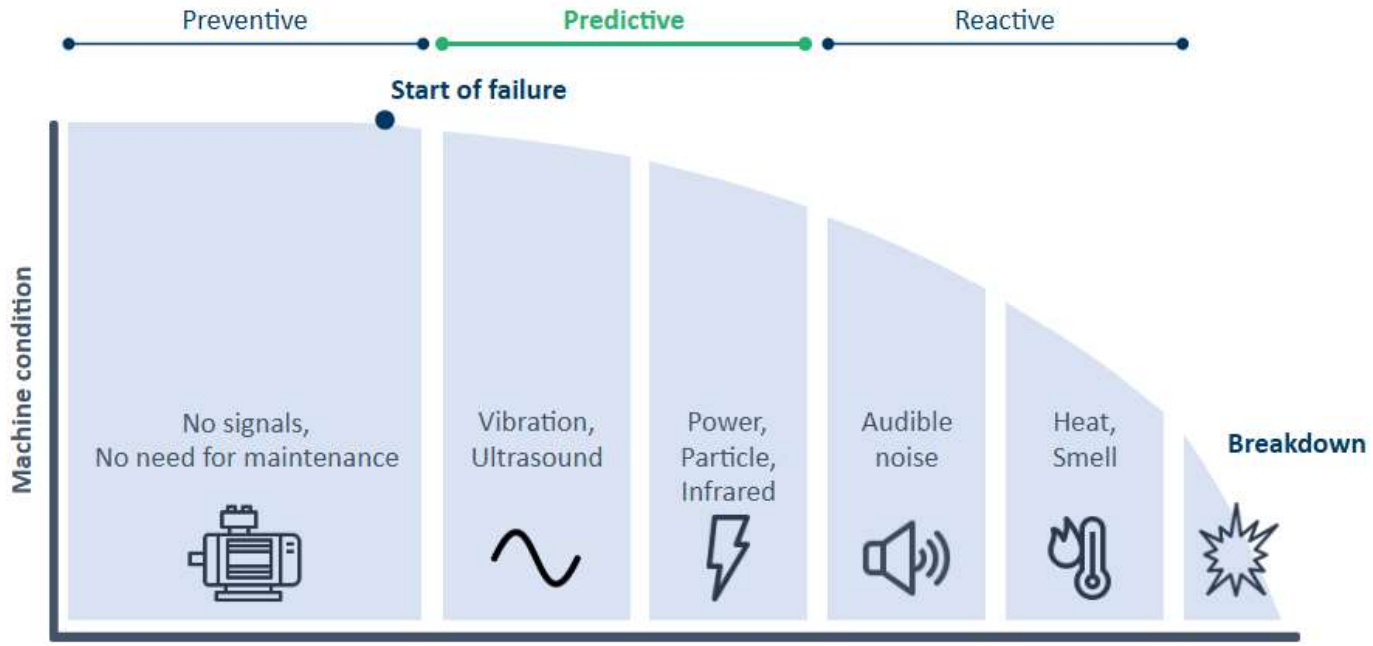
i-DE is the Iberdrola **DSO** in Spain (**I**BERDROLA – **D**ISTRIBUCIÓN **E**LÉCTRICA)

Optimizing grid maintenance activities with AI

In Spain due to regulation all TCs (transformation centers), substations and power plants must be fully inspected and maintained at least **every 3 years**. Meaning the entire grid has a short maintenance cycle.

Preventive maintenance is used to calculate probability of failure and need to replace equipment and optimize the maintenance and to synergize **new investments** and **equipment substitutions**.

Every year, maintenance schedules are planned with the calculated **health index** in mind and planning other work around needed work.



The use case

To use AI, specifically to develop ML (machine learning) models, for preventive maintenance on different types of assets in the network. This improves decisions for maintenance operations, and feeds into different business processes around logistics, inspections or procurement. “*Simplicity is the ultimate sophistication*”.

- Fault rate prediction
- Probability of failure inside a period

Subterranean Power Lines

ML models for:

- Cables
- Cable joints

Aerial Power Lines

ML models for:

- Supports
- Insulators
- Cables

Transformation Centres

ML models for:

- Indoors
- Outdoors

The data available

Available data for the project:

- Previous inspection reports
- Topology maps
- Image databases
- Asset inventory
- Fault reports
- Asset usage reports
- Historic network metrics

Subterranean Power Lines

- Number of joints
- Segment lengths
- Year of installation
- Cable specs

Aerial Power Lines

- Site characteristics reports
- Support type
- Tower material
- Meteorology

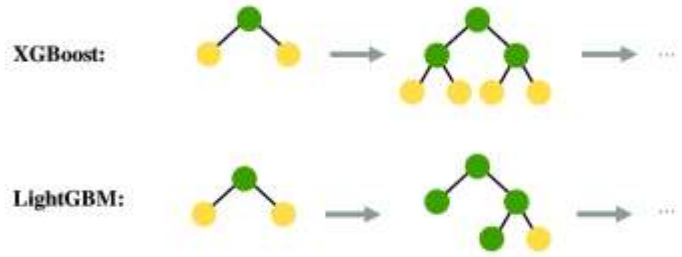
Transformation Centres

- Transformer age
- Nº of customers connected
- Component specifications
- Average ambient temp.

The method used

Different types of ML models trialed. Some are better suited than others depending on the asset types. The most successful ones tried for these assets are:

- **XGBoost**: (*extreme gradient boosting*) An optimized gradient boosting framework that uses decision trees and is designed for speed and performance, often used in structured data competitions.
- **LightGBM**: (*light gradient boosting machine*) A gradient boosting framework that uses histogram-based algorithms and leaf-wise tree growth for faster training and lower memory usage on large datasets.



Subterranean Power Lines

XGBoost

Aerial Power Lines

LightGBM

Transformation Centres

LightGBM

The results

The **main benefits** of the models created there has been a significant improvement in maintenance operations. Measurable improvements on costs and on Network KPI performance metrics of quality of service (TIEPI and NIEPI).

>100 **faults prevented** / year

TIEPI and **NIEPI** performance impact due to overall better asset health.

TIEPI (Tiempo de Interrupción Equivalente de la Potencia Instalada),
NIEPI (Número de interrupciones equivalente de la potencia instalada)

CI (Customer Interruptions) – customers interrupted per 100 customers
CML (Customer Minutes Lost) – duration of interruptions per customer

FQI (Fréquence de coupures individuelles) – frequency of individual outages
DQI (Durée de coupures individuelles) – duration of individual outages

SAIDI (System Average Interruption Duration Index)
SAIFI (System Average Interruption Frequency Index)

Spanish DSOs

The **lessons learned** are that the main models for these applications are around decision trees algorithms. Data governance practices will facilitate future projects. Further assets can be included but there is an efficiency threshold.


THANK YOU!
Iberdrola

IRENA INNOVATION WEEK 2025

Presentation

Kosuke Yamamoto

Chief officer
New Energy and Industrial Technology Development Organization (NEDO), Japan

#IIW2025

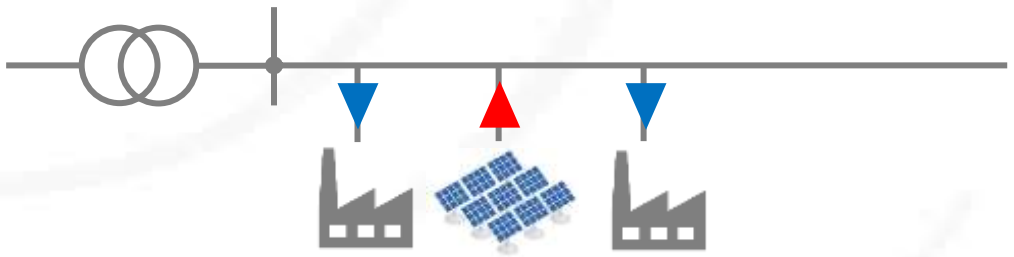
Challenges for grid congestion in Japan

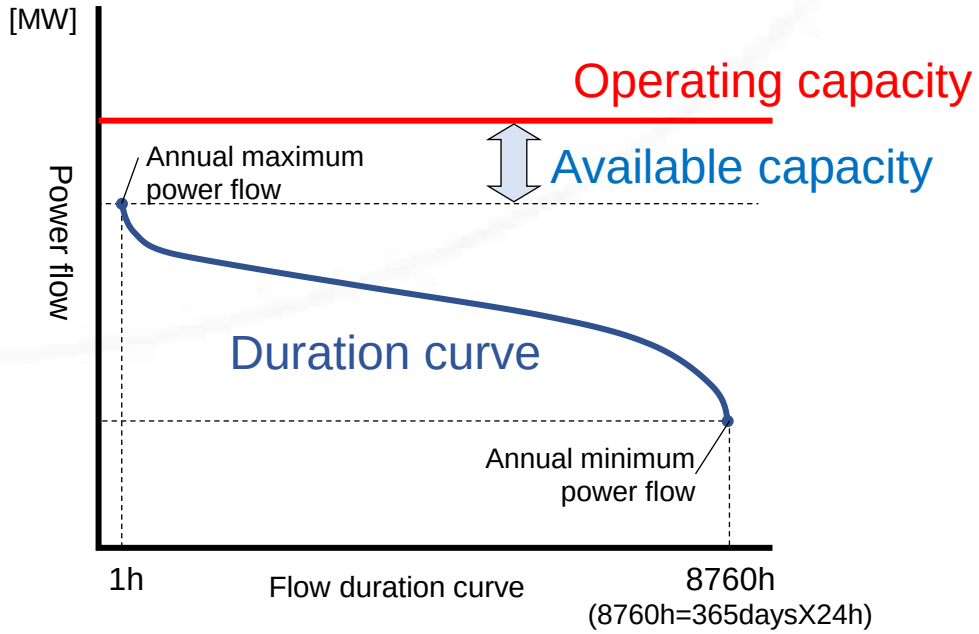
06/12/2025

YAMAMOTO Kosuke
Chief Officer
Grid Interconnection Unit, Renewable Energy Department
New Energy and Industrial Technology Development Organization (NEDO)

