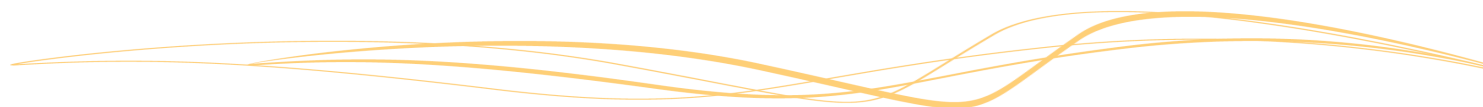


# Making money out of the Smart Grid

## **IEEE PES Conference on Innovative Smart Grid Technologies Europe 2010**

By Alice Waltham, IPA Energy + Water Economics

12 October 2010

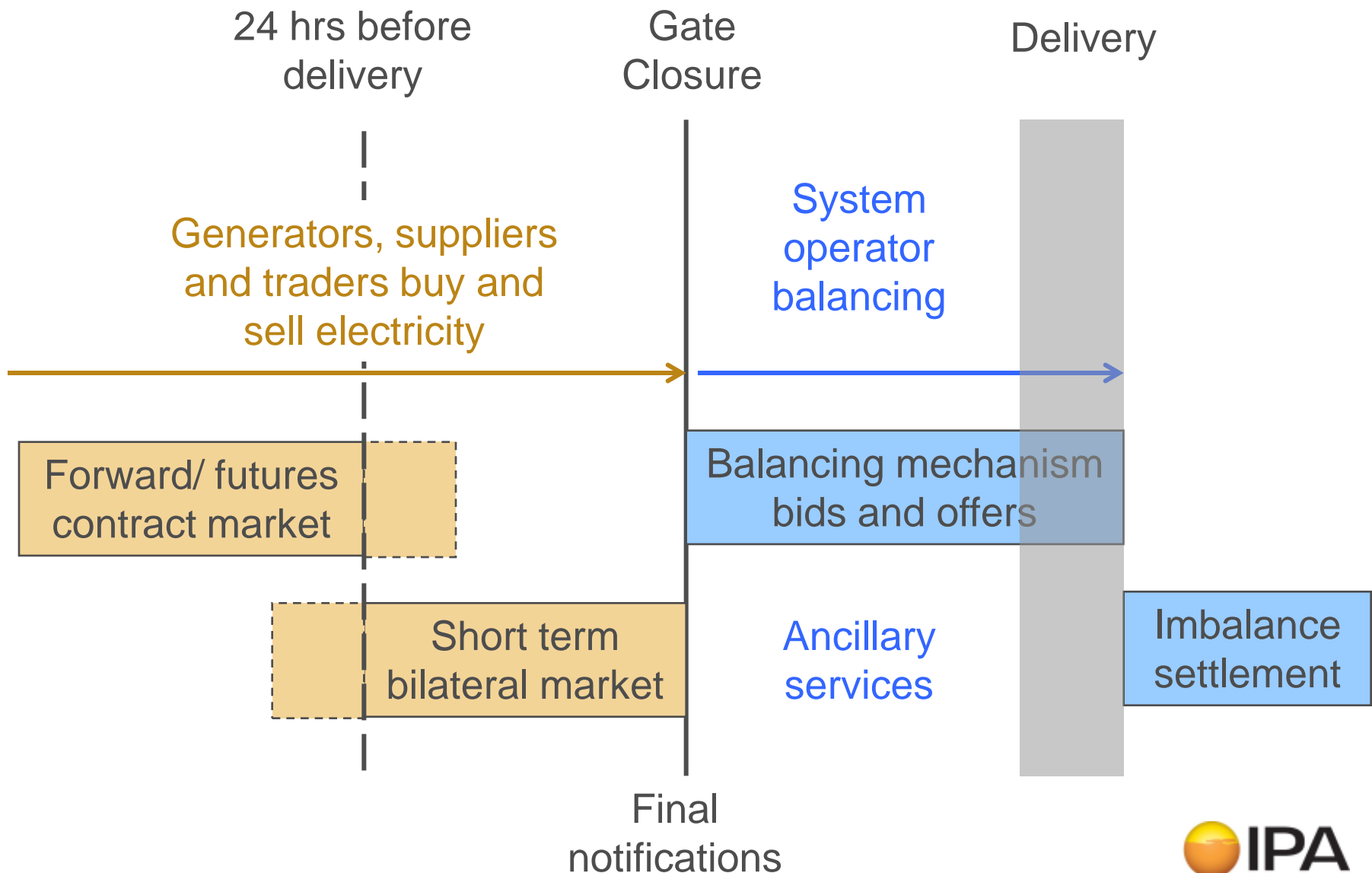


# Overview

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1. How do electricity markets operate today?
2. What may be different about a smart grid market?
3. Why aren't grids and markets "smarter" now – what is stopping us?

