

The current and future role of DG in EU electricity supply

Will it fundamentally transform the power industry?

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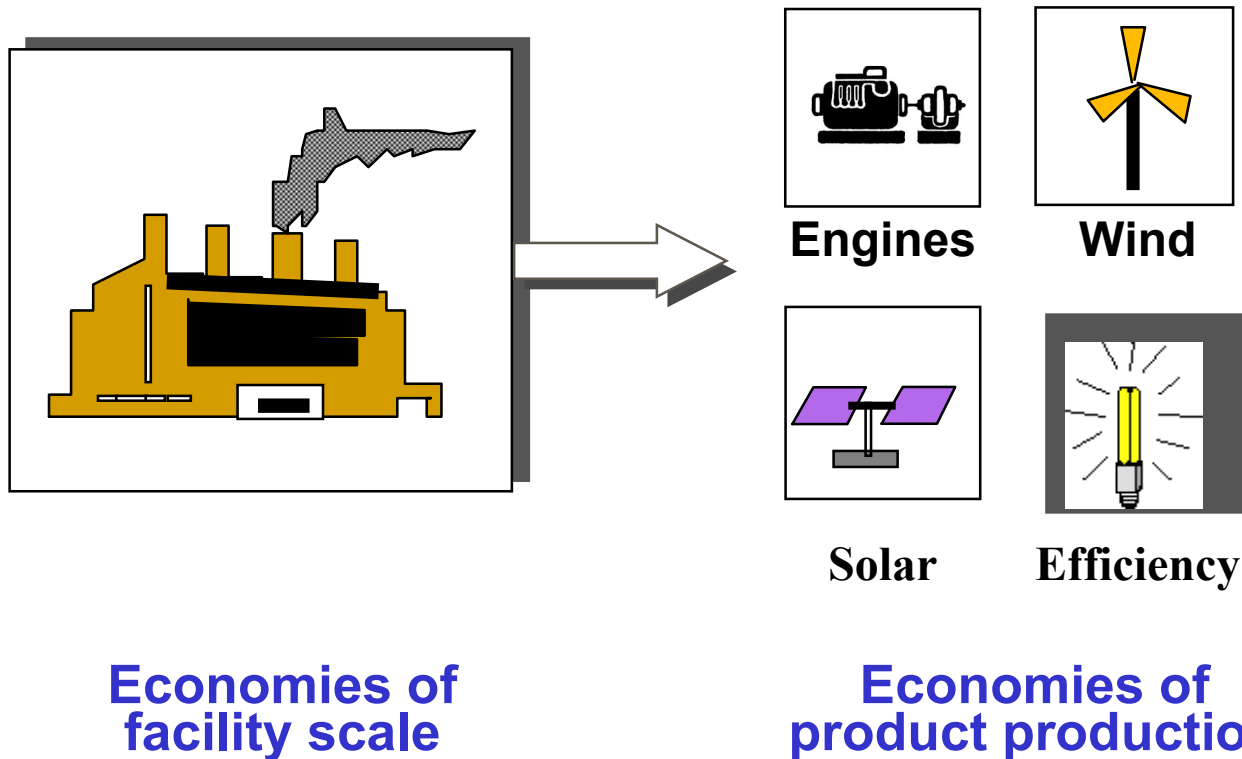
My preferred definition of DG

Distributed generation can be defined as:

- the integrated or stand-alone use of **small, modular electricity generation** sources
- installed **within the distribution system** or at a **customer's site**
- **by utilities, utility customers** and other **third parties**
- to meet specific **capacity** and **reliability needs**
- in **applications that benefit** the electricity system, specific end-use customers, or both.

Strategic Driver 1: New Technologies

Emerging technologies represent tools for fundamental changes in the utility business.



Strategic driver 2: customer choice

Restructuring and evolving regulation drive **customers** to be more **proactive** and informed about energy purchases and investments.

Increasing need for **differentiated energy services**,
e.g.

