Latest Japan's Demand Side Flexibility

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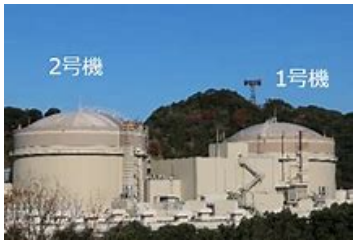
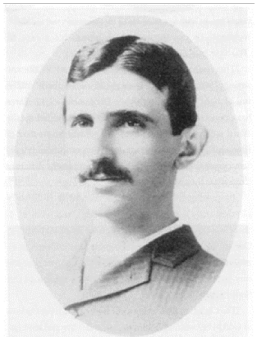
TRANSITION of Energy Business

Traditional Model

Exactly Same in Japan





Nichola Tesla

Samuel Insull

Hybrid Model

Combination of Downstream & Upstream

Centralized Three Phase system

Journey on Japan's Demand Response and VPP

2011 The Great Earthquake (Fukushima Incident)

2012 Restart of Electricity System Reformation

2014 Energy Plan (Including DR introduction) established

DR導入を含むエネルギー基本計画

2015 DR Guideline (Operation Rules) established

ベースライン検討会(現ERAB検討会)活動開始

2016 Capacity procurement (including DR) auction started

VPP pilot project (2016～2020) started

調整力Ⅰ´公募開始、VPP実証開始

2017 Ⅰ´ Reserve (DR) contract Aggregator-TSO started

～First implementation in 2018 ⇒capacity expanding

Ⅰ´の初発動と容量拡大

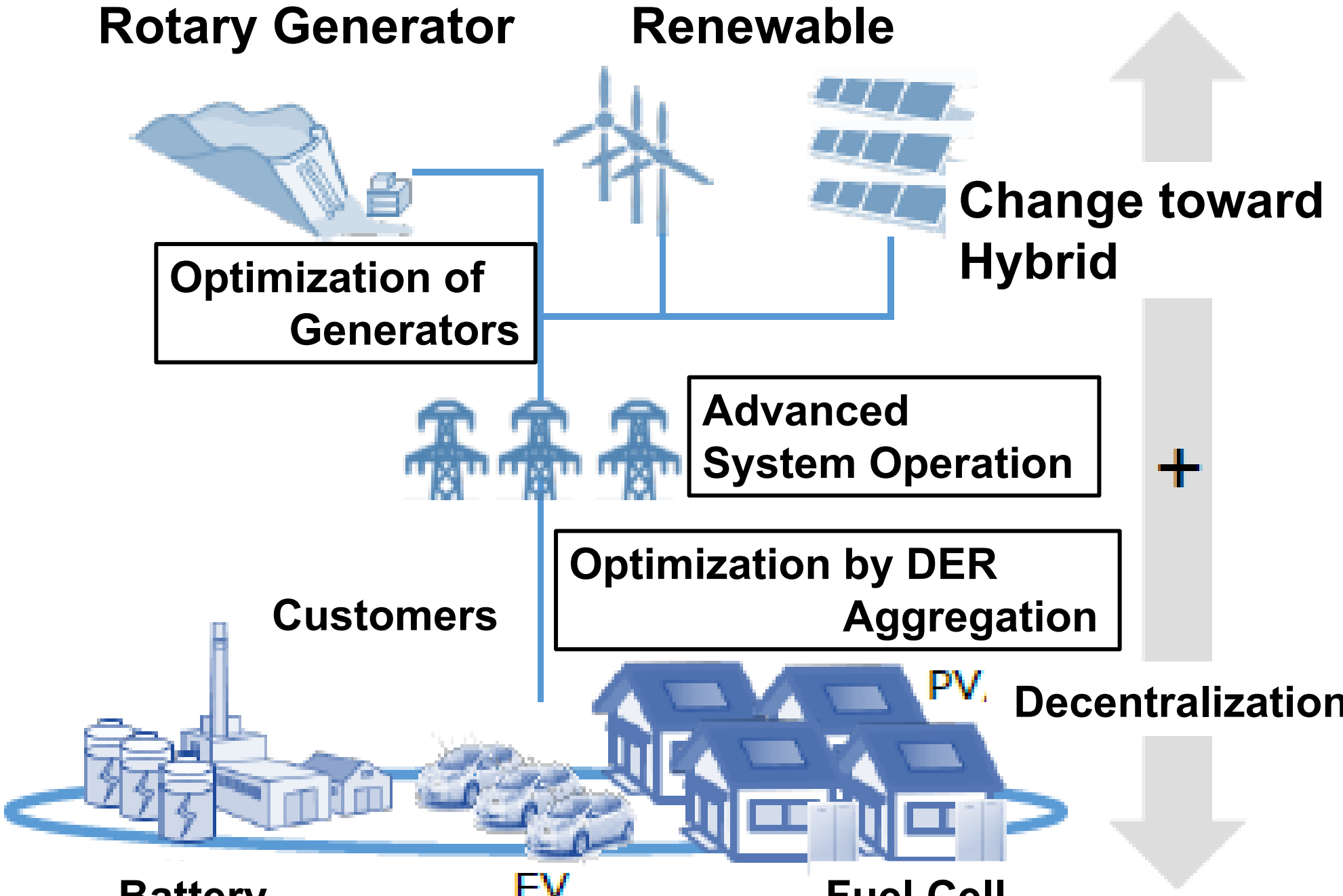
2020 End of VPP project ⇒RE balancing and DER multi-use

