

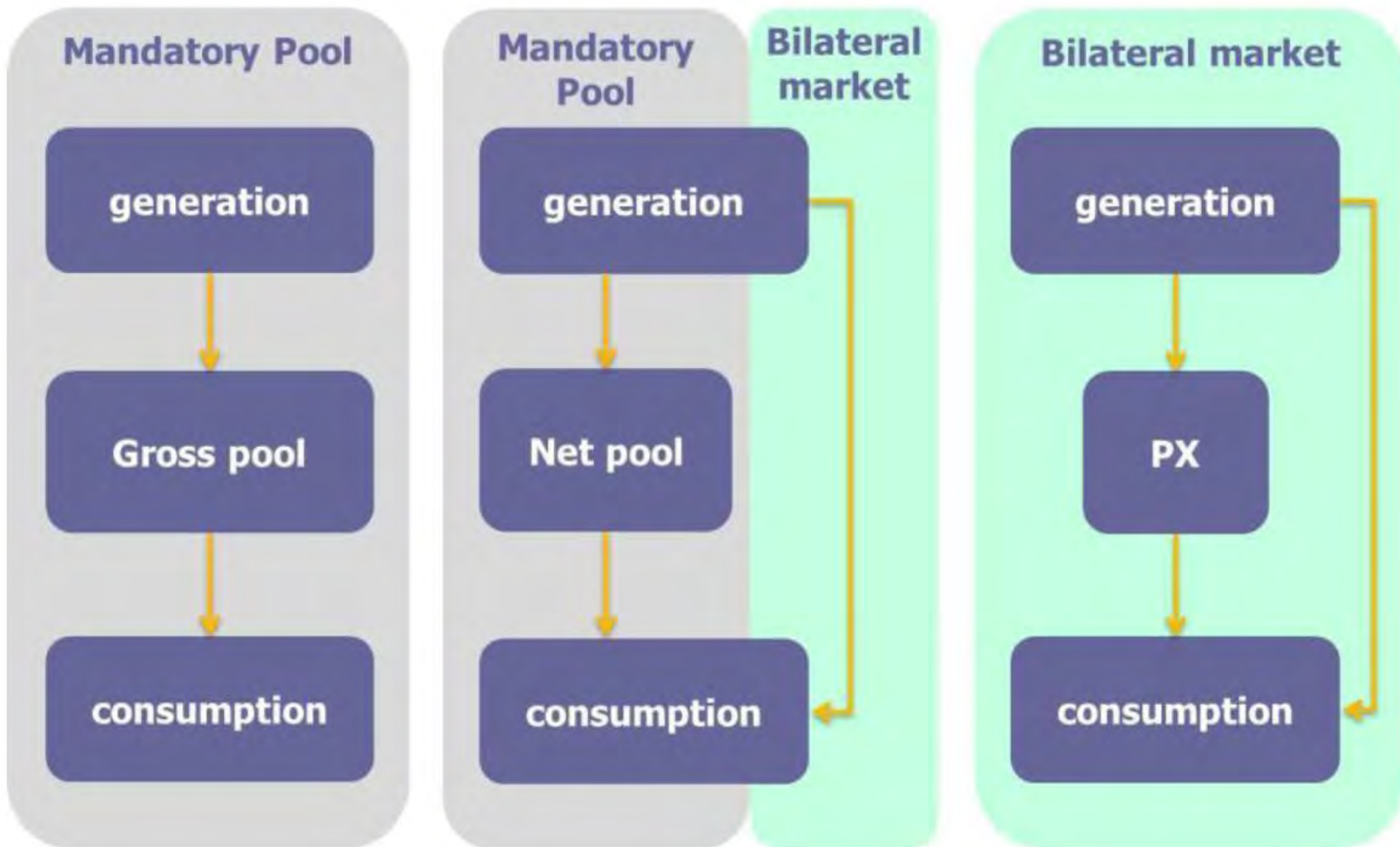


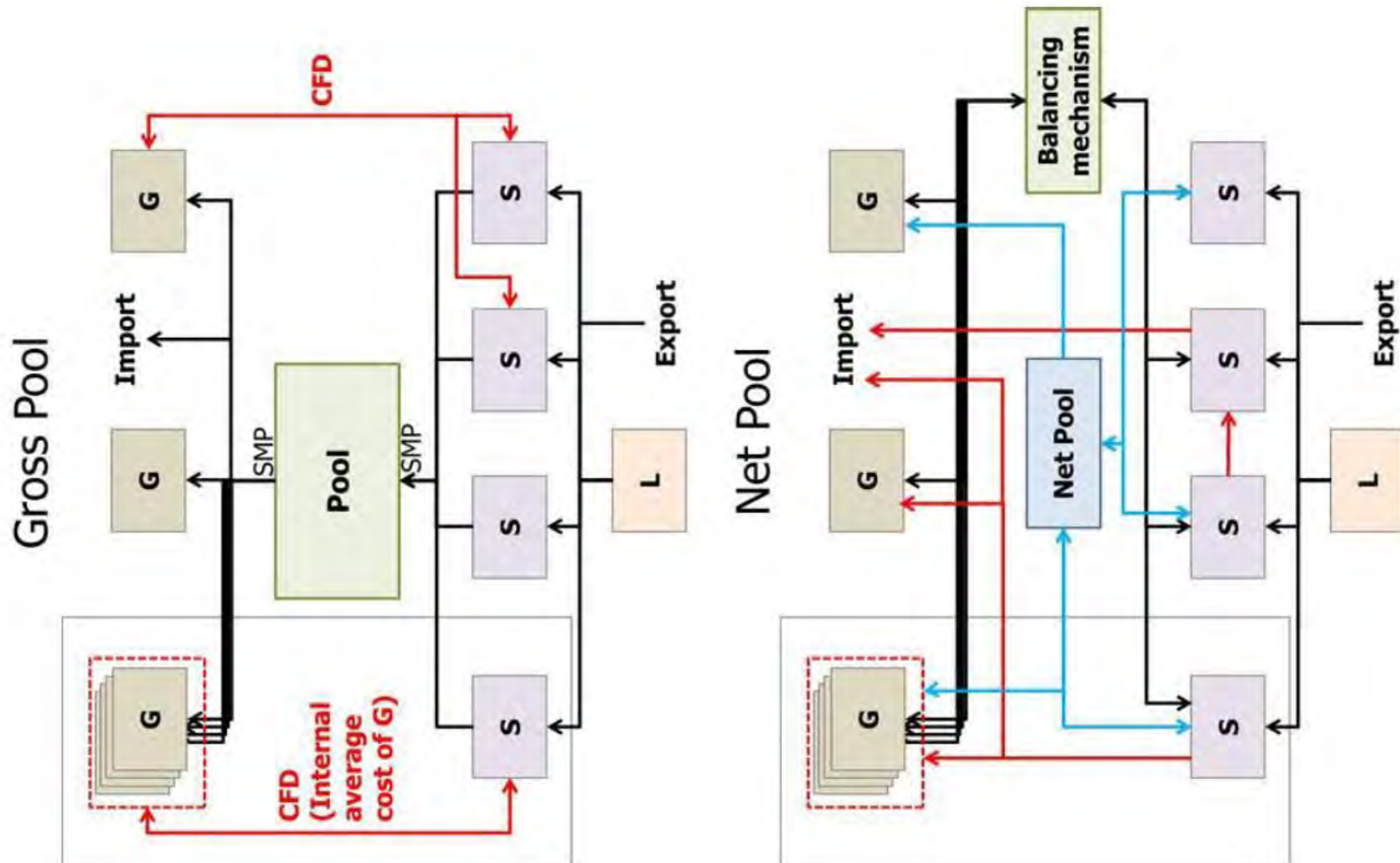
**Ενέργεια: Ώρα για αποφάσεις
Αγορά ηλεκτρισμού στην Κύπρο:
Ενέργειες προς όφελος του τελικού χρήστη**

We need to link our future with EU's 2030 targets and beyond, for a booming sustainable economy

Do we see far enough?