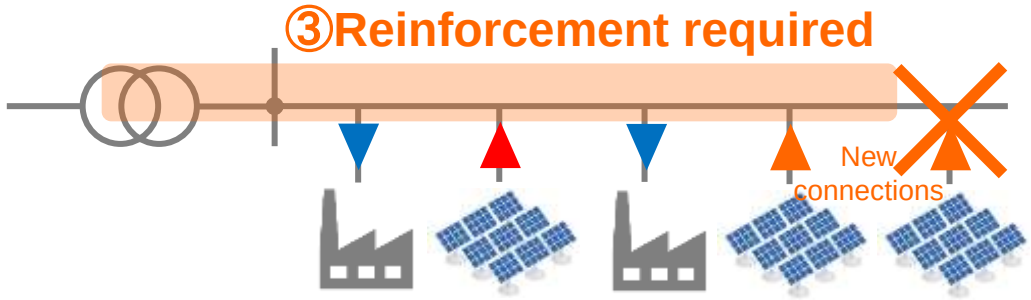
Grid constraints under RE penetration

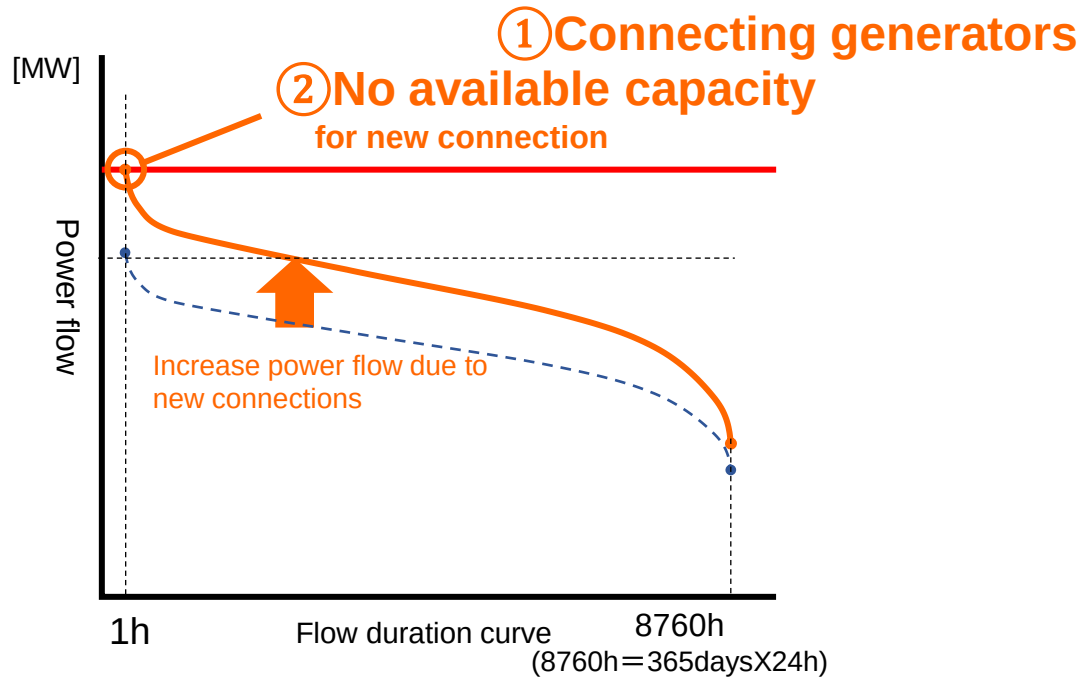
Previous Grid



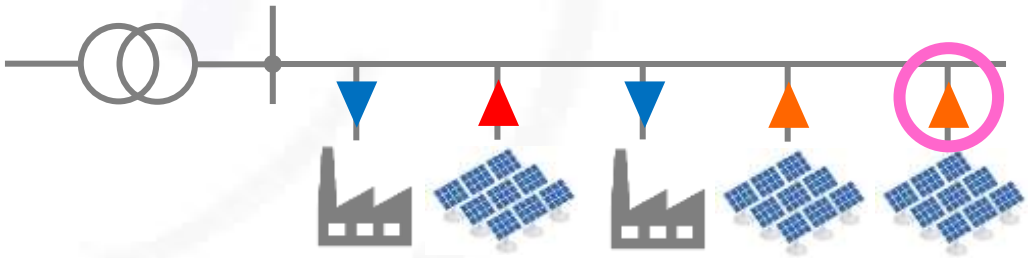


Under mass RE penetration

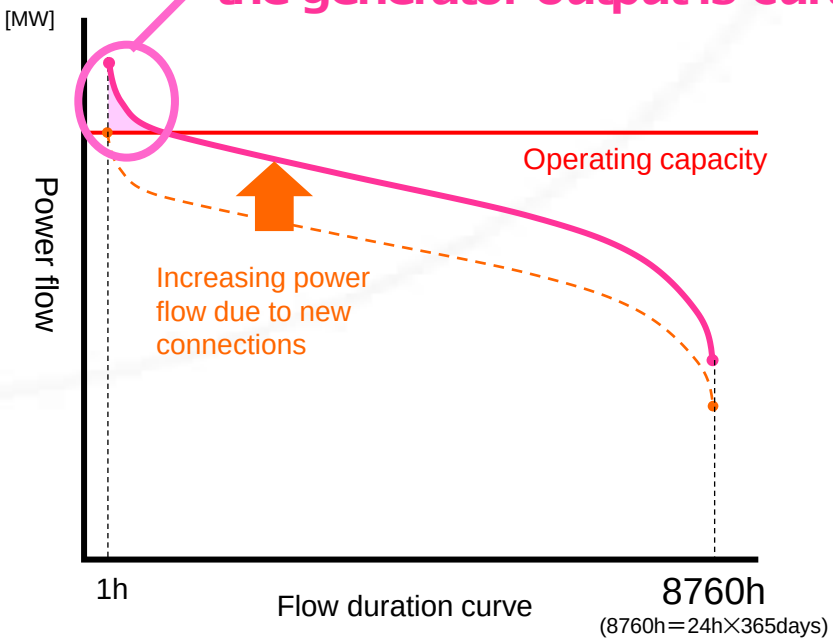


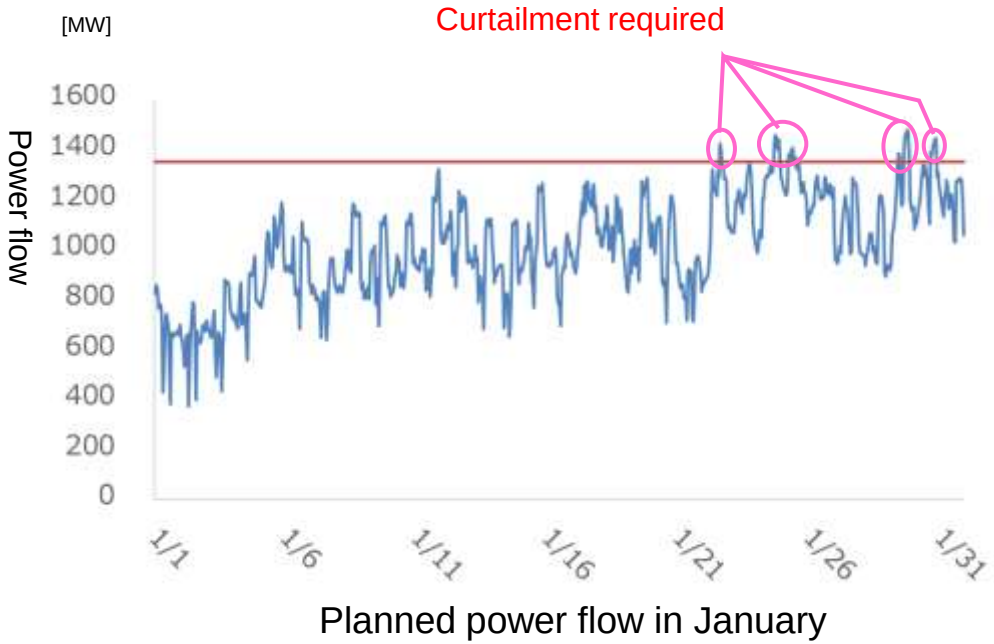


Solution for maximum utilization of grid for RE
Non-firm connection



When the capacity exceeds operating capacity, the generator output is curtailed





Planned power flow in January

Comparison with Similar Systems in Other Countries

	Japan	UK	Germany	US
Grid operator	10 TSOs	National Grid ESO	50Hertz etc.	ERCOT
Congestion-tolerant connection method	Non-firm connection	-Transmission: early connection with assumption of grid reinforcements ** -Distribution: non-firm connection, flexible connection	Early connection with the assumption of grid reinforcements **	Non-firm connection (ERIS)
Congestion management during normal times	Redispatch	-Transmission: re-powering (balancing mechanism) -Distribution: output control, etc.	-Transmission: redispatch + renewable curtailments *** -Distribution: renewable curtailments ***	Nodal pricing based on LMP out-of-market redispatch (including renewable curtailments)
Applicable	Transmission level (66-500kV*) * Varies by TSOs, and includes transmission grids.	-Transmission level (275-400kV) -Distribution level (-132kV)	-Transmission level (220kV, 380kV) -Distribution level(-110kV)	-Transmission level (69kV-)
Characteristics the transmission system	Loop, Mesh (multiple loops), Radial	mesh	mesh	Radial

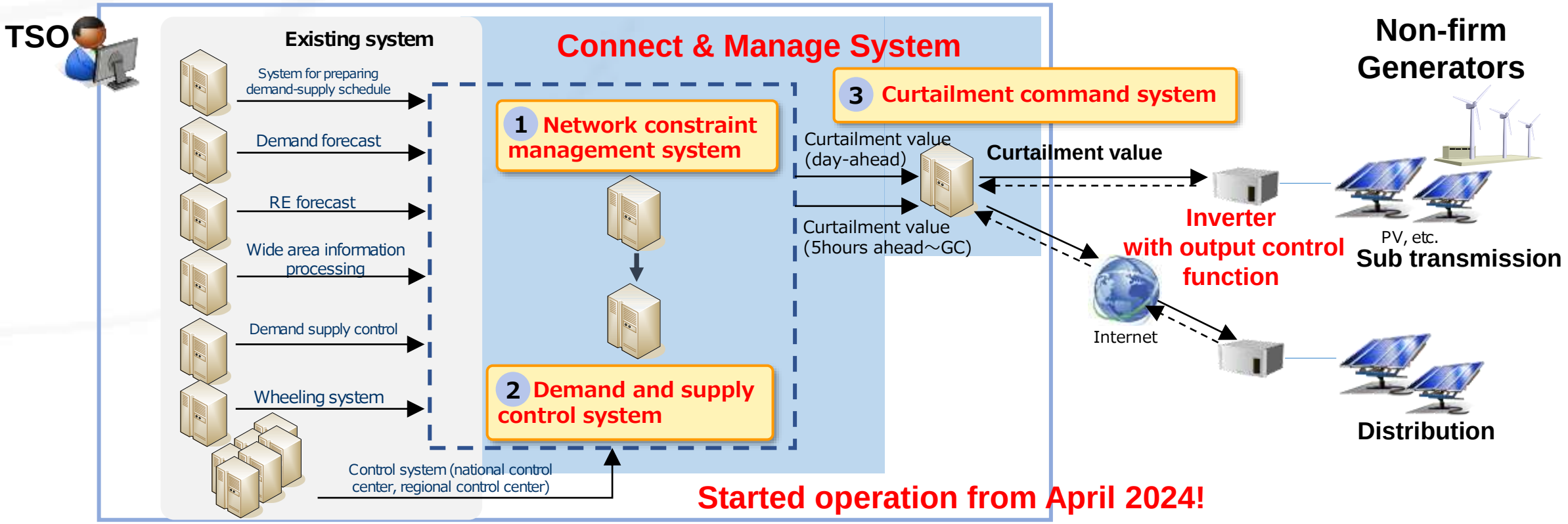
** Output control is compensated　　***Redispatch 2.0 and later re-powered