VPPの新展開 (toward 2030～2034)

2021DER expansion emphasized in Carbon Neutrality

次世代電力マネジメント産業の打ち出し Action Plan

Power system in future by METI



Japan's Activities After 2018 on DSO & Flexibility

2018.9 Hokkaido Blackout, Hard Typhoon Attack to Japan Mainland (also in 2019)

2018.10 METI platform study group started プラットフォーム研の立ち上げ
- ～UK & US Flexibility cases introduced (WPD, piclo, NY REV..)
- ～Emphasis of advanced technology platform building
- ～DSO&TSO tariff change to Revenue Cap (レベニューキャップ)
- ～Possibility of local grid
- ～Change of metering rules for DER expansion
  - ⇒Transferred to practical rule change (各委員会等のタスクアウト)

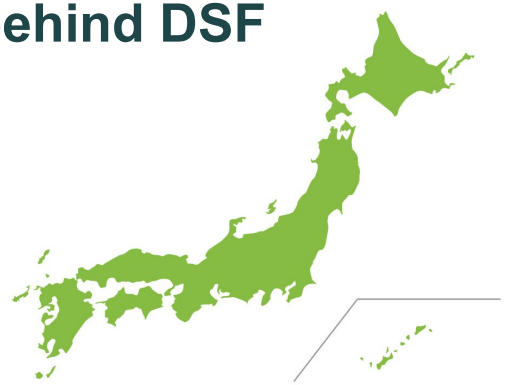
2020.4 DSO and TSO DER utilization platform study started by METI, NEDO ,Tokyo Power Glid, Kansai T&D, others

2020.6 New Electricity business Act enacted

2020.8 Smart Resiliense Network established for DER utilization
TSOs, DSOs, Aggregators, DER companies participates
スマートレジリエンスネットワークが設立、活動中。

需要側フレキシビリティ先進地域の欧州と日本の違い

Difference between
Europe and Japan behind DSF



再エネ導入速度:風力を中心に早い
RE Increase →Rapid
卸(当日)市場　:活発な取引と
ネガプライス、変動大
Intra Market→Active
DER(顧客側機器):
EV普及で先行
家庭用機器が大出力(kW)
EV spreading, Appliances
配電ネットワークの余裕が少ない
DSO Robustness→Not enough

再エネ導入速度:太陽光中心で緩やか
RE Increase →Re
卸(当日)市場　:未発達、最低0.01円/kWh
Intra Market→Inactive
DER(顧客側機器):
家庭用蓄電池は多いがフレキシビリティ
未活用、他の機器は省エネ進み小出力
Residential Battery, EV on the way
配電ネットワークの余裕が大きく、配電線の切り替え能力が高い
DSO Robustness→Presently Enough

次世代電力マネジメント産業(14分野の一つ)

DER promotion policy for Carbon Neutrality(2021.7)

○分散型エネルギーリソース(DER)の活用最適化に向けた制度・市場整備:市場規模 約3千億円～　DER market in 2030→3billion＄

○FITからFIP制度への移行による変動再エネの市場統合[2022年度～]
Promotion of Direct Marketing for FIT

○DERの価値取引市場(卸電力、需給調整、環境価値等)の要件整備(大規模電源との公平取扱等) Equality of Generator and DSF

○混雑緩和にDERを活用するローカルレベルの混雑プライシング、市場取引の創設検討　Local Energy Market(Including Flexibility)

○主なDER(蓄電池／EV、需要側リソース)の活用容易化に向けた取組
Elimination of DER utilization barrier

○定置用蓄電池のコスト低減・普及拡大に向けた取組(コスト目標、導入・投資支援、JET認証運用改善等) Battery cost reduction

Japan's present position for demand-side utilization

Japan's Latest Situation

⊿kW市場

(Primary⇔Tertiary)

△

Reserve Market for DER
→Rule revise Ongoing

Recruyiting DER
DER Metering issue

Intra-kWh Market

Very small presentry
・Expand with RE FIT migration to FIP
2023→2030～

△

[DR&DER Players]

centrica storage
NUVVE
ENER-G
VOLTALIS
sonnen
JEDLIX
NEXT KRAFTWERKE

RE Value
(Certificate, Tracking)

○

Now Expanding

Capacity(kW)market
(Curtailment)

○

Now Expanding
Capacity procurement
⇒Capacity market(2024)

DSO payment for distribution stablity

× → △ ?

2020
DSO pilot project started

Today's Issue

○日本の需要側フレキシビリティ、特にまだ検討途上の配電レベルの安定化に向けた活用を包括的に進めていくためには何が必要か?

What is the comprehensive way to activate DSF in Japan, including DSO voltage use??

○規制当局とTSO/DSO自身の役割は何か

How should regulators and TSO/DSO make actions for DSF utilization in Japan and other countries.

○フレキシビリティのリソース選択はどうあるべきか。リソース間の競争性、契約等、プラットフォームをどう構築していくか。

What Flexibility resource will be used?? What function will the flexibility platform prepare??