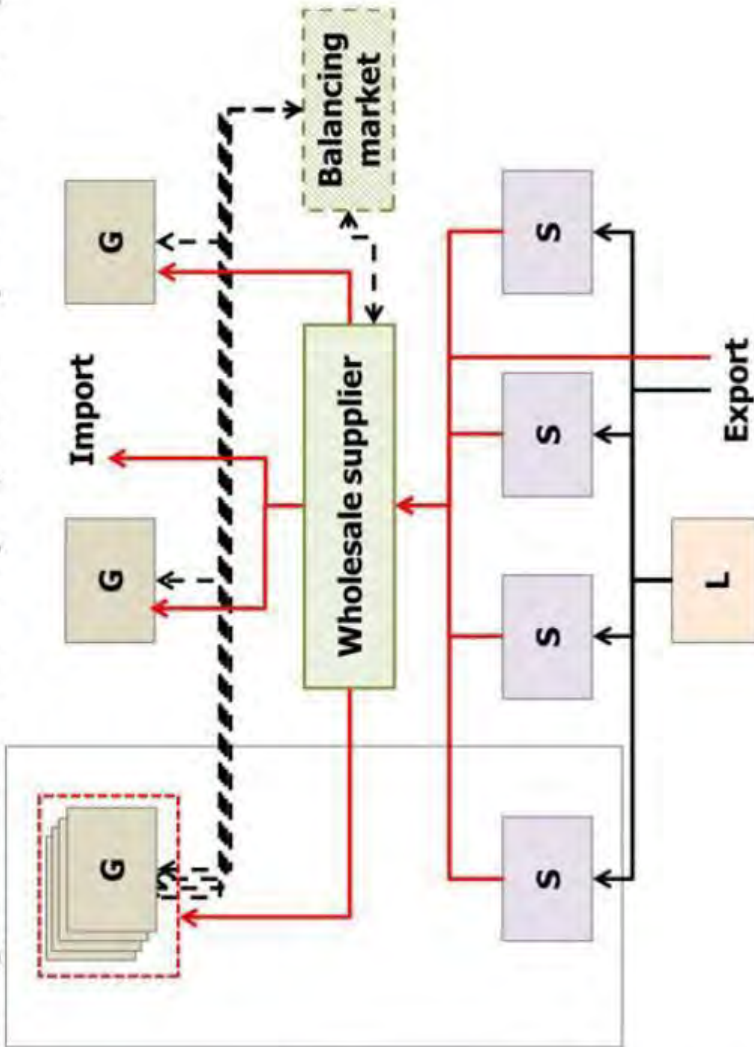




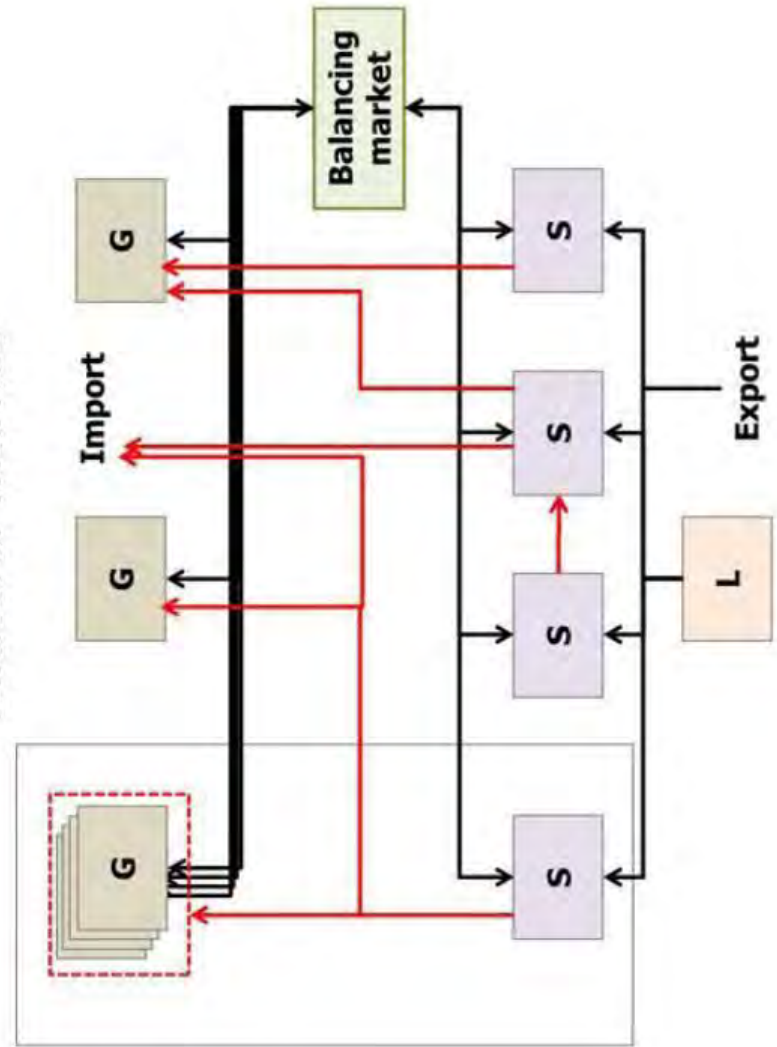


Legend: G: Generator; S: Supplier; L: Load; CFD: Contracts for difference;

Single wholesale buyer/seller (non-market)



Bilateral market



Legend: G: Generator; S: Supplier; L: Load; CFD: Contracts for difference;

SET Plan Integrated Roadmap (13 themes)

T10: Development of renewables

T8: System flexibility

T1: Engaging consumers

T2: Smart technologies for consumers

T6: Modernising the electricity grid

T7: Energy storage

T8: System flexibility

T9: Smart cities & communities

T3: Energy efficiency in buildings

T4: Energy efficiency in heating & cooling

T5: Energy efficiency in industry & services

T7: Energy storage

T13: Biofuels, fuel cells & hydrogen,
alternative fuels

T11: Carbon capture storage/use

T12: Nuclear energy

ENERGY UNION R&I & Competitiveness priorities

N°1 in Renewables

**Smart EU Energy
System with
consumers at the
centre**

**Efficient Energy
Systems**

**Sustainable
Transport**

SET Plan (10 key actions)