Source: NEDO based on various materials

NEDO Project for non-firm connection and manage

2020-2023FY

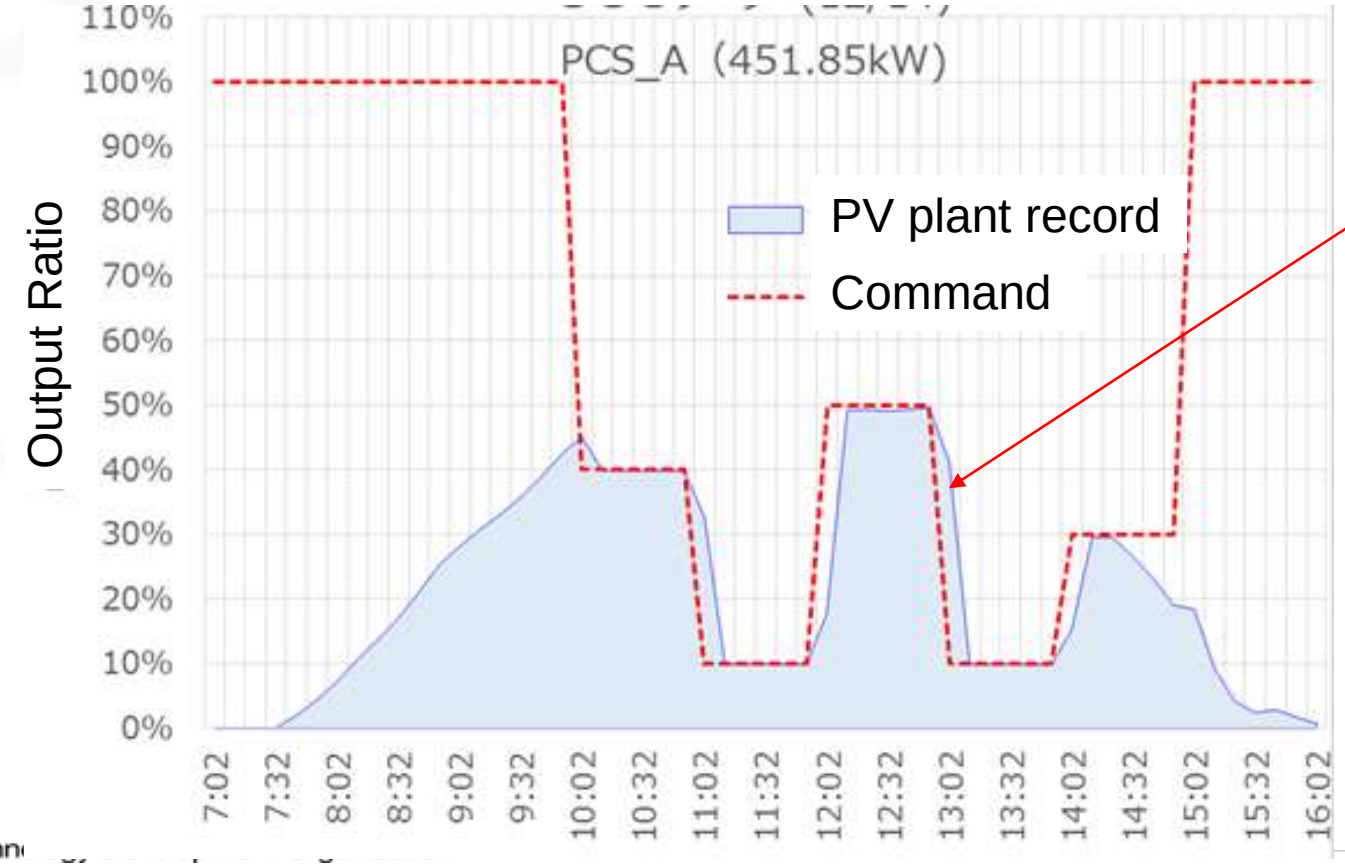
- To develop a system for non-firm connection & manage and demonstrate through field tests.
- Partners: TEPCO Power Grid, Hokkaido Electric Power Network, Tohoku Electric Power Network, Hitachi, Shikoku Instrumentation etc. (Total 12 partners)



An Example of Test Results

Confirmed that each power generator was able to control output within the command from the system.

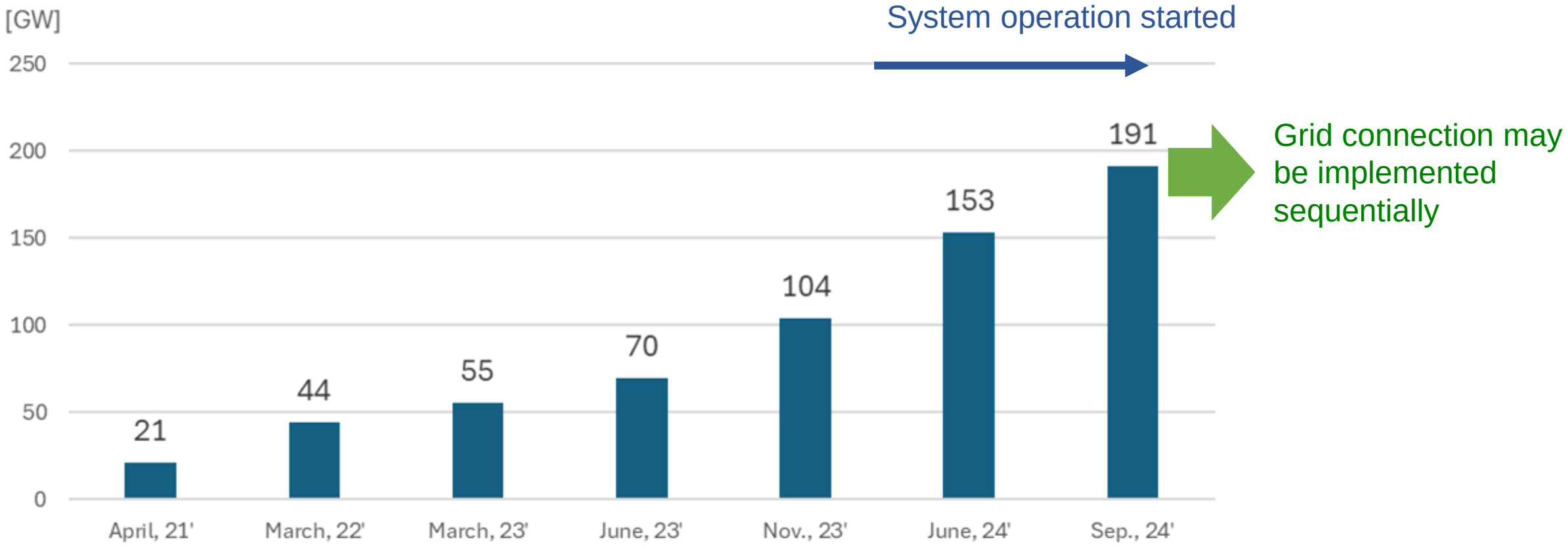
A output control test result (10 minutes performance)



Control delay was kept to a maximum of 5-10 minutes.

Started considering non-firm connection

Trends in considerations and contract applications for non-firm connection



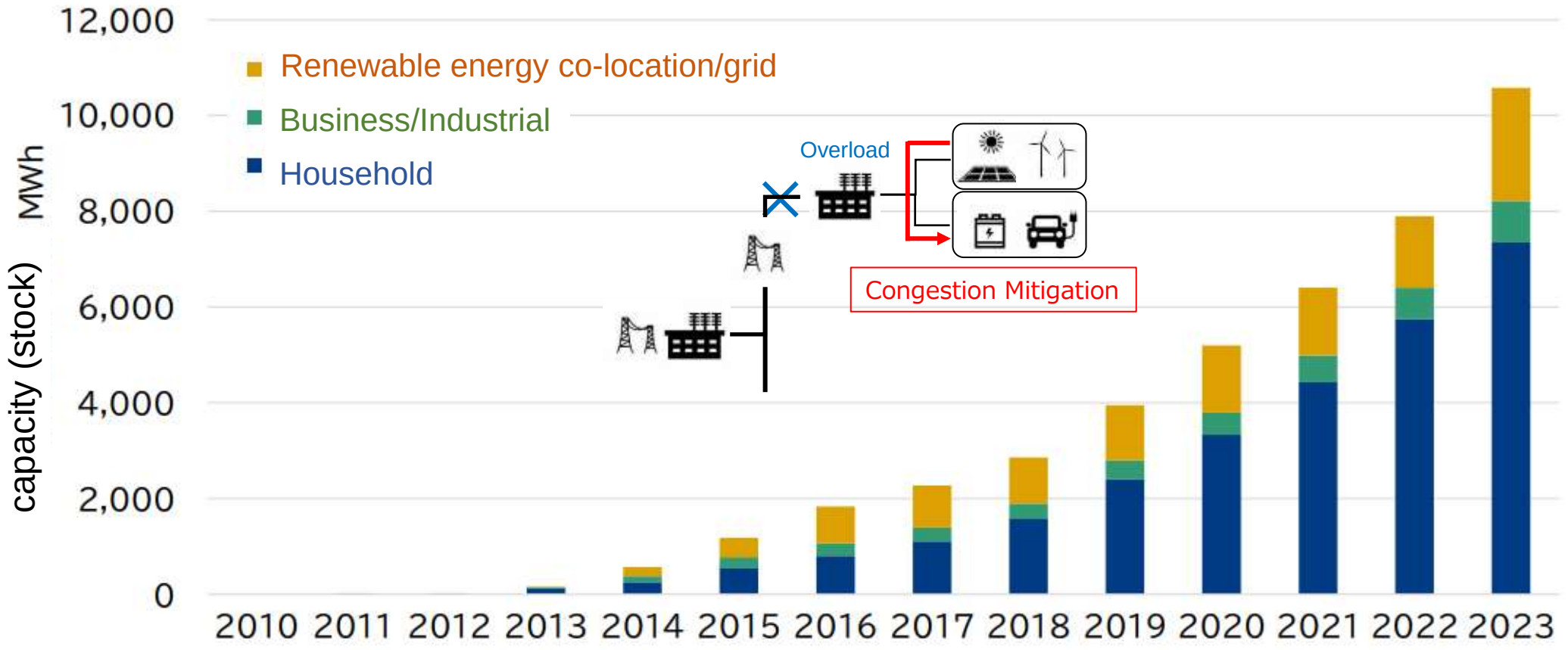
Although RE curtailment due to grid constraints has not occurred,
thermal power curtailment due to grid congestion occurred within the TEPCO Power Grid area in January 2025