# An electricity market



# Who makes money from electricity today?



# Who participates in electricity markets?

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## Up to gate closure...

Buying and selling generation

OTC/ bilateral/ pool/ exchange trading

Balancing within portfolio

Forecasting (not controlling) demand



# Who participates in electricity markets?

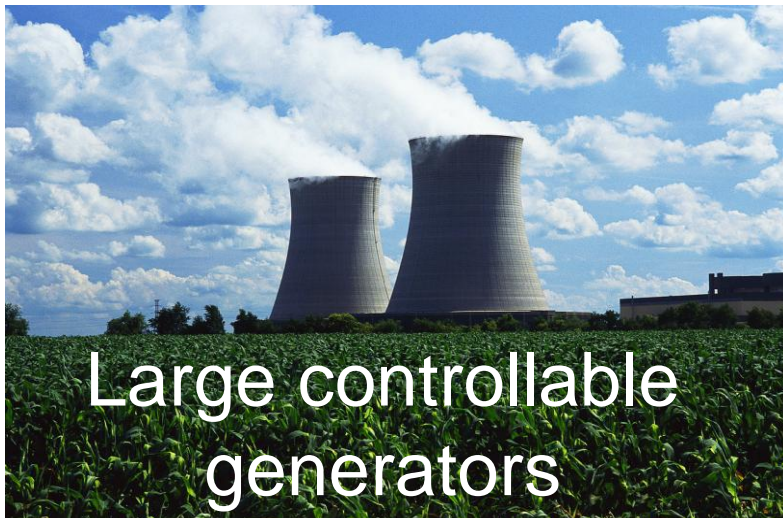
## After gate closure...

Balancing actions

Centrally controlled

Bids and offers to balancing mechanism

Highly regulated



# Who pays?

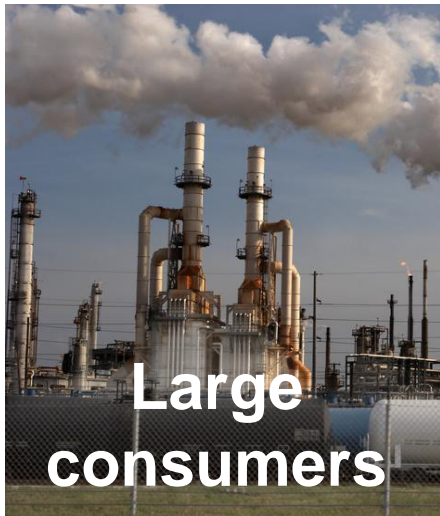
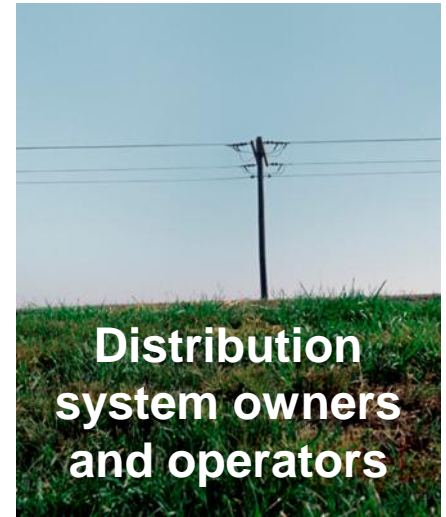
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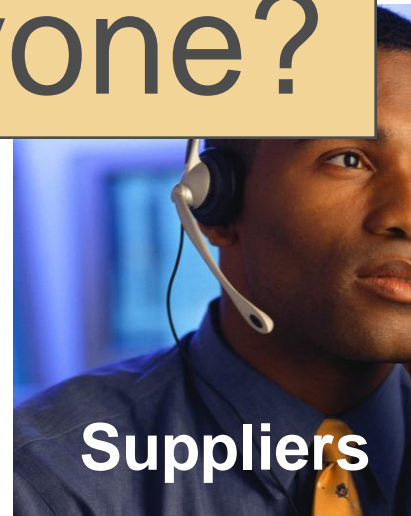
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# How could a smart grid be different?