- reliability
- quality
- co-generation/thermal
- “green” energy

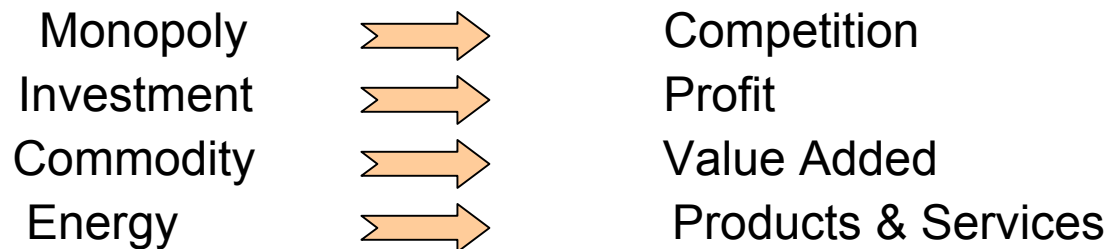
Changing perceptions about system reliability:

- inadequate response to increased demand for electric power through insufficient and/or delayed G,T,D system upgrades and expansions;
- increased customer expectations for higher reliability than may be available from the current systems;**
- weakening of traditional roles, responsibilities and incentives for maintaining a uniformly high level of performance

Strategic driver 3: utility restructuring

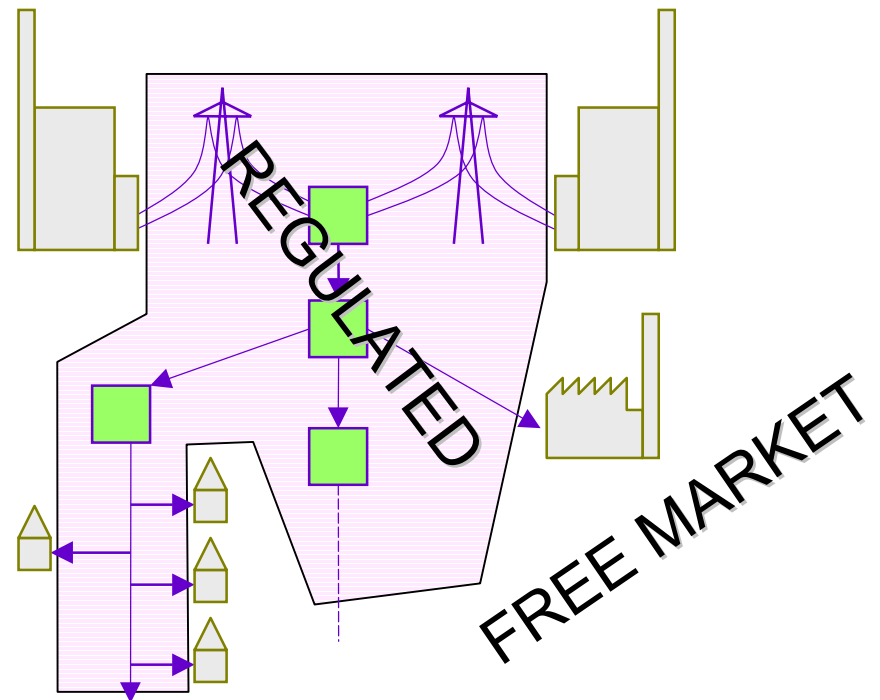
“Delamination” of vertically-integrated utility into service components:

- Generation
 - *Transmission*
 - *Distribution*
 - Marketing & Customer Services
- } “Wires” Companies



