



How Regulators Can Respond to a Fast-Changing Energy Sector

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Over the past year, discussion among European regulators about the appropriate response to rapid changes in the energy sector has resulted in a “3D” strategy to guide our future programs and policies:

- **Decarbonization.** Driven by a major downward shift in the cost of renewable energy along with Europe’s commitment to address climate change, decarbonization efforts are changing how energy systems are operated, markets priced, and networks managed.
- **Digitalization.** Electricity consumers are gaining access to a wide range of emerging service options based on platforms that have been transformational in other sectors.
- **Dynamic regulation.** Energy regulators need to change as they face fundamental questions about how to respond to decarbonization and digitalization. They need to focus on solving tomorrow’s problems before they arise.



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In preparation for this strategy, European energy regulators recently issued a [report](#) on smart technology development, with a focus on five key technological changes in the energy sector:

- Smart home technologies and the Internet of Things
- Consumer-generated electricity
- Electrical energy storage
- Electric vehicles (EVs) and charging stations
- Blockchain applications

Here, I would like to discuss how energy regulators can consider two of these.

CONSUMER-GENERATED ELECTRICITY

While not new, generation by electricity consumers has grown significantly in recent years, particularly with declining rooftop solar costs. Inadequate consideration of the grid implications in Europe has resulted in challenges for consumers, such as costly retrofits of inverters and the inability to supply their own power during grid blackouts.

Energy regulators must consider strategies that empower consumers to benefit fully from their energy resources. Examples include dynamic retail rates (often known as *wholesale pass-through prices*) and peer-to-peer trading (often using blockchain technologies).

Increasing consumer-generated electricity will change how the grid is managed, and regulators need to engage in a discussion about the future role of distribution system operators for reliable, secure grid operations. This might involve solutions such as consumer participation in wholesale markets, revised network tariffs, and smart inverters.

Regulators will need to assess terms and conditions in consumer/supplier contracts to ensure that they do not restrict the consumer's choice of supplier.

Regulators will need to consider how comparison tools for consumers can be adapted to reflect market developments. As customers increasingly sell excess electricity to the grid, regulators must examine their right to relevant information on the bill while avoiding information overload.

EVs AND CHARGING INFRASTRUCTURE

Widespread adoption of EVs is expected to increase electricity consumption significantly—to as much as one-quarter to one-third of consumption for households with EVs. In addition, the new loads may occur at overlapping times, such as when people arrive home from work and plug in their vehicles. Distribution systems in many locations have not been designed for such load increases. To address this, energy regulators can encourage distribution system operators to contract for congestion management services rather than overhaul grid infrastructure. European regulators are working with legislators to promote competition in charging infrastructure markets, help ensure that system operators are technology-neutral, and protect consumers from cyber security incidents.

Regulators need to carefully consider important questions raised by EVs, including:

- How do consumers access information on energy prices as they connect to different charging stations?
- Who pays for grid upgrades needed for fast charging?
- Who protects consumers' interests when technology is changing so quickly?

To navigate the power sector's transformation, European energy regulators will need to cooperate more closely and share best practices with regulators in other sectors—such as telecommunications and consumer protection—as well as with regulators in other parts of the world.