Source: NEDO based on various materials

Remaining challenges in grid congestion

Utilize storage batteries and other resources to minimize output curtailment of connected renewable energy

Installed capacity of stationary battery energy storage systems in Japan



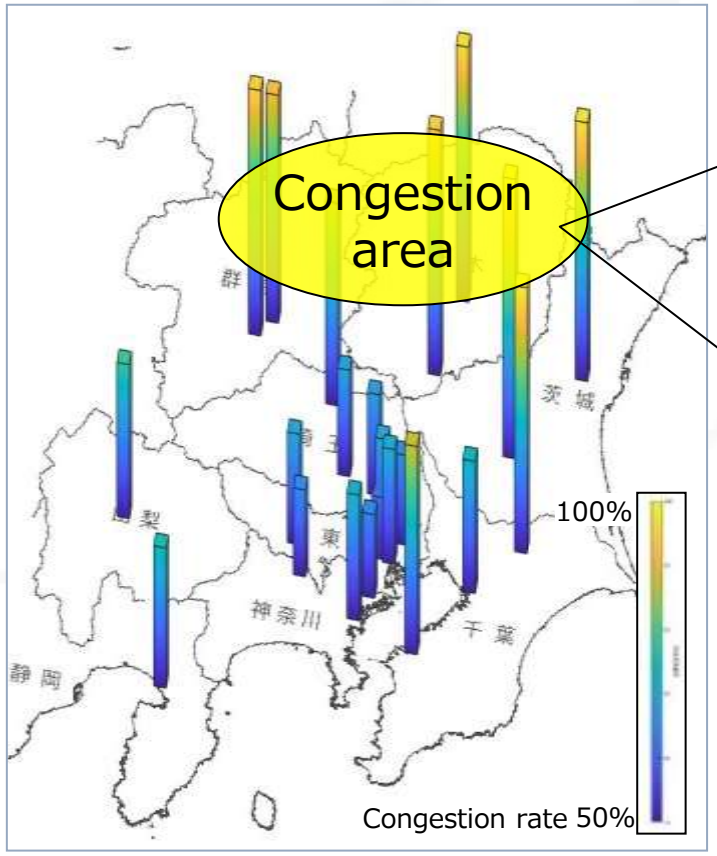
New Energy and Industrial Technology Development Organization

Source: https://www.meti.go.jp/shingikai/energy_environment/storage_system/pdf/2024_005_03_00.pdf#page=9

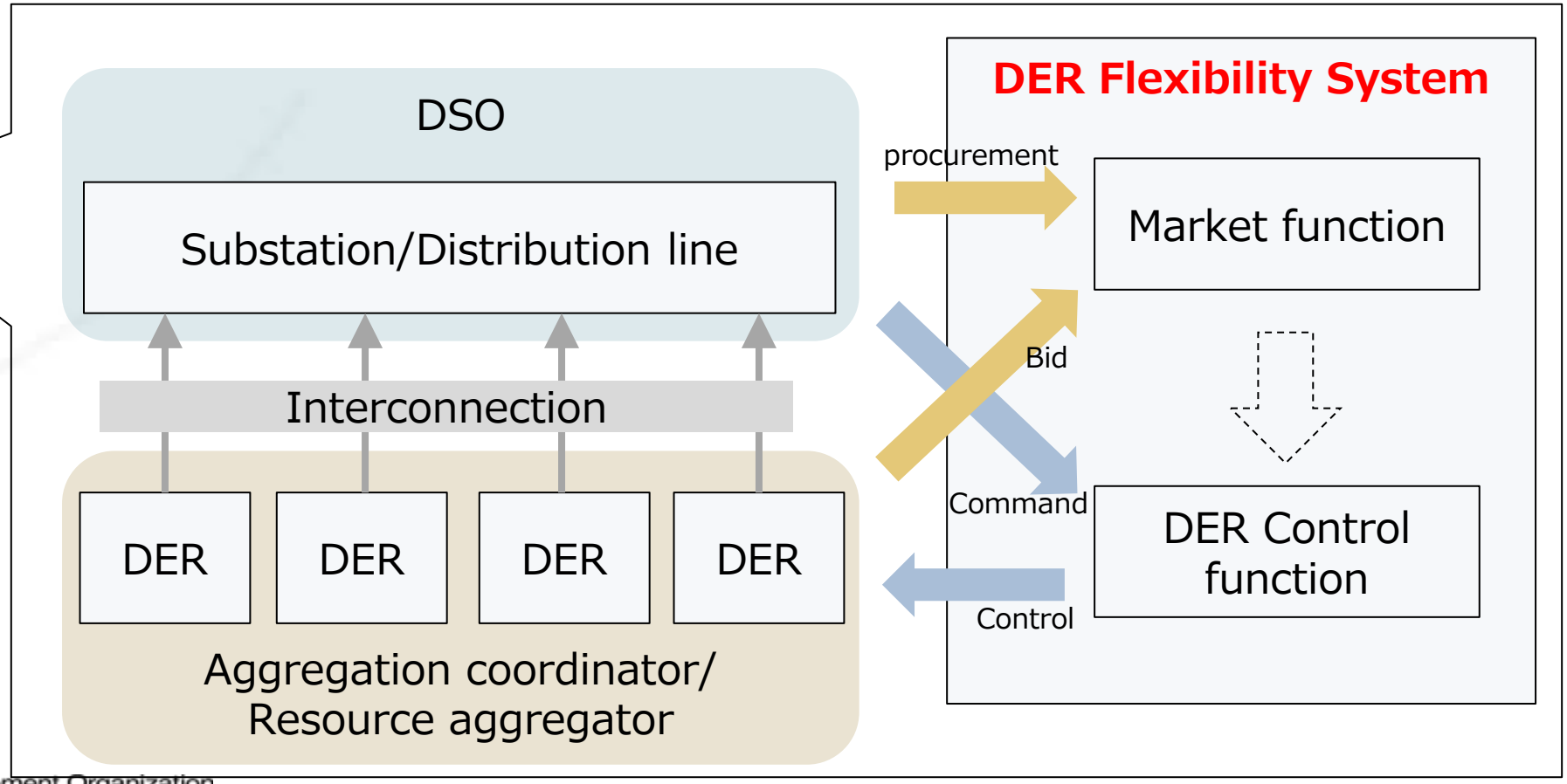
Field Demonstration Test at the NEDO FLEX DER Project

2022-2024FY

To develop a DER flexibility system to mitigate congestion in distribution systems caused by RE by monitoring the operational status of DERs and controlling them to shift demand, without resorting to curtailment of RE output.



※ https://www.tepco.co.jp/pg/consignment/system/



powergrid@ml.nedo.go.jp

IRENA INNOVATION WEEK 2025

Q&A:

Digitalisation for Optimising System Operation with High Share of Renewables

Fernando Llaver
SPLIGHT

Rafael San Juan
Iberdrola

Kosuke Yamamoto
NEDO

Join at slido.com #1053254

#IIW2025

Audience Q&A

IRENA INNOVATION WEEK 2025

Session 2:

Digitalisation for Demand Side Management and Renewables Integration

Serge Subiron

Mercury Consortium

Tarvo Ong

FUSEBOX

Tomoyuki Chinuki

Mitsubishi Electric

#IIW2025

IRENA INNOVATION WEEK 2025

Presentation

Serge Subiron

President
Mercury Consortium

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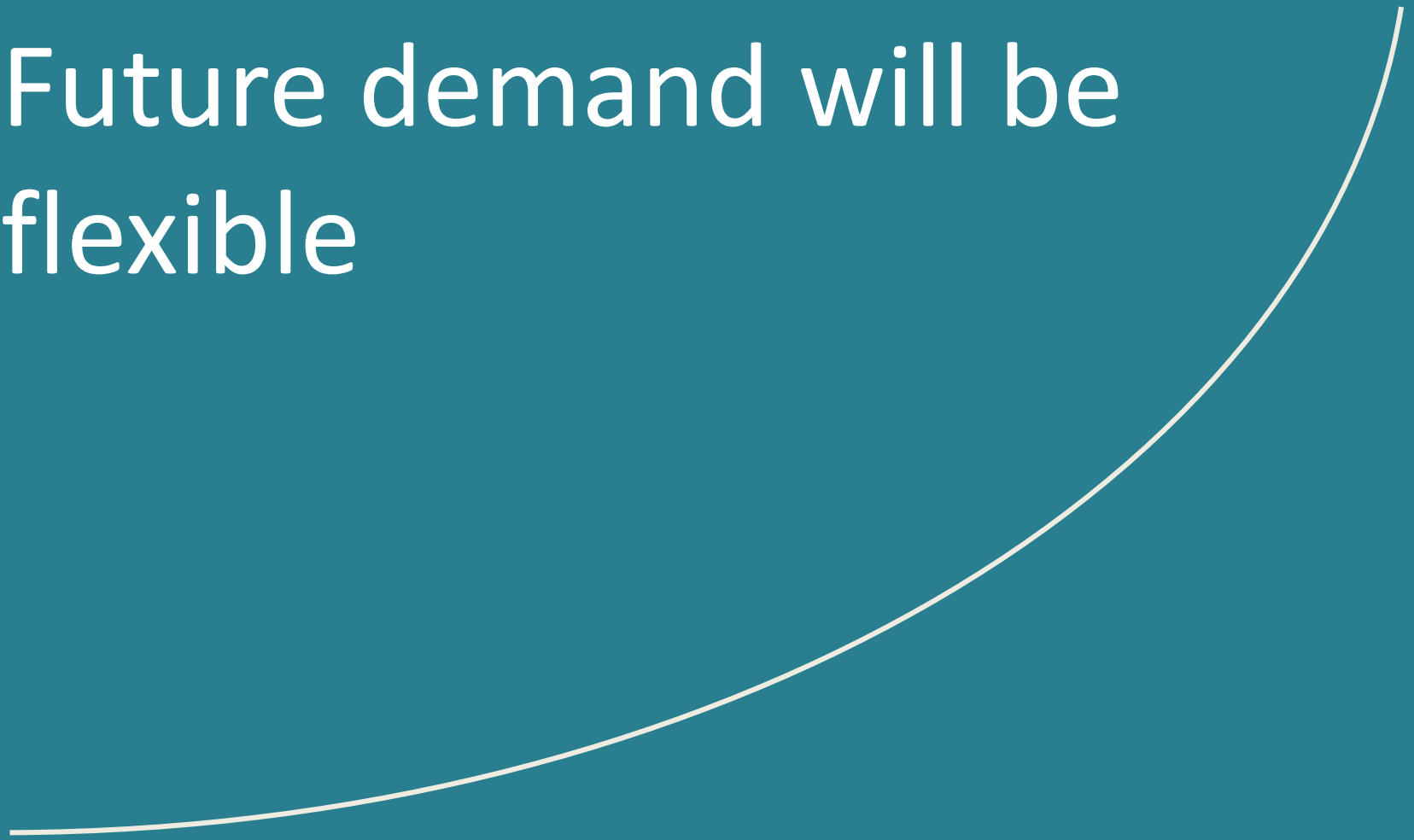
mercury

the Energy Devices Interoperability Standard

Serge Subiron
President & Executive Director

#IIW2025

Future demand will be flexible



200 million new devices by 2030

40 million today

Source: BNEF

5%
Of consumer devices participate in demand reduction programs

mercury

Collaborative and non-profit initiative bringing together manufacturers, utilities, regulators, associations and tech providers.