1. Performant renewable
technologies integrated in the
system

2. Reduce costs of technologies

3. New technologies & services
for consumers

4. Resilience & security of
energy system

5. New materials & technologies
for buildings

6. Energy efficiency for industry

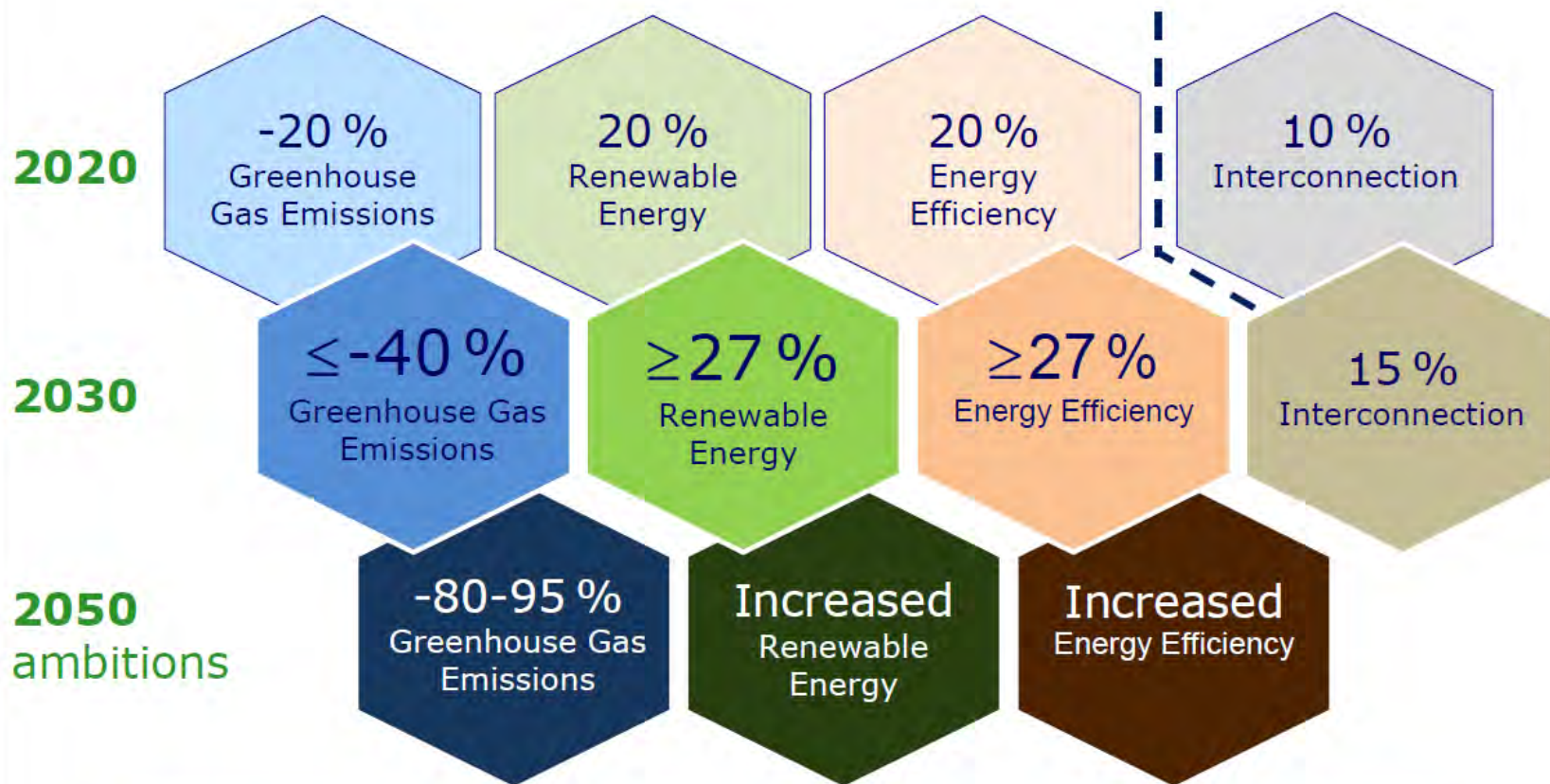
7. Competitive in global battery
sector (e-mobility)