THE ELECTRICAL GRID IN A DEREGULATED ENERGY BUSINESS

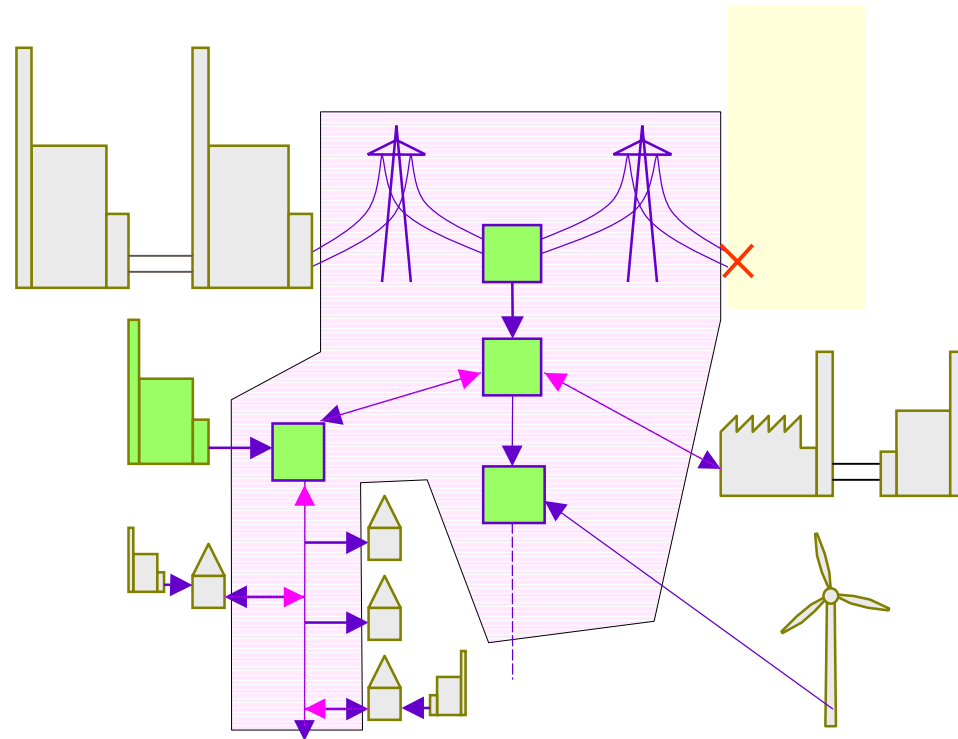
...deregulation has fragmented the business, leaving the network as a regulated monopoly...



...which has the duty of accommodating whatever transport of electricity its customers may require...

...which is expected to lead to a considerably different use of the network.

THE ELECTRICAL GRID IN A DEREGULATED ENERGY BUSINESS



THE DISTRIBUTION NETWORK BECOMES AN ELECTRICITY HIGHWAY: CONNECTIVITY

Strategic driver 4: economics of DG

- DG makes possible the use of clean,resources of energy, allowing **increasing energy diversification**.
- DG provides new technologies which allow to use fossil or bio-fuels **more efficiently** and thus helping in pollution reduction.
- DG systems can be **installed in short time**. Speed of implementation and the modular nature of this technology allow to efficiently invest in power generation.
- The generator can be **sited close to the end-user, delaying the need to upgrade congested T&D networks**, thus **decreasing** transmission and distribution **costs** and electrical **losses**, and providing ancillary services