With a mission to:

Develop and promote guidelines for consumer devices — such as EVs, heat pumps, residential batteries, and smart thermostats — to support simple use cases, participate in demand-response programs and energy markets.

Confirmed members

EPRI

KRAKEN

e·on next

EDF

conEdison

GivEnergy

SOUTHERN CALIFORNIA EDISON®

octopus energy

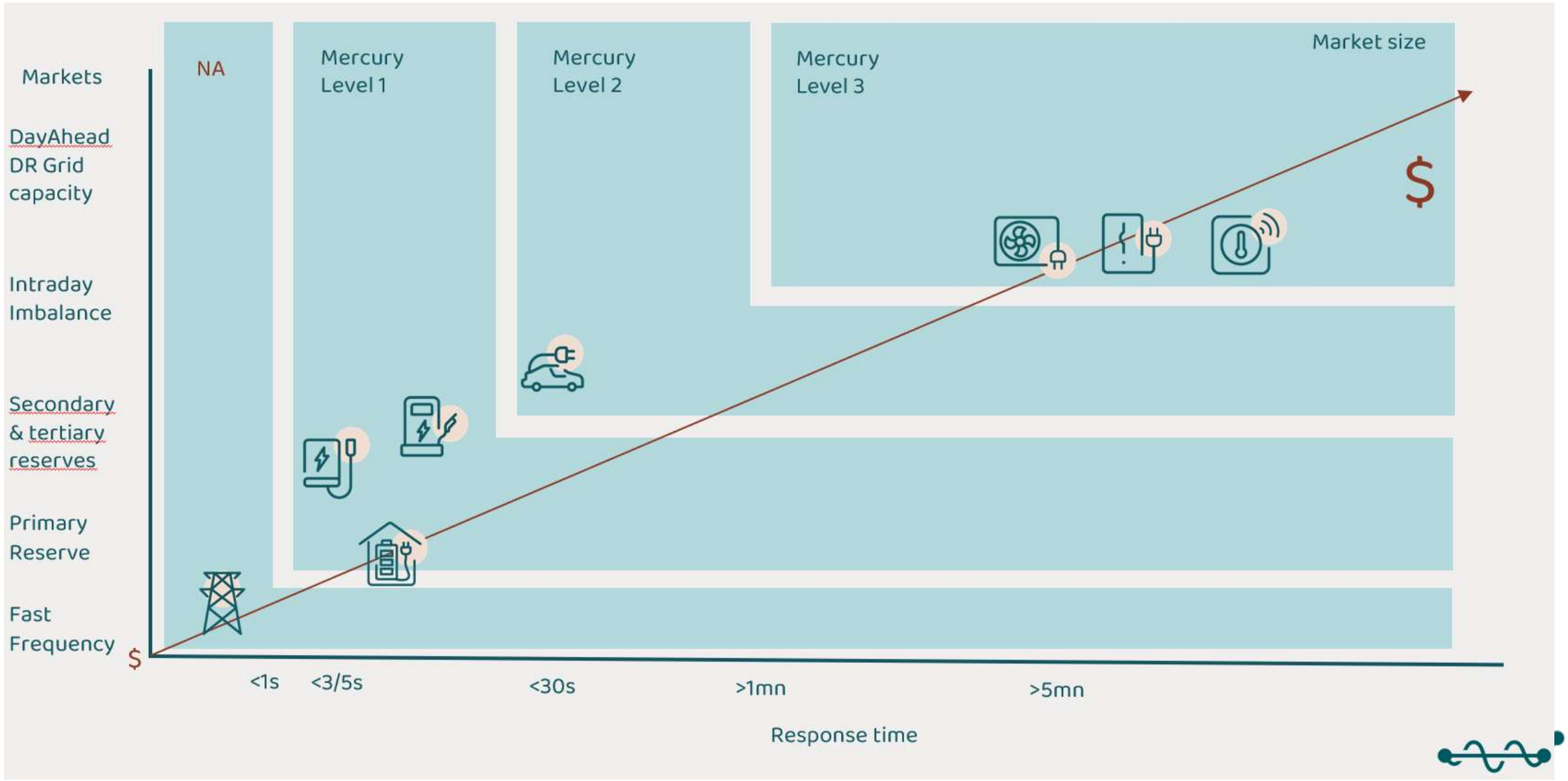
mixergy®

easee®

NEW YORK STATE OF OPPORTUNITY. | NY Power Authority

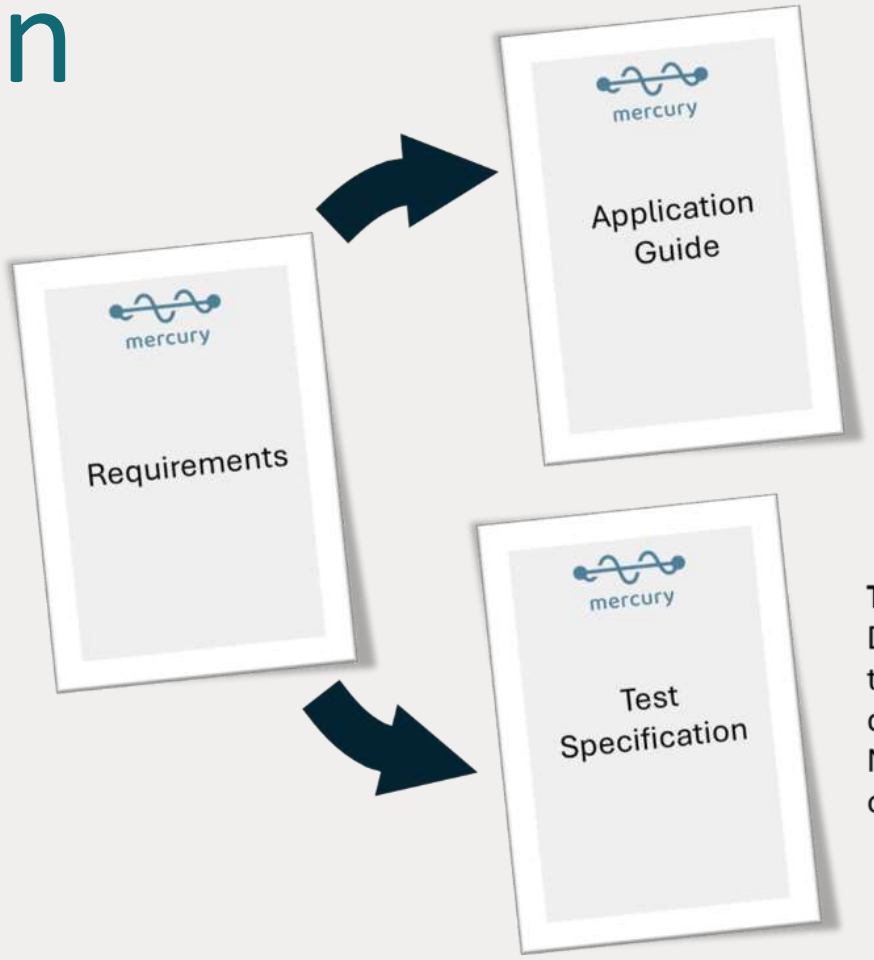
Utilidata

What is a Mercury certification



DER Functional & Performance Certification

This document: establishes what is required for this product type to be Mercury certified.



Application Guide: Provides example use cases and describes the usage and benefits of the requirements.

Test Specification: Describes the detailed testing procedure and data to be provided to Mercury.org for certification.

serge.subiron@kraken.tech

IRENA INNOVATION WEEK 2025

Presentation

Tarvo Ong

Founder and CEO
FUSEBOX

#IIW2025

Fusebox
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JUNE 2025

BUILD SMART NOT HARD

Practical Steps From Energy Assets to Markets

Tarvo Õng
CEO of Fusebox

How to leverage flexibility — **clearly, simply, and profitably**

Fusebox
.energy

JUNE 2025

We're here to make complexity simple

10+ Years of **Flex Expertise**

We Run **Our Own VPP**

Connection to **8 TSOs**

5.5 GWh mFRR traded **a month**

Active in **all balancing markets**

Proven Across Europe

VPP-as-a-Service

Recognised by

Republic of Estonia Government · Switch Singapore Week of Innovation & Technology · EDF · Shell · ABB · smartEn Smart Energy Europe · Siemens · EAS