8. Renewable fuels

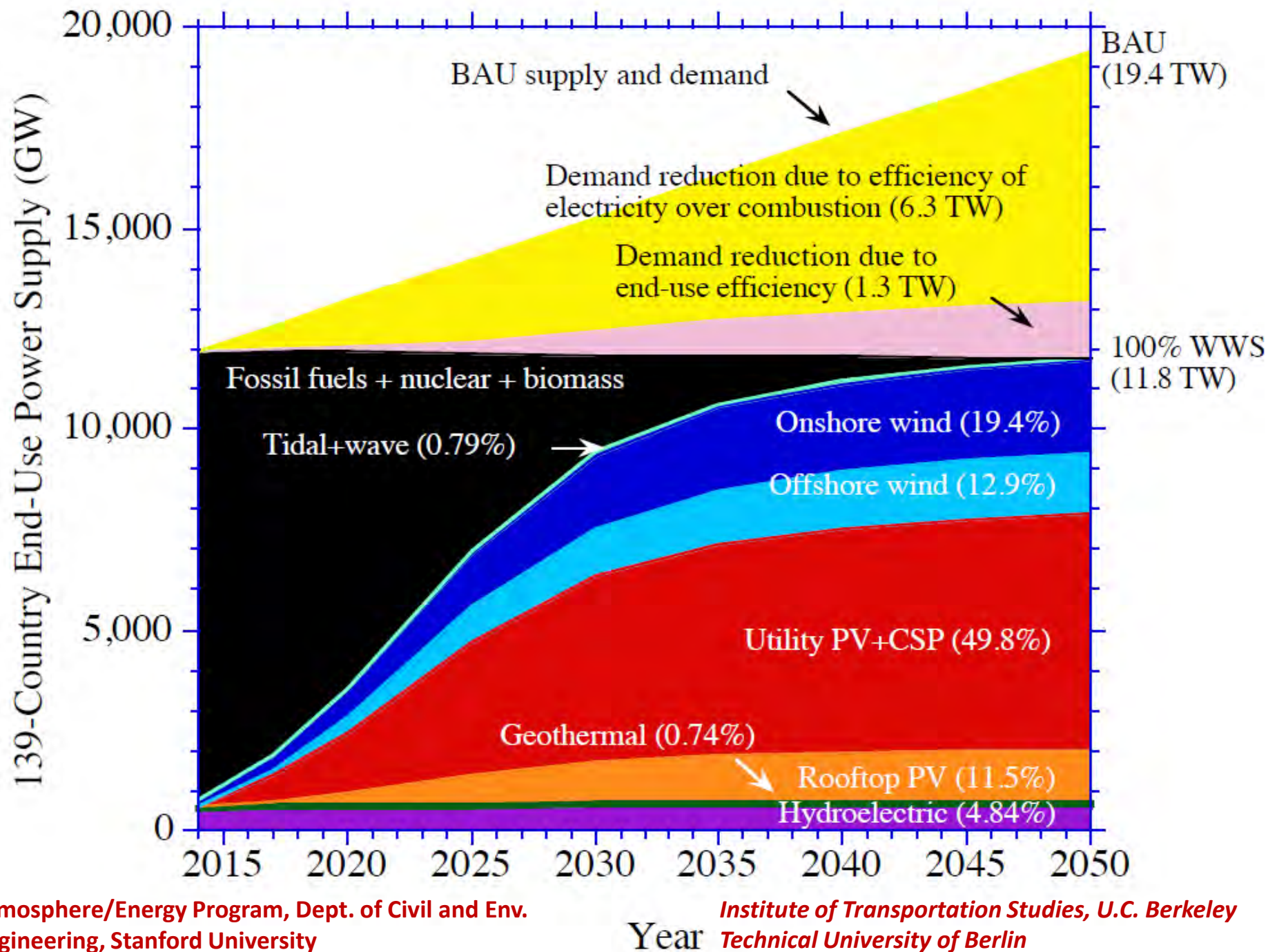
9. CCS/U

10. Nuclear Safety

EU Strategy for 2020 to 2030 +



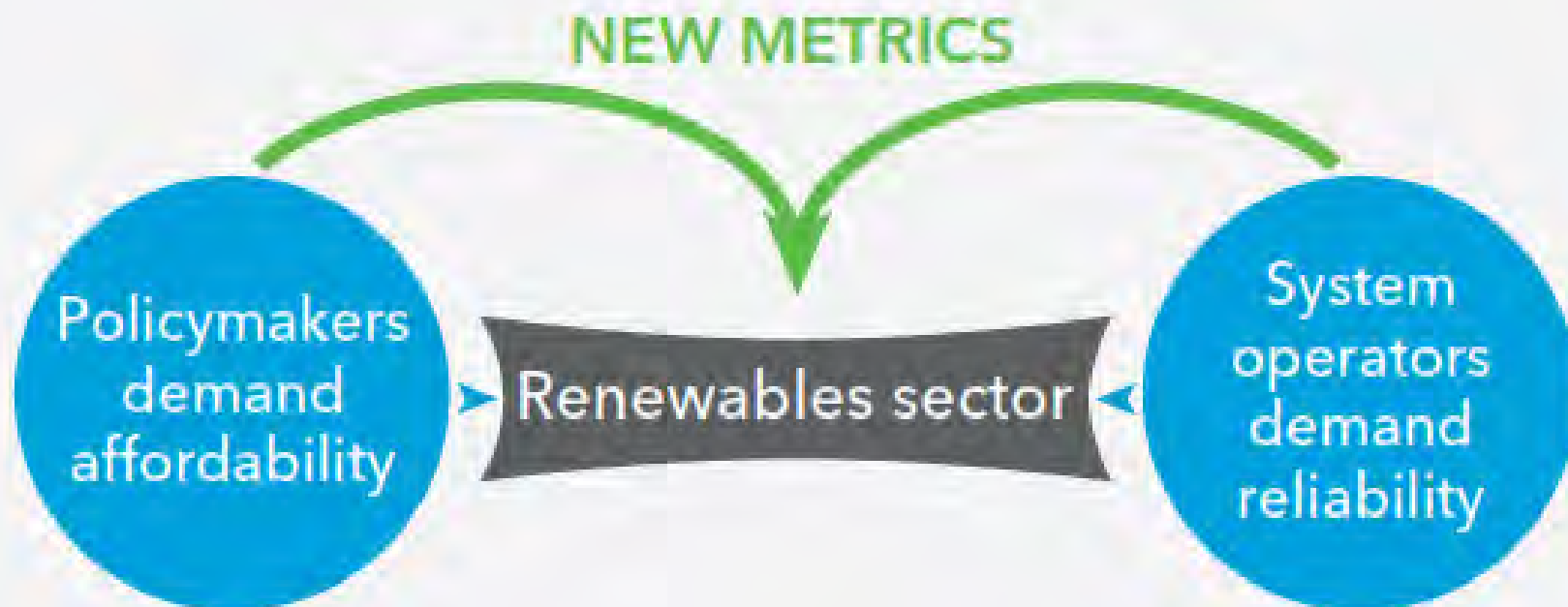
27% renewable energy in 2030: up to 45% renewable electricity



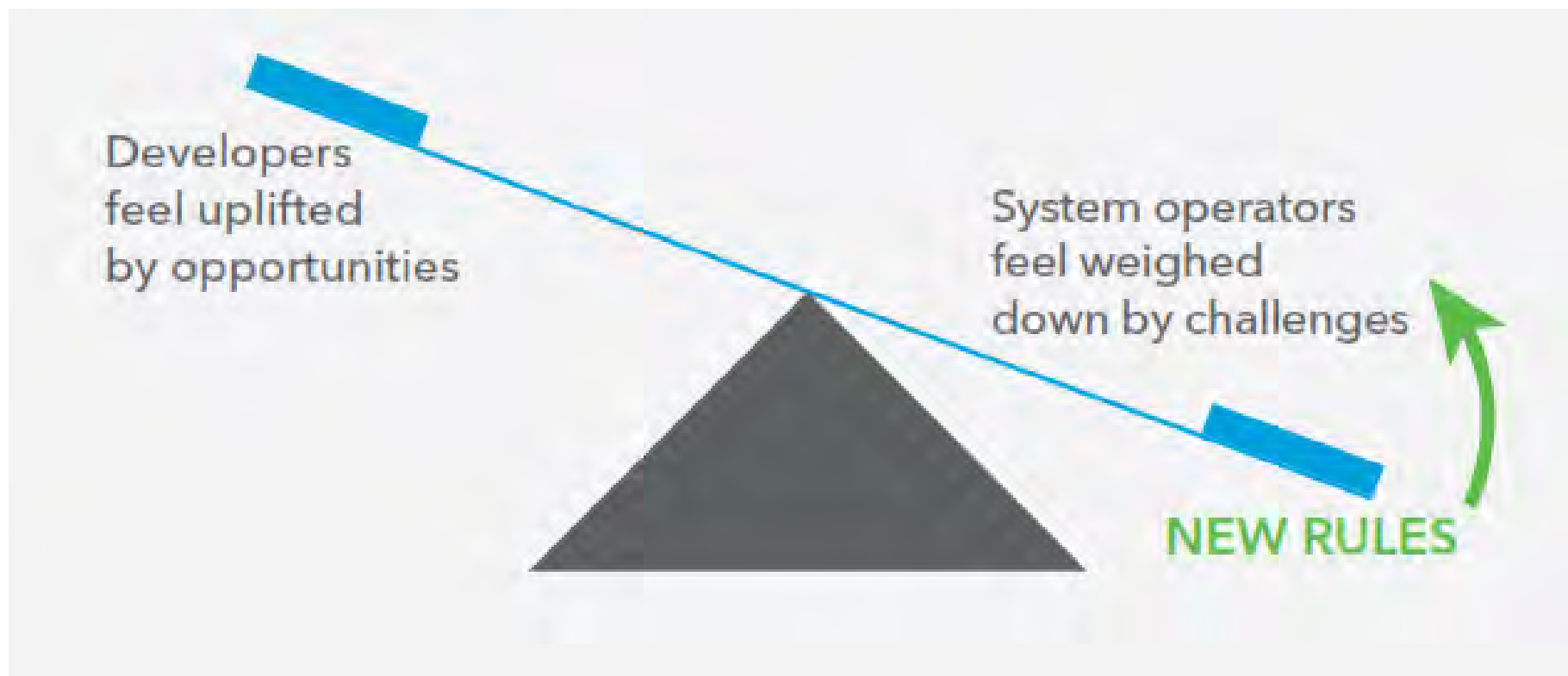
Business is not as usual: A new norm is born

- Through the dynamics of RES we are re-shaping the electrical industry,
- We need to go beyond integration – RES is not as conceived, a tolerable integration into status quo arrangements but a much smarter need,
- Through the adoption of these new technologies, a new norm is born that requires:

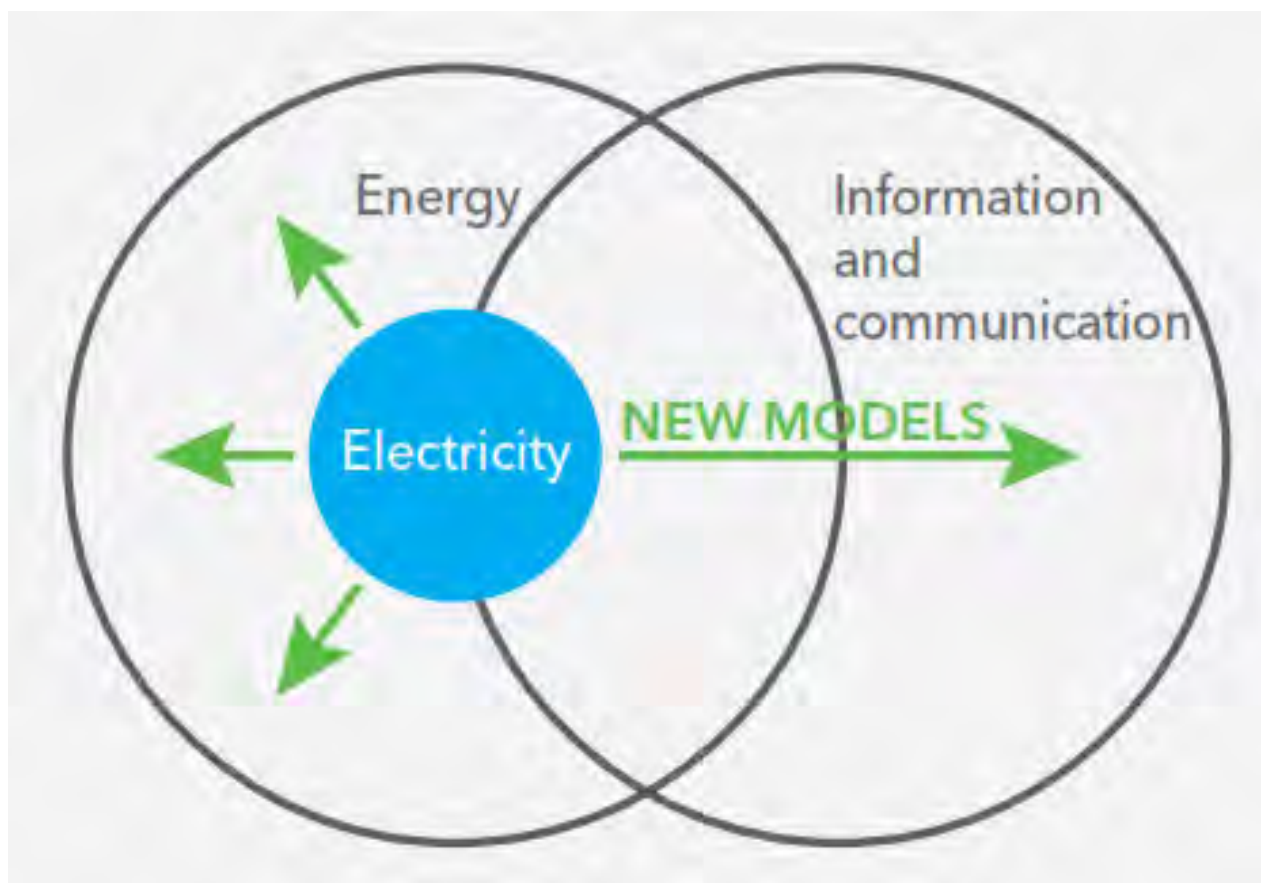
Convergence between policymakers for better prices and demand reliability from System Operators



Rebalancing between opportunities of developers and grid challenges of System Operators

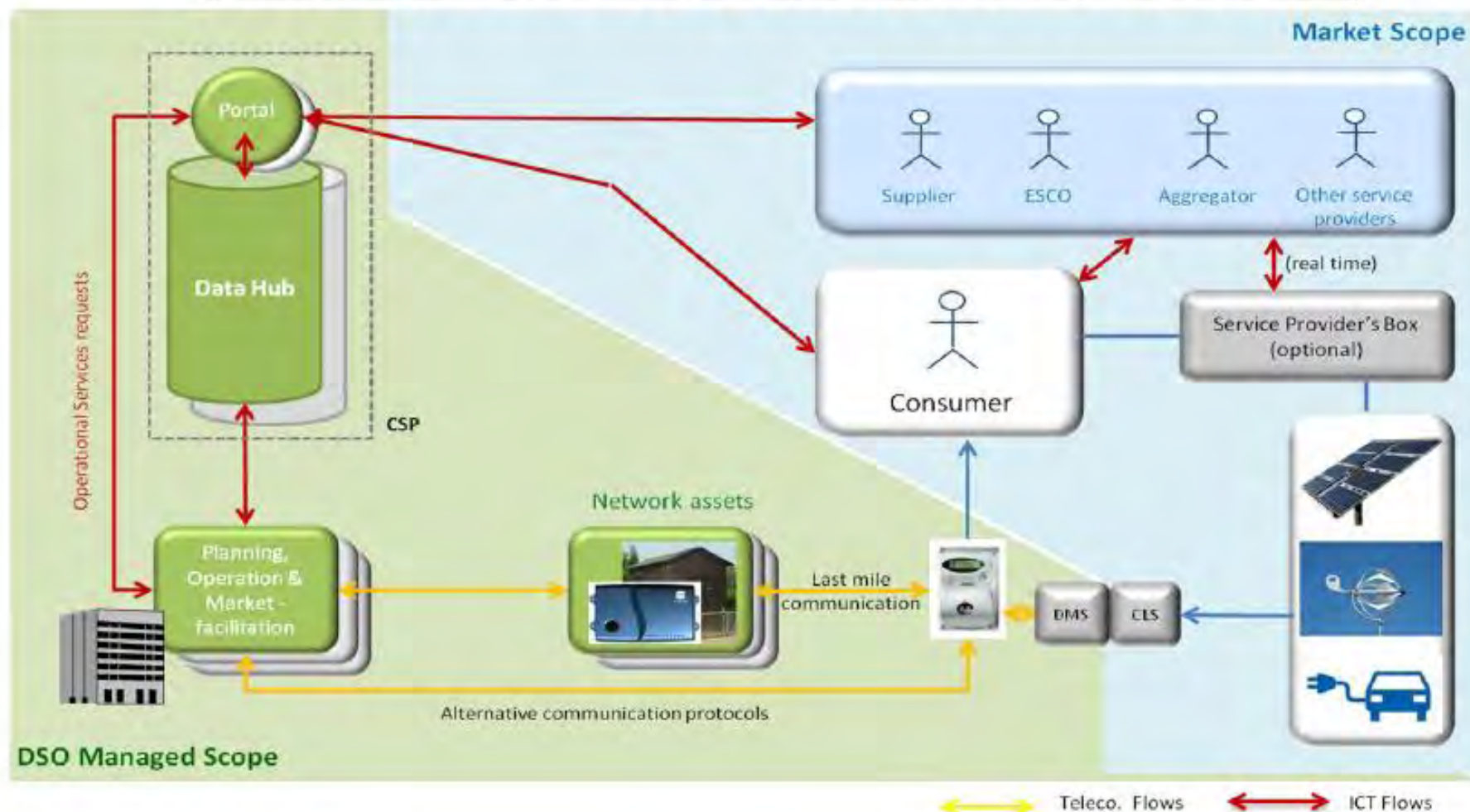


New market models for expanding the electricity business into the internet of energy