Economics and benefits of DG

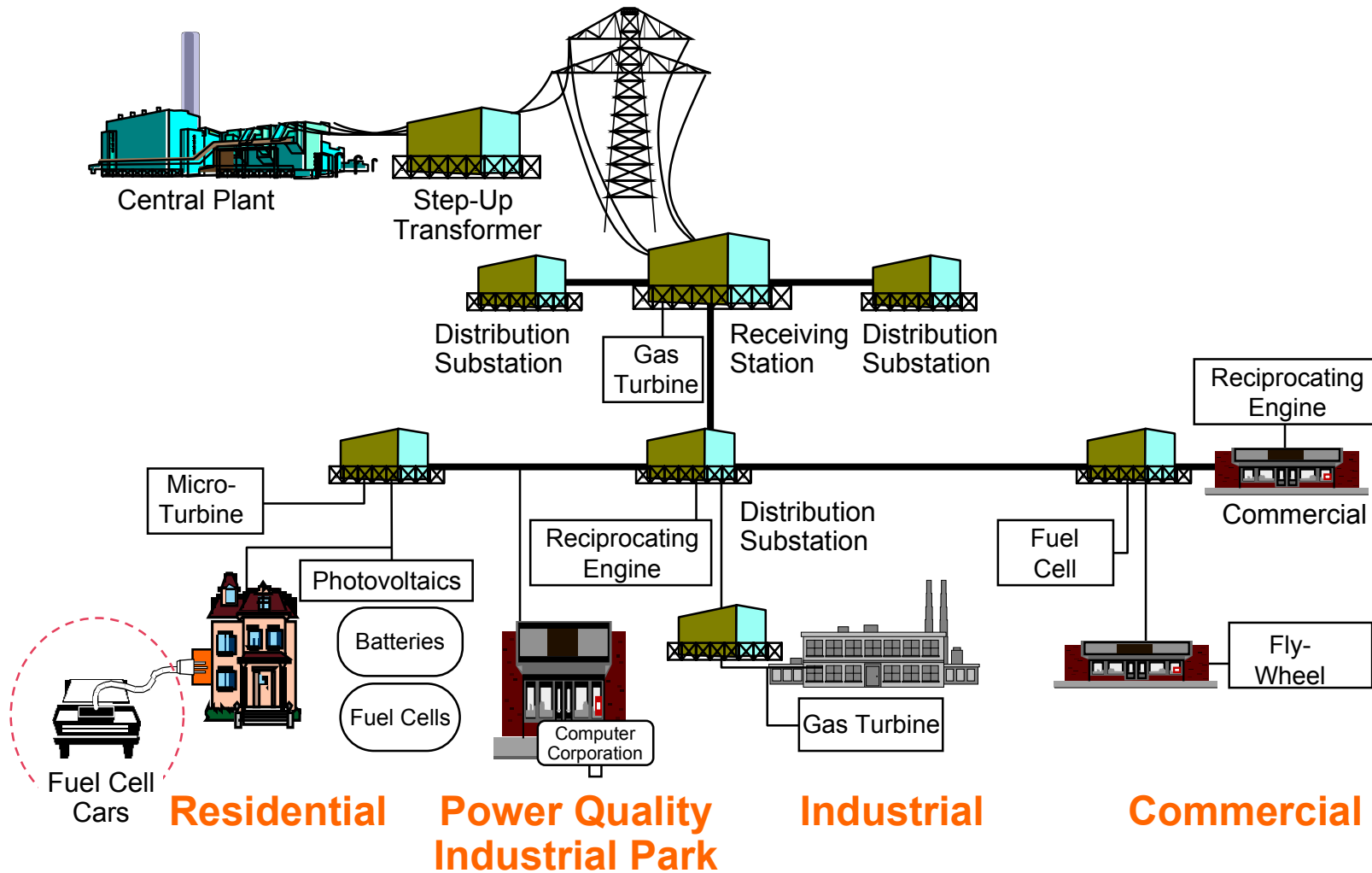
Flexibility of DG to its owner in operation, size, expandability

A DG plant can operate during periods of high energy prices- peak- and then switch off;

easy of installation allow capacity to expand readily, some Dg are even portable, they can literally “follow the market”;

existence of relevant unused emergency standby power is gaining increased attention as growth leads to tighter capacity margins

1 kW to 50,000 kW systems strategically placed could enhance grid reliability, improve energy efficiency and reliability to end users



EU utility response to DG deployment

General utility reluctance to embrace DG, as they view DG as potentially **disruptive to traditional focus**, existing system investments and overall business.

Generation utilities core competence in large central station, while distribution utilities concentrate on wires - **no familiarity** with DG

Fear that proliferation of DG could create new **power management and safety concerns**

Concern that Dg-even when well deployed- may become an **undesirable precedent**, used to compel them to deploy DG under undesirable circumstances

DG may represent, if deployed in certain way, a **loss utility revenues**

Status of DG within Electric Utilities in EU

- Despite some commercial successes, DG industry remains in a tenuous, embryonic phase.
- Larger players have had limited success,
- Majority of applications are MW scale, kW option still emerging
- The investment community is losing some patience
- The market structure of the energy industry still has not changed to better adopt DG and DER**

The way forward: policy is key

New regulatory policies to create new solutions including market-based approach to ensure reliability.

Regulators and stakeholders to confront barriers like electric rates, interconnection, siting and permitting.

Recognition of how market-oriented **programs** can send appropriate **price signals** when DG can be cost-effective.

Methods for allocation of **costs and benefits** to create appropriate market price signals.

DG can then be allowed a fair evaluation by the market

The way forward: a strategy for utilities-1

DG could be an important and flexible tool for D support risk management and customer retention, but **growing market is far from assured.**

Regulators must engage all interested parties to minimize regulatory **barriers to utility deployment** of DG where it can be effective, while balancing issues of market fairness.

DG **providers** must continue to **improve DG business models** and **technology performance** ranging from efficiency to emission, from aggregation to dispatch.

Utilities must recognize the **value of utility DG** and demonstrate a willingness to use it.