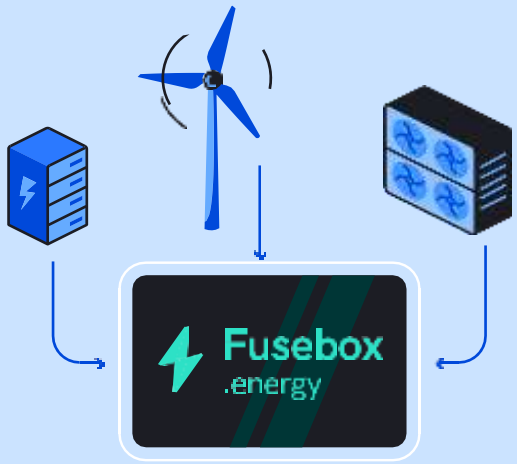
Fusebox
.energy

Unlocking Ancillary Markets

JUNE 2025

Day 1

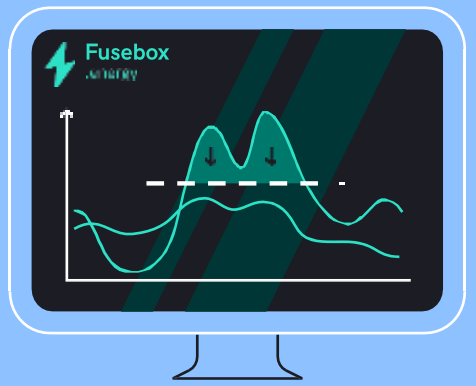
Connect Your Energy Assets



Enabling smart asset control

Month 1

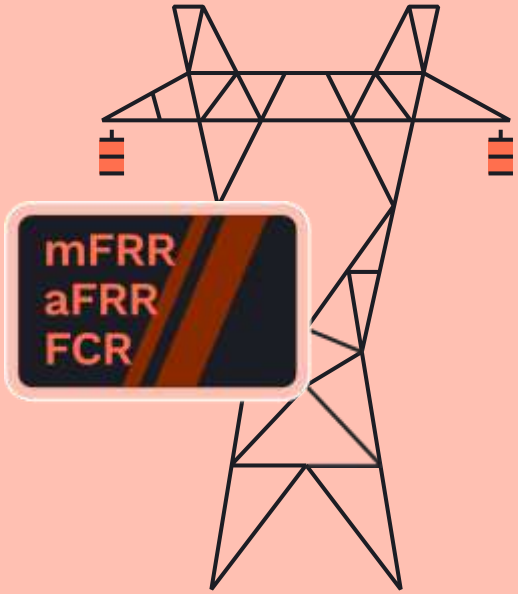
Optimise Energy with Fusebox EMS



Localised asset management

Quarter 1

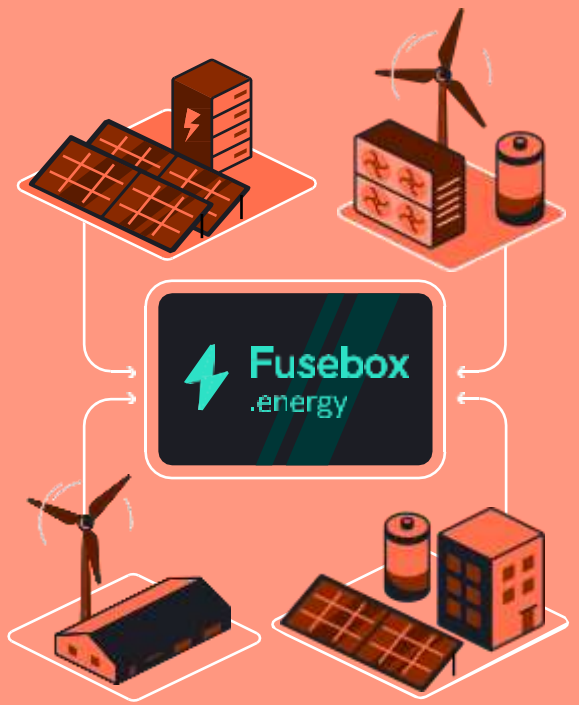
Enter Ancillary Markets



From site to grid

Year 1+

Scale Your Asset Portfolio



Value stacking

EMS

VPP

Fusebox
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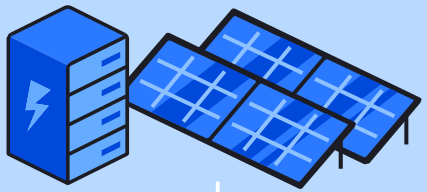
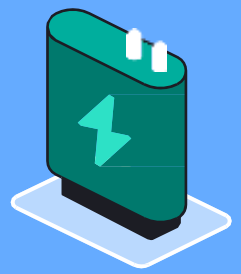
Day 1

JUNE 2025

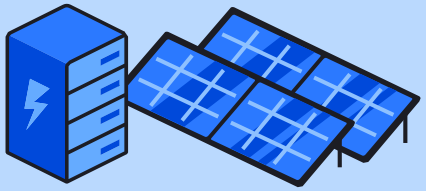
Connect & Integrate Your Assets

Fusebox on-site controller





3rd party cloud



Battery manufacturer cloud

Turn assets into revenue

- 100+ asset types (home to C&I size)
- Renewable generation
- Industrial & commercial loads
- IoT devices

Seamless Integration

- Full onboarding support
- Use Fusebox or 3rd-party controllers
- Cloud-to-cloud connectivity

Real-time control

- Monitor & control distributed assets
- 1-second insight resolution

Fusebox
.energy

Month 1

JUNE 2025

Optimise Energy with Fusebox EMS

Forecasting & control for hybrid sites

- Manage local generation, storage, and load
- Maximum self-consumption
- Price arbitrage

Up to 40%
energy bill savings

50%
lower tariffs

0€
negative price penalties

20% higher
PV output

Fusebox
.energy

Quarter 1

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Enter Ancillary Markets

Create flexible asset portfolios

Market stacking is key

Automated two-way grid communication

Automated reporting and billing

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Year 1+

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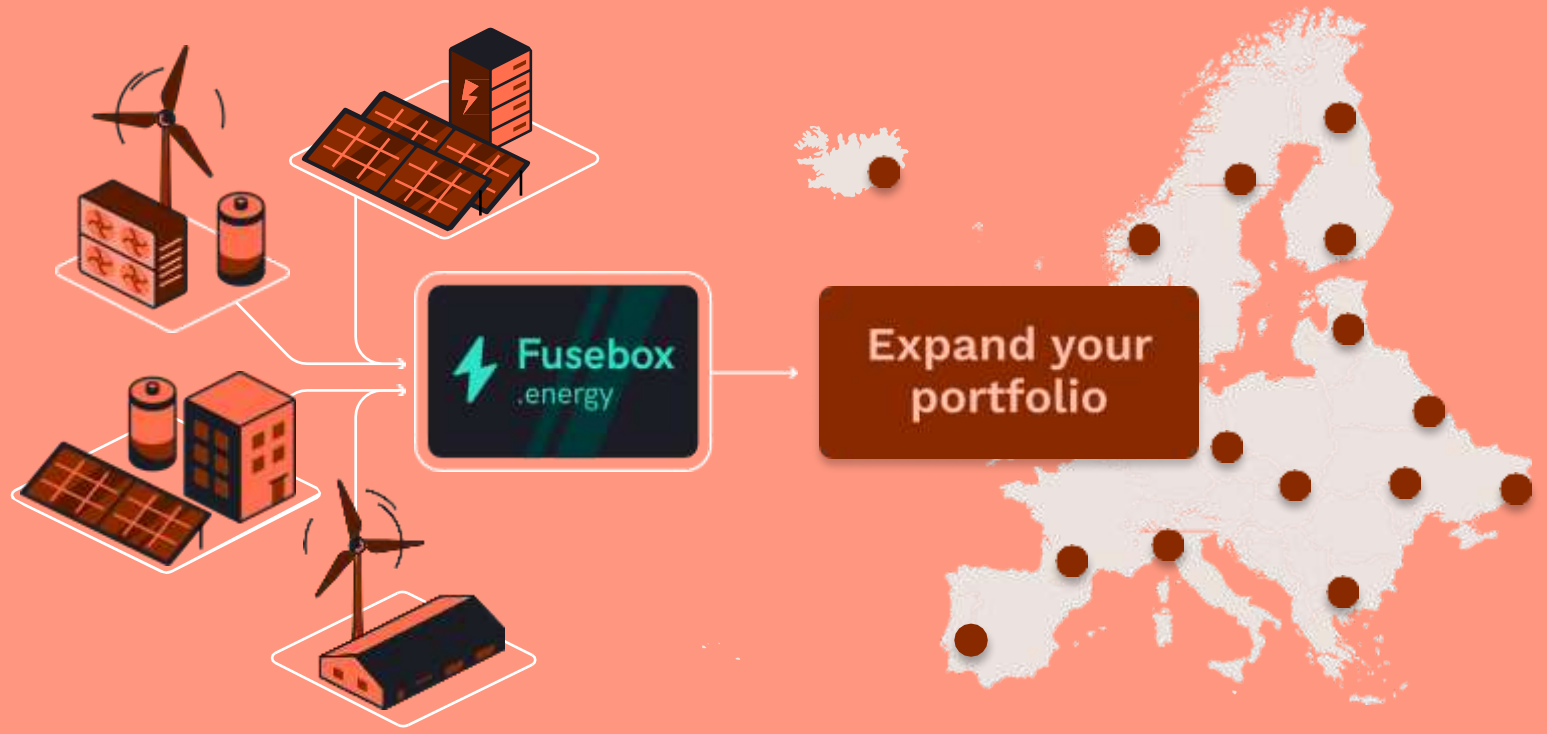
Scale Your Asset Portfolio

Fleet-wide VPP.
Central management.



Benefits

- Unlock value from asset-to-TSO integration
- Use one SaaS platform across regions
- Stack value via ancillary services
- Offer new services to your clients
- Link to 3rd-party trading desks for extra gains

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CASE STUDY
Mid-sized renewable energy provider

- Integration of C&I size assets
- Imbalance reduction by 70%
- Time saved 2 years to ancillary
- Connection to 3rd-party trading desk
- OPEX savings €2.5M – €5M/5 years

70 MWh
C&I assets aggregated in 1 year

5.1 GWh
traded on ancillary markets in 1 month

Thanks!