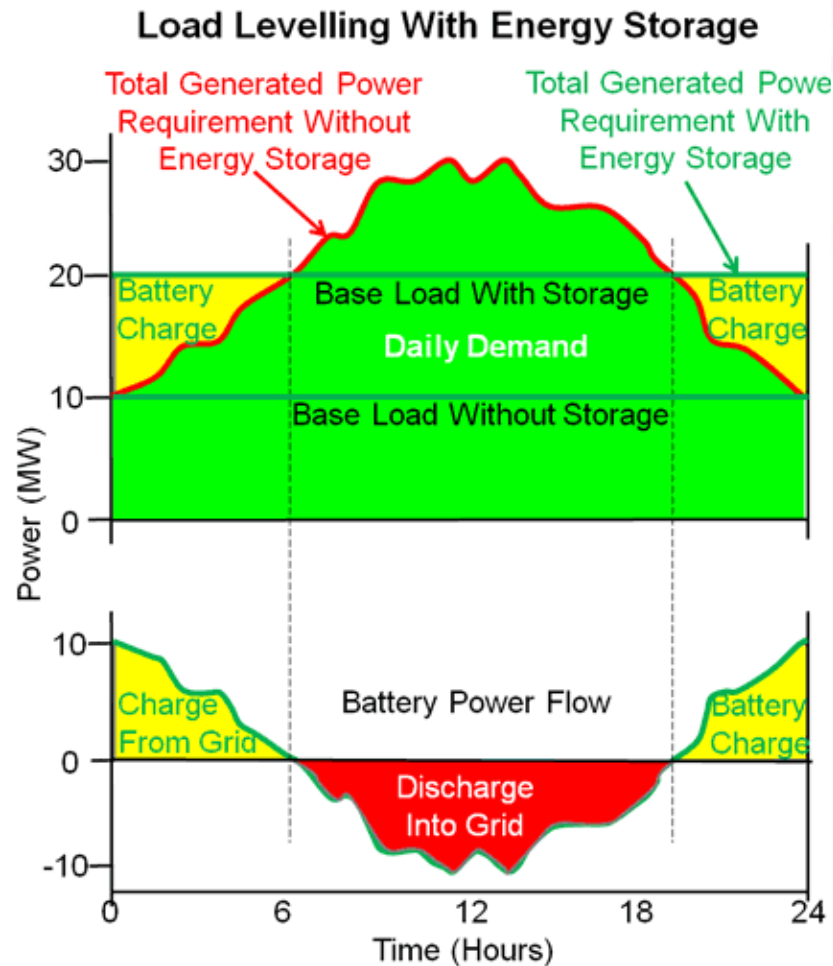


Smart Grid Task Force EG3: Options of handling Smart Grids Data

Case I: DSO as market Facilitator

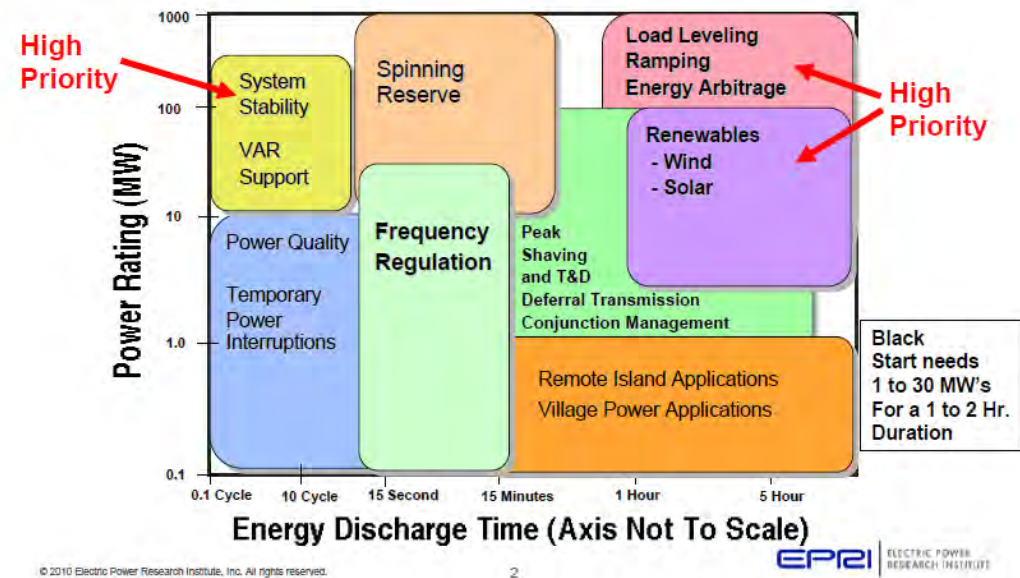


The bi-directional nature of storage offers a wealth of flexibility ...