The way forward: a strategy for utilities-2

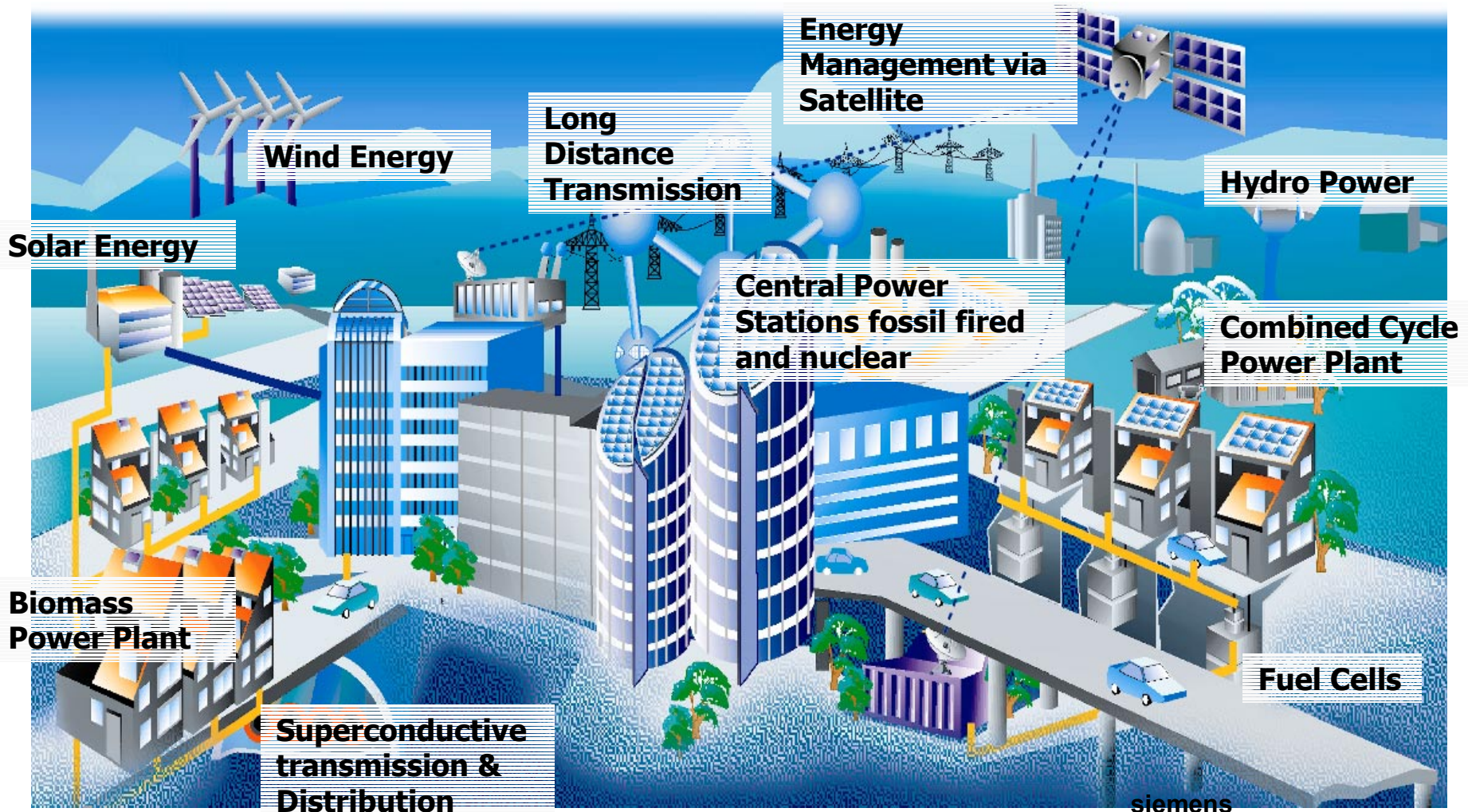
Change the traditional technical culture- understand DG capabilities, strengths, weakness, recognize business model approaches to meet their objectives;

Address barriers to deployment: Resolve regulatory and technical issues discouraging DG productive deployment;

Know where and when to use it: develop tools to view structure and operations to match DG options and electric system;

Optimize implementation : establish internal capabilities and outsourcing relationship to ensure successful implementation

Networked Centralized and Distributed Energy Supply Systems in the 21st Century



For further information

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