Contact Us

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fusebox.energy

IRENA INNOVATION WEEK 2025

Presentation

Tomoyuki Chinuki

Senior Engineer
Mitsubishi Electric

#IIW2025

Digitalization for the energy transition: Case studies
Sub-session 2: Digitalisation for Demand side Management and Renewable Integration

Digital Energy Solutions of Mitsubishi Electric

June 12th

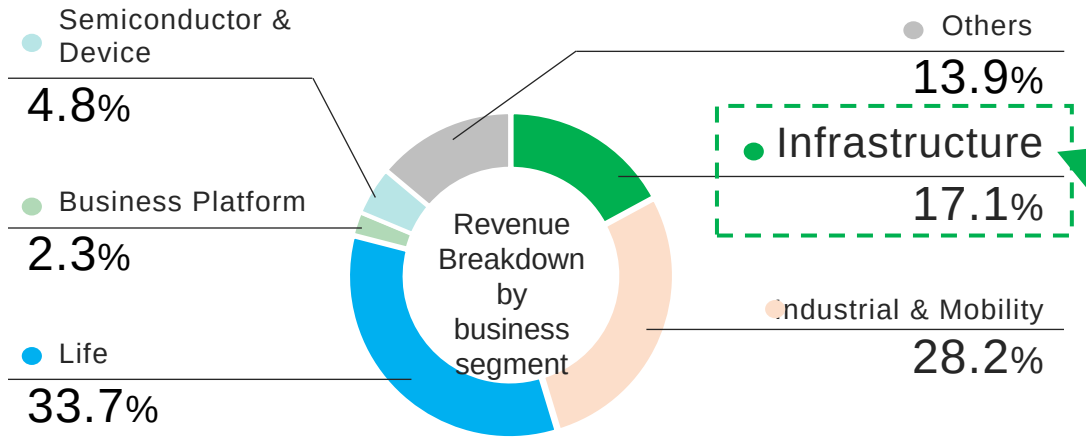
IRENA Innovation week 2025

MITSUBISHI ELECTRIC CORPORATION

Mitsubishi Electric Corporation at a glance

Head Office:	Tokyo, Japan
Established:	1921 (Over 100 years)
Consolidated Revenue:	5 Trillion yen (= USD 37Billion)
Employees: (consolidated)	~150,000

(As of March 31, 2024 / USD=140JPY)



Products by business domains

Public Utility Systems

Energy & Electric Systems

Defense & Space Systems

Factory Automation Systems

Automotive Equipment

"Digital Energy Solutions" are here

Building Systems

Air Conditioning & Home Products

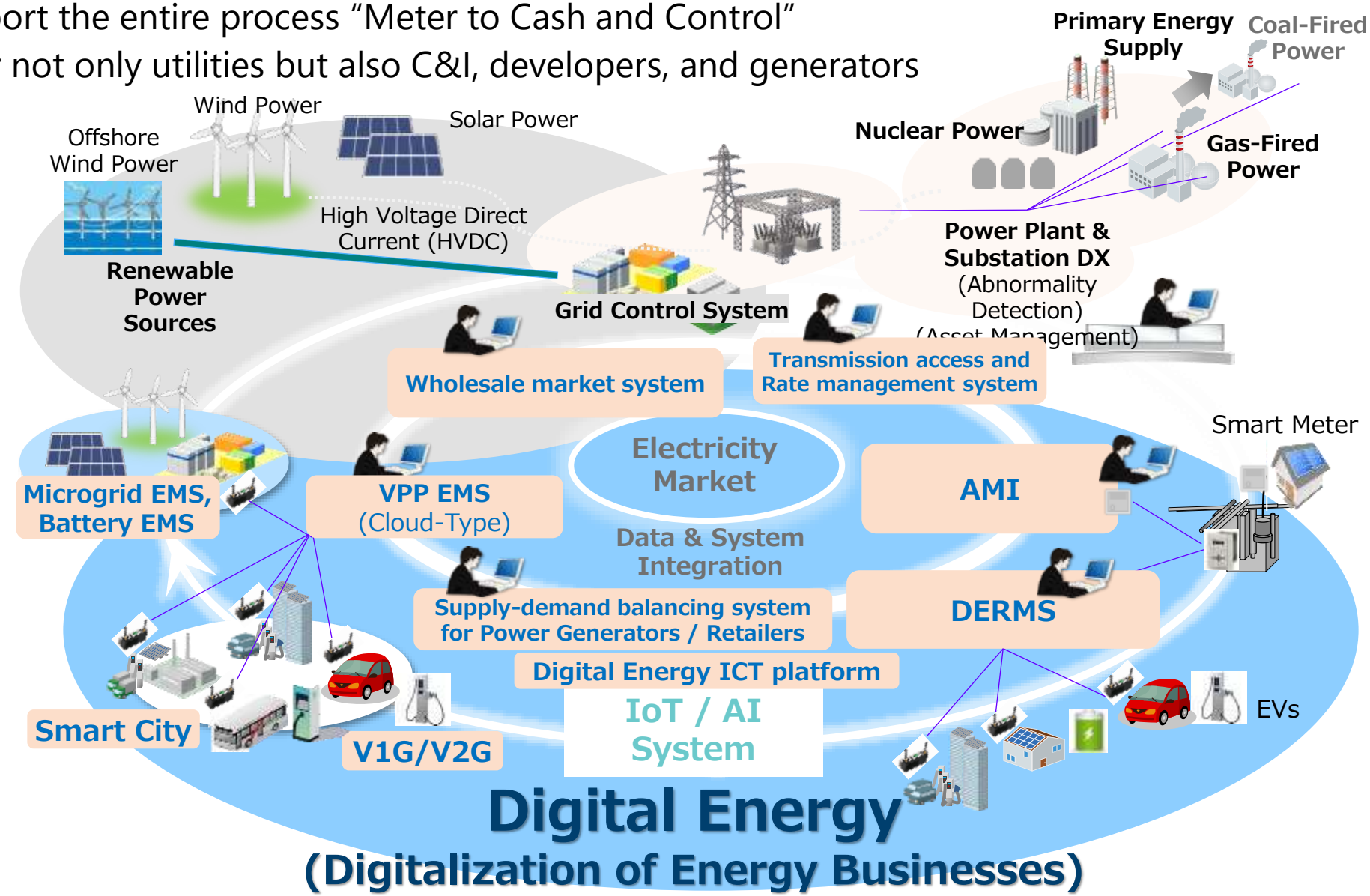
Information & Communication Systems/Services

Semiconductors &Devices

Digital Energy Solutions in Mitsubishi Electric

Diverse product portfolio

- ✓ Support the entire process “Meter to Cash and Control”
- ✓ Offer not only utilities but also C&I, developers, and generators



Actual use case and solution

#1 Battery EMS（“BLEnDer RE”） for reliable grid operation

Use Case#1 EMS batteries <Customer needs>

Client: North Hokkaido Wind Energy Transmission Corp. (Transmission Owner, Japan)

Situation and Challenges:

- Hokkaido area has a large potential for wind turbines(WTs) and has a need to send electricity to Mainland.
- However, there are several grid operational challenges caused by the small grid capacity and insufficient available capacity.
- Clients decided to install **large amount of WTs and BESS** under **insufficient capacity**

⇒ **BESS control for grid stabilization** was needed

Use Case#1 EMS batteries <Solution>

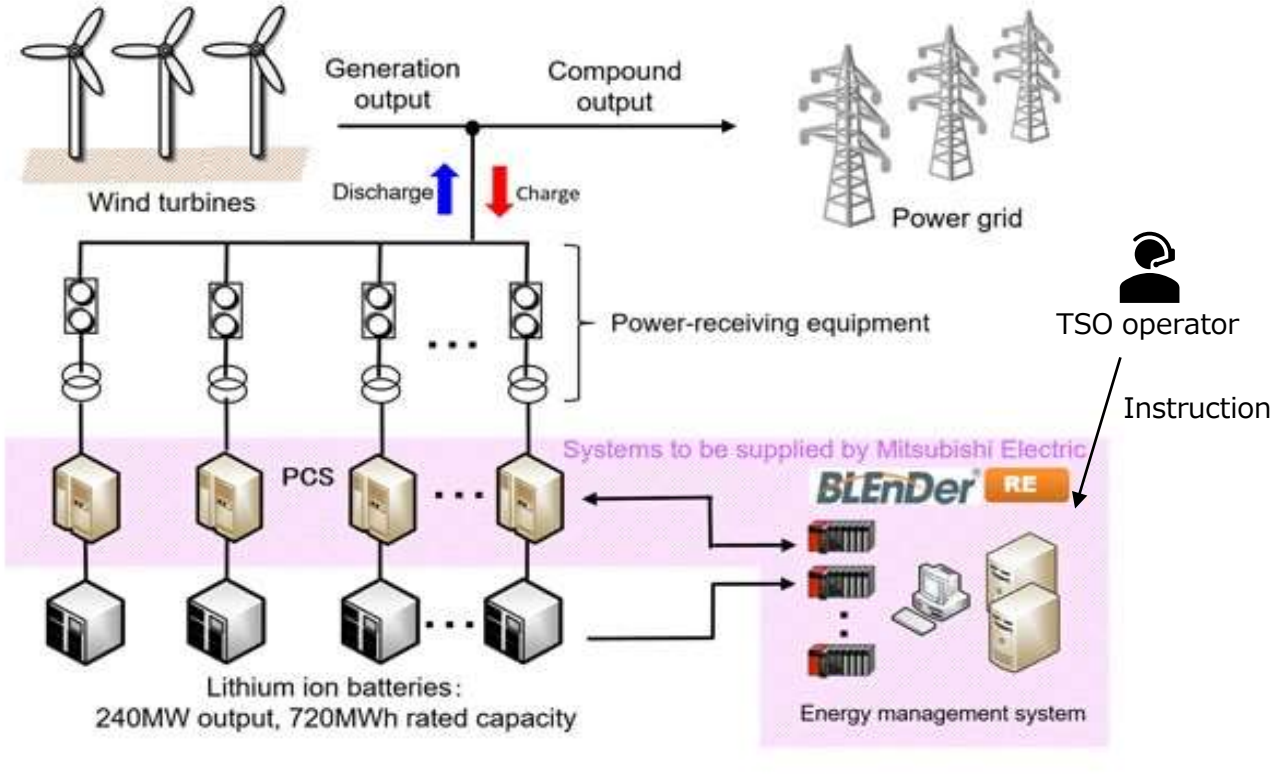
Solution Deployed : EMS (“BLEnDer RE”) and PCS to control BESS