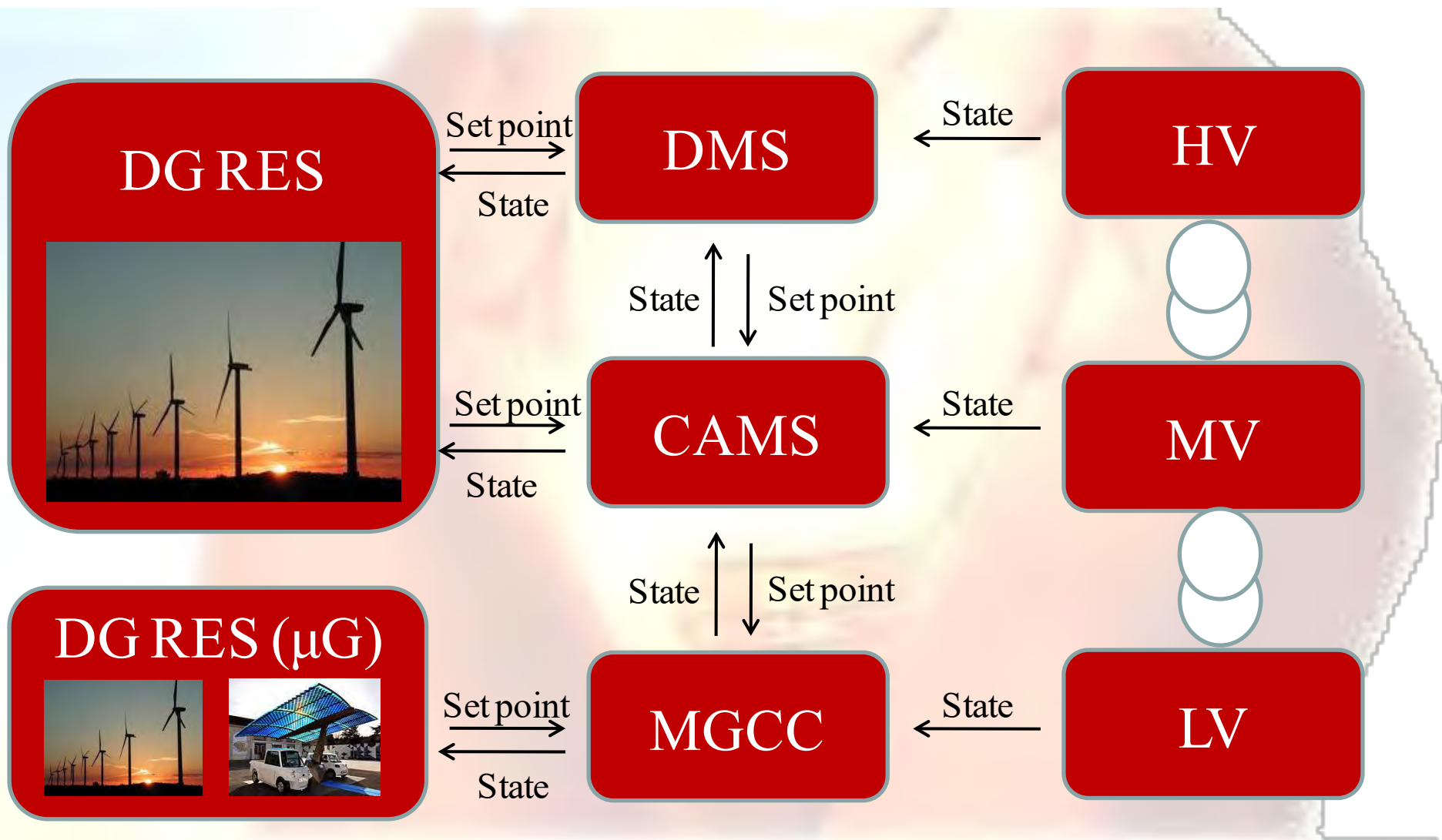
Electric Energy Storage Applications

(All Boundary Regions Displayed Are Approximate)

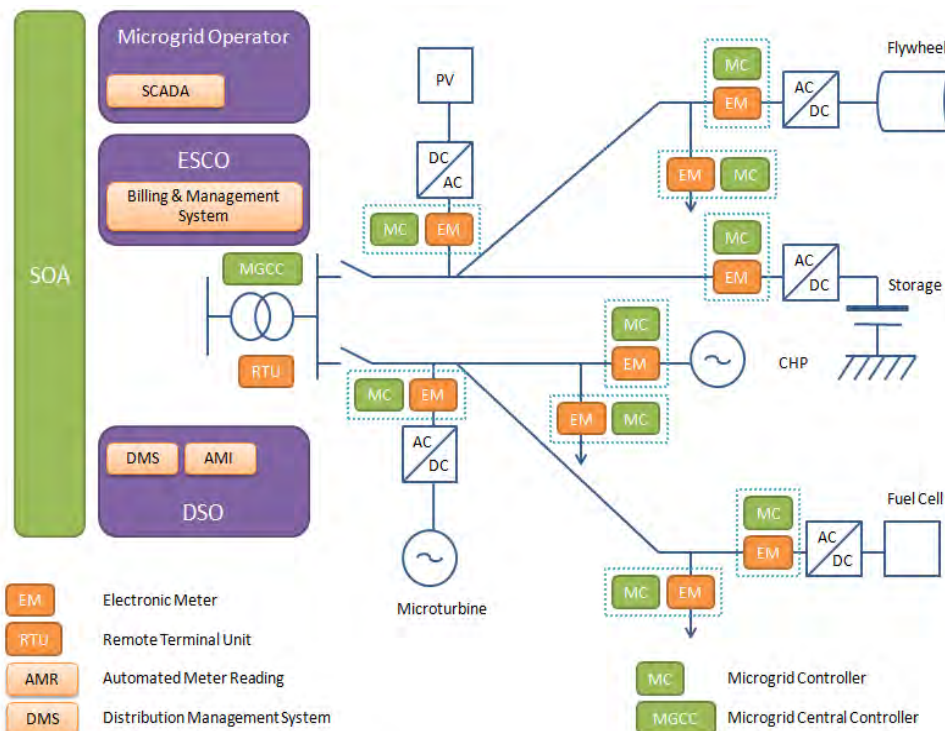


Complex to regulate due to its multi-use capability – But offers much needed flexibility !

Hierarchical Multiagent



Need for smart incentivized Regulation ...

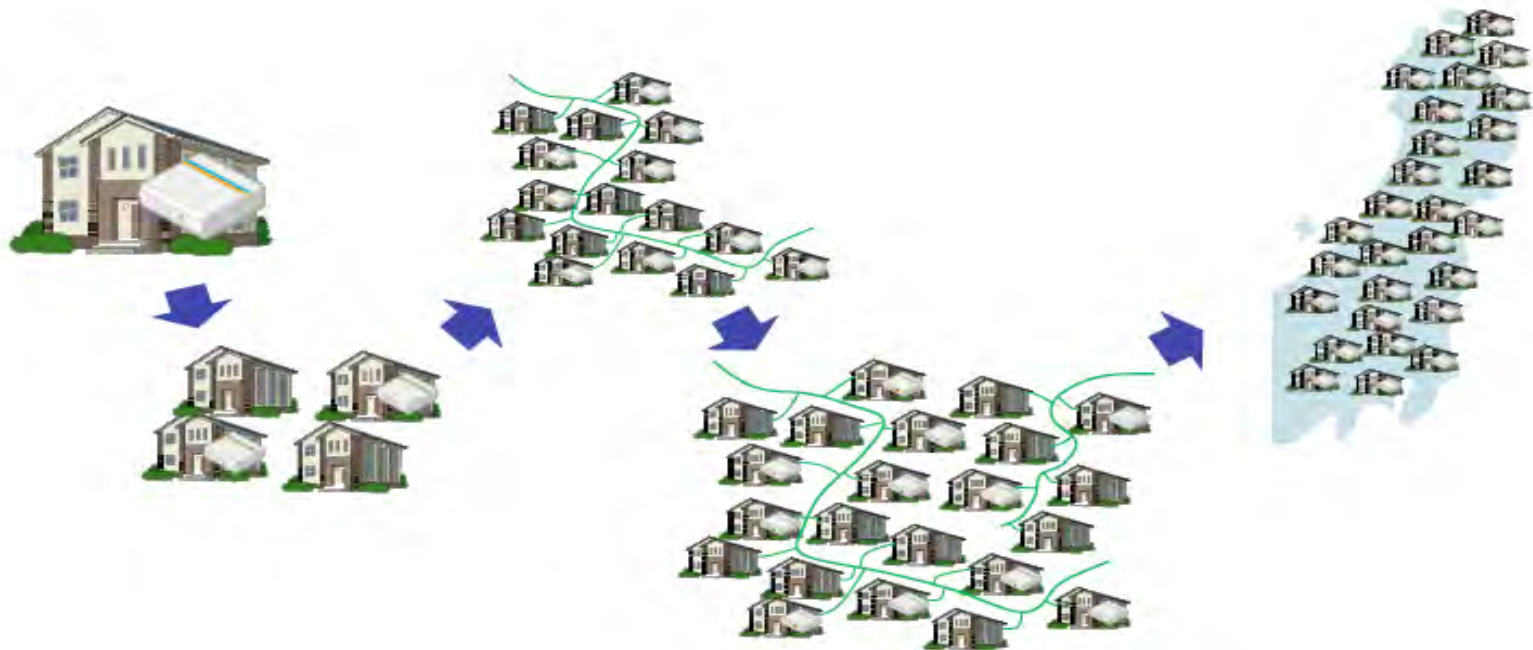


- **Distributed control architecture will prevail seamlessly linking all active elements of the integrated grid**
- **Embedded systems with microgrid capabilities or “web of cell” connectivity will offer quality inclusion of energy efficient buildings**

➤ **Policy and Regulatory shortcomings need to be addressed for smart investments to prevail and maximize benefits to all active stakeholders !!!**

Scaling up is flexible ...

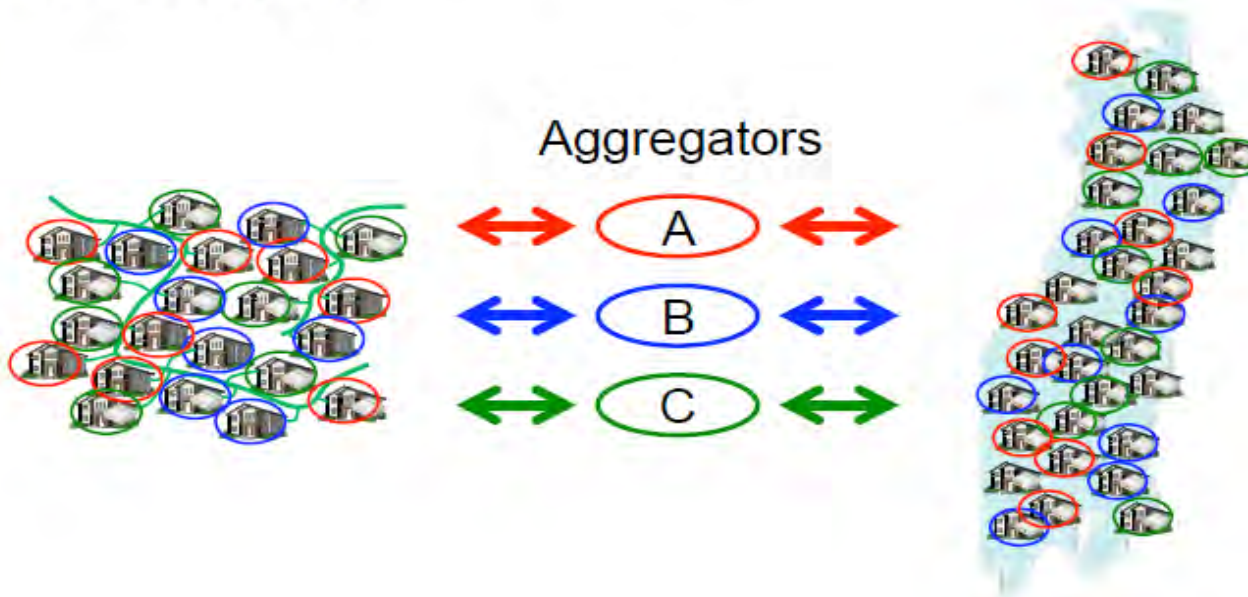
Flexibility on scale



Aggregation is flexible ...

Consumers can choose

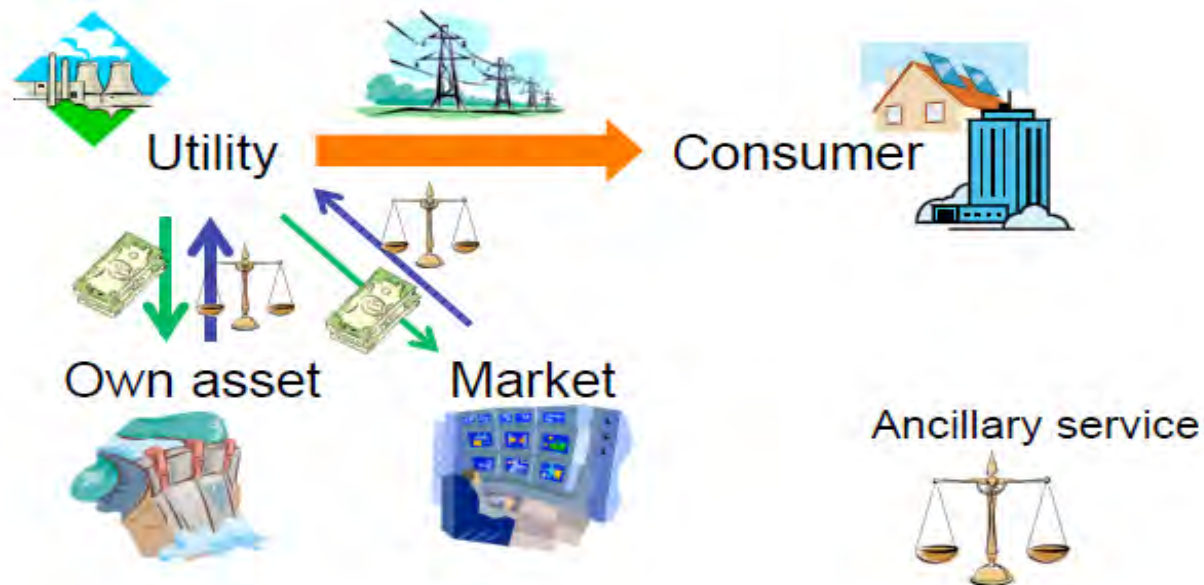
- Aggregators / autonomous (independent)
- No monopoly



Market functioning is flexible ...

Contribution of DER on power system operation

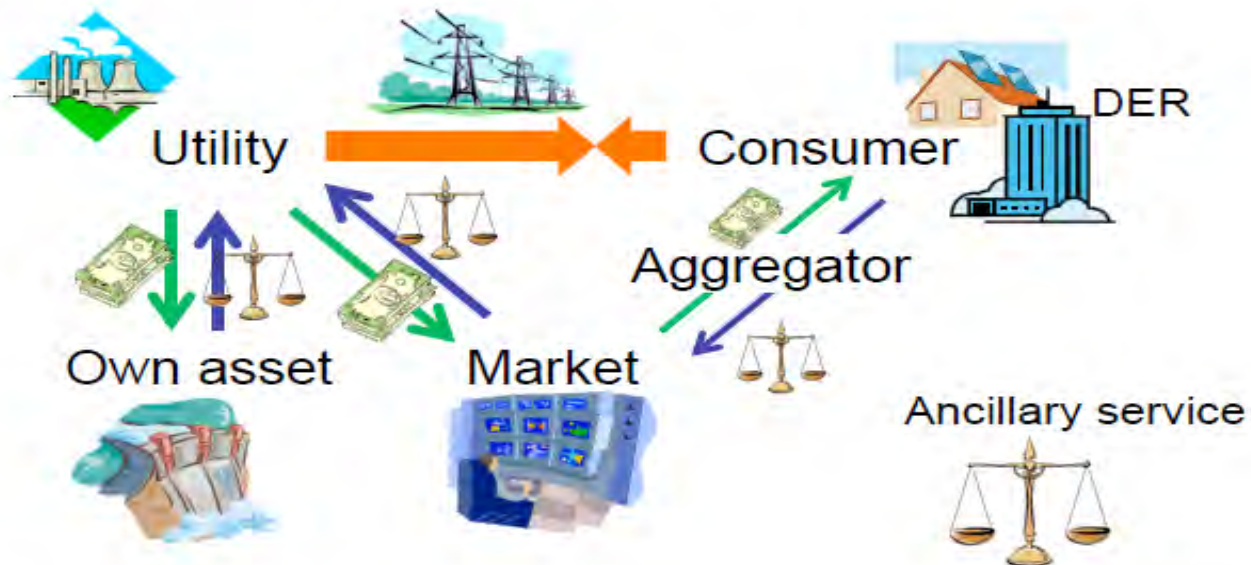
- Now: power system operation is done by utility only



Market functioning through aggregators

Contribution of DER on power system operation

- Now: power system operation is done by utility only
- Future: consumers join through markets



Thank you !!!

Market functioning through aggregators

Contribution of DER on power system operation

- Now: power system operation is done by utility only
- Future: consumers join through markets