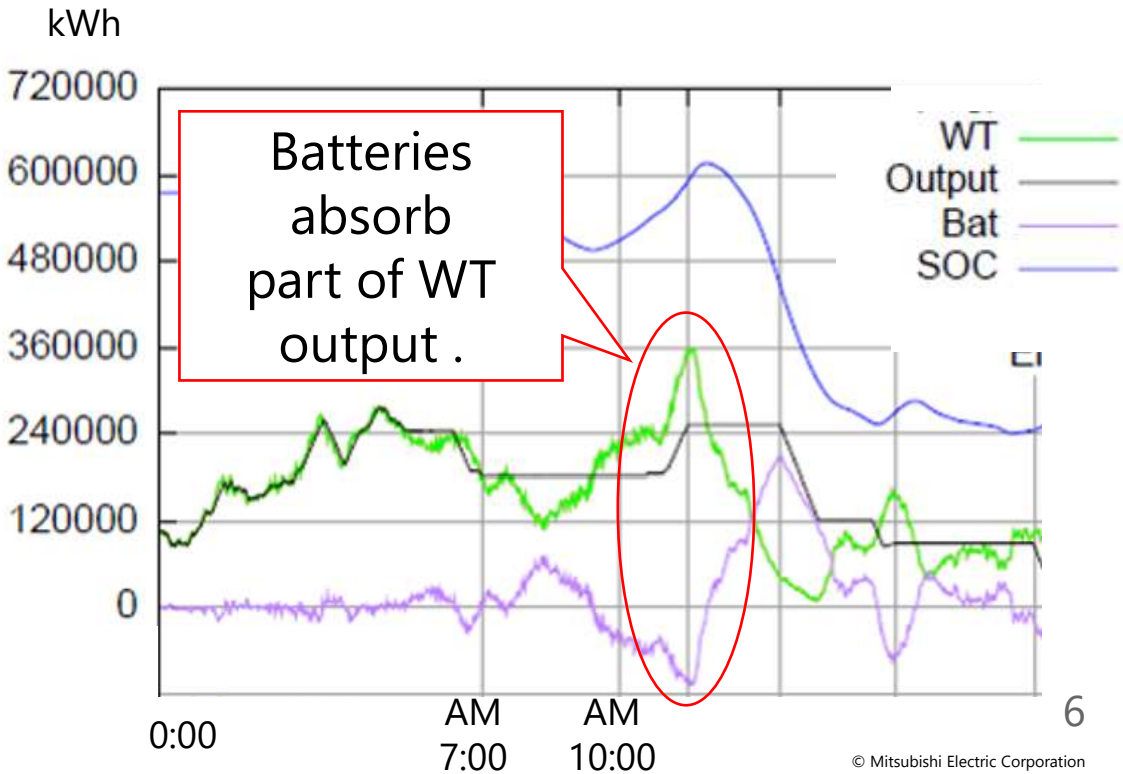
Benefits :

✓**Reduce WT curtailment :** Charge generated power beyond grid capacity, considering SOC constraints

✓**Grid Balance Support:** Charge based on TSO instructions when surplus imbalance occurs.

✓**Grid Stabilization:** Smooth WT output avoid impacts on frequency/voltage.





Actual use case and solution

#2 Flexible Connection for DERs

Use Case#2 Flexible Connection <Customer needs>

Client: (Distribution System Operator, UK)

Situation and Challenges:

- A large volume of connection applications for renewable generation
- Grid reinforcements to fully allow connections were **expensive and resulted in long timescales.**
- **Needs for cheaper and faster connections** for generators

Solution Deployed :

DERMS* for real-time control
to realize flexible connection since 2019

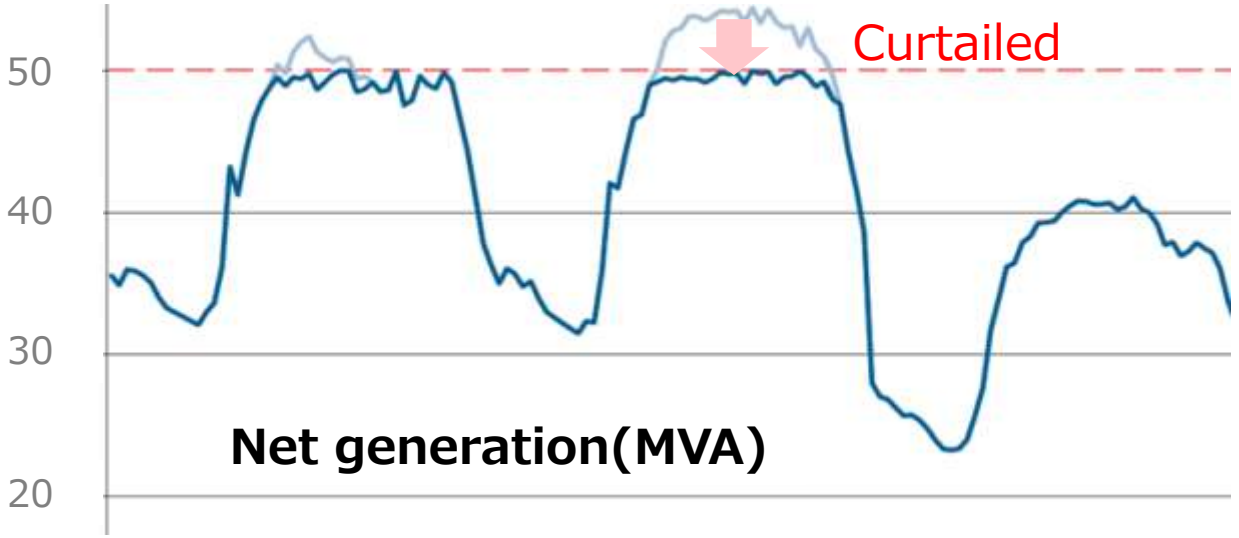
*Distributed Energy Resources Management System

"UK Power Networks DSO: 2 years on",
(UK Power Networks, 2025)

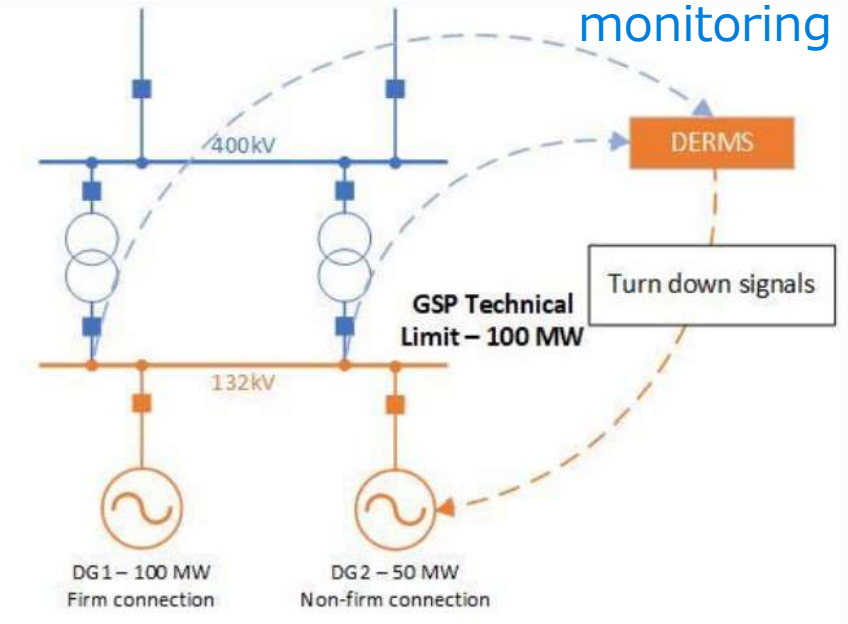
Use Case#2 Flexible interconnection <Solution>

Flexible Connection

- ✓ a technical and commercial agreement to allow to connect DERs in constrained network areas **without the conventional network reinforcement**
- ✓ **subjects to DERs accepting to have their output curtailed when the network is congested**
- ✓ **Realized by DERMS**.



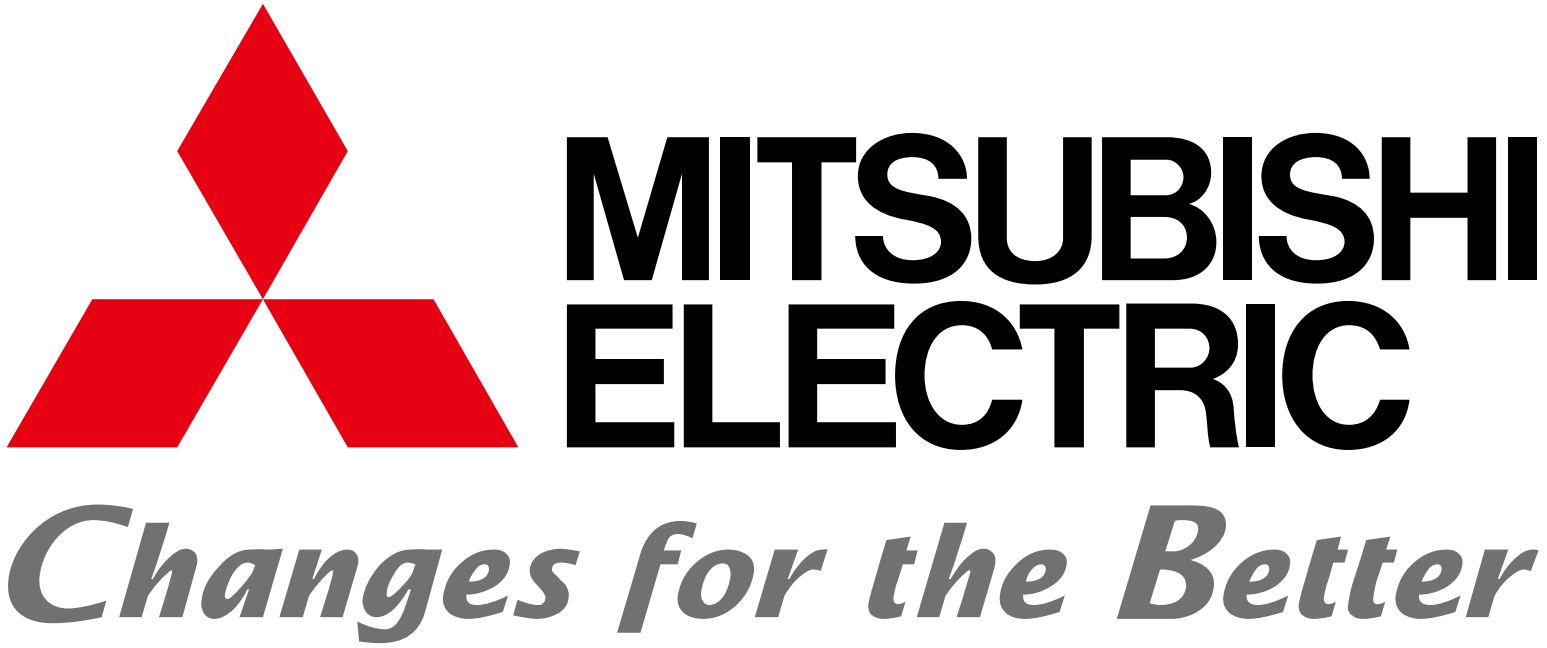
DERMS realize real-time monitoring and control



"UK Power Networks DSO: 2 years on", (UK Power Networks, 2025)

Benefits :

- ✓**Low-cost and fast renewable energy interconnection**
- ✓**Reduce curtailment** through real-time monitoring and control without relying on forecasts.


MITSUBISHI
ELECTRIC
Changes for the Better

IRENA INNOVATION WEEK 2025

Q&A:

Digitalisation for Demand Side Management and Renewables Integration

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Join at slido.com #1053254

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Audience Q&A

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Closing remarks

Yasuhiro Sakuma
IRENA

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Renewables and Digitalisation for a Sustainable Energy Future

Thank you!

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Reception at the City Hall

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