# Who could participate in a smart grid?



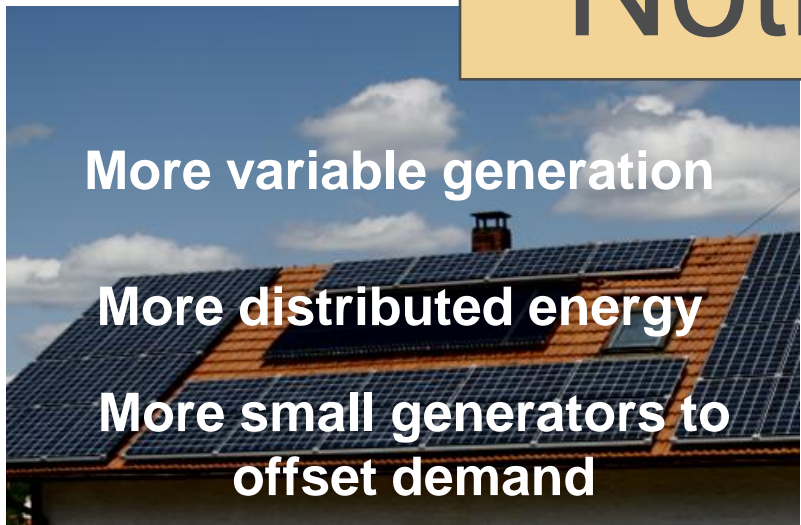
**Everyone?**



# What is new in a smart grid?

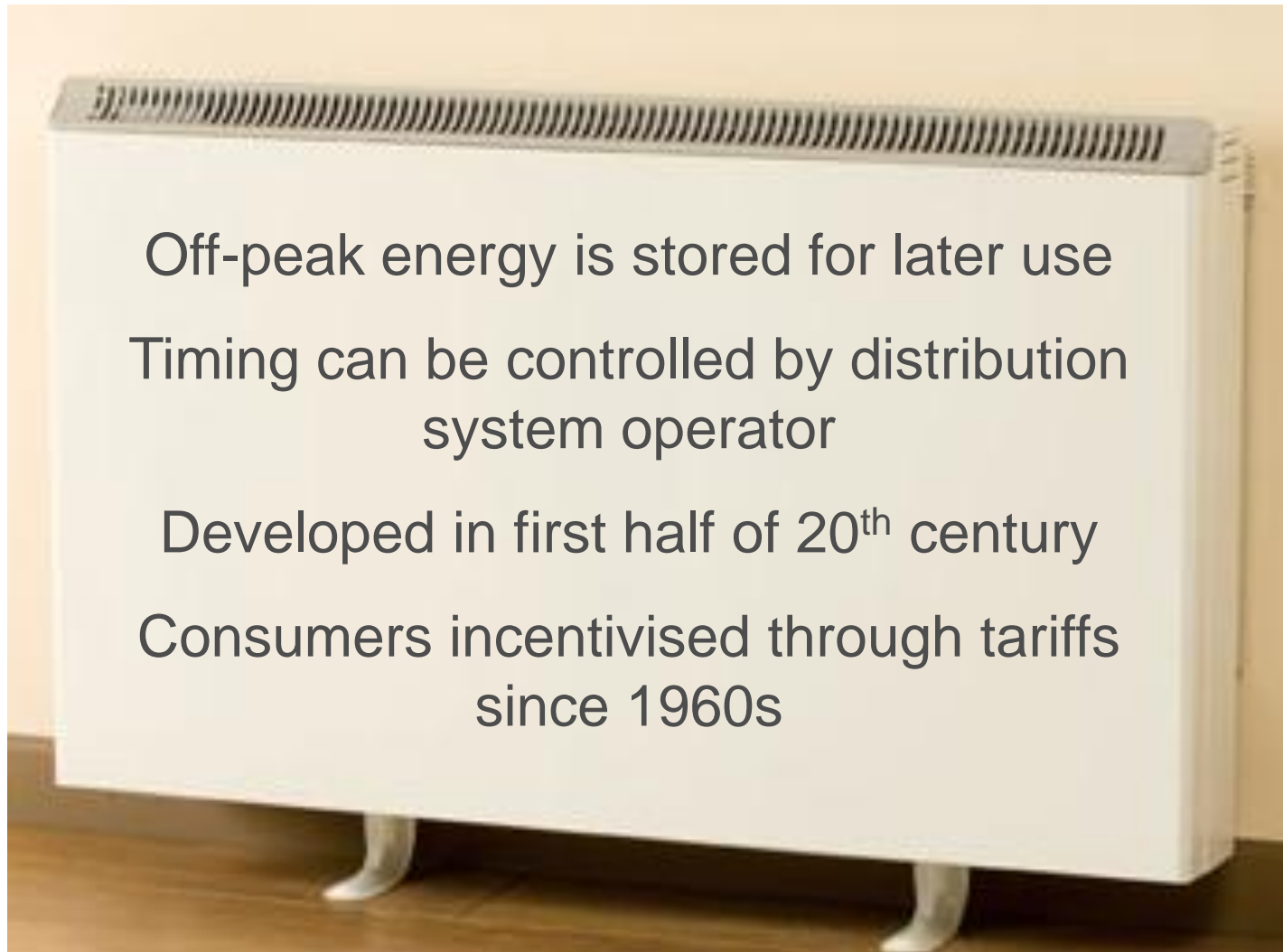


**Nothing?**



# A smart appliance?

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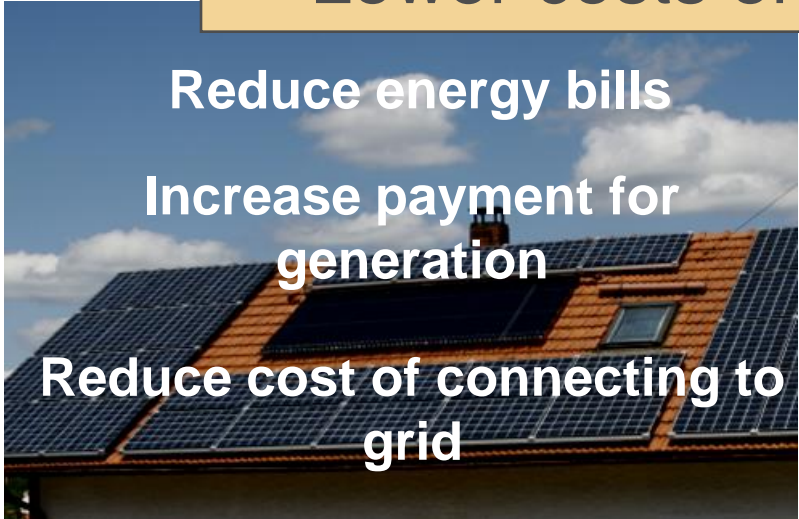


Off-peak energy is stored for later use  
Timing can be controlled by distribution  
system operator  
Developed in first half of 20<sup>th</sup> century  
Consumers incentivised through tariffs  
since 1960s

# Possible benefits – why get involved



**Lower costs or higher revenue**



# Who pays?

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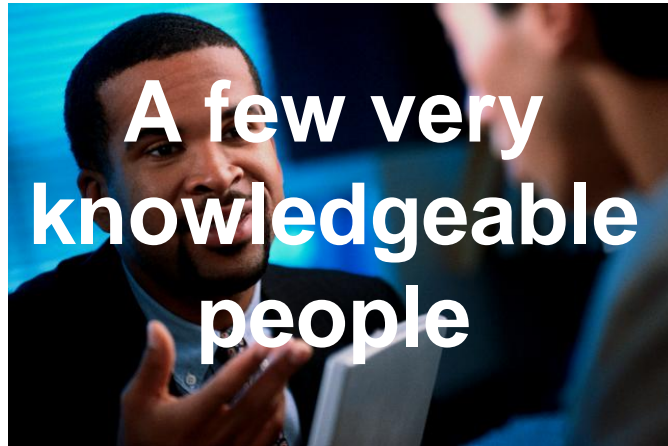
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# Why aren't grids "smarter" now?

# Who will *actually* participate in a smart grid market?

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**Now**



**Smart grid**



**But...**

Most people don't want to think about electricity

Not as **exciting** as a new car or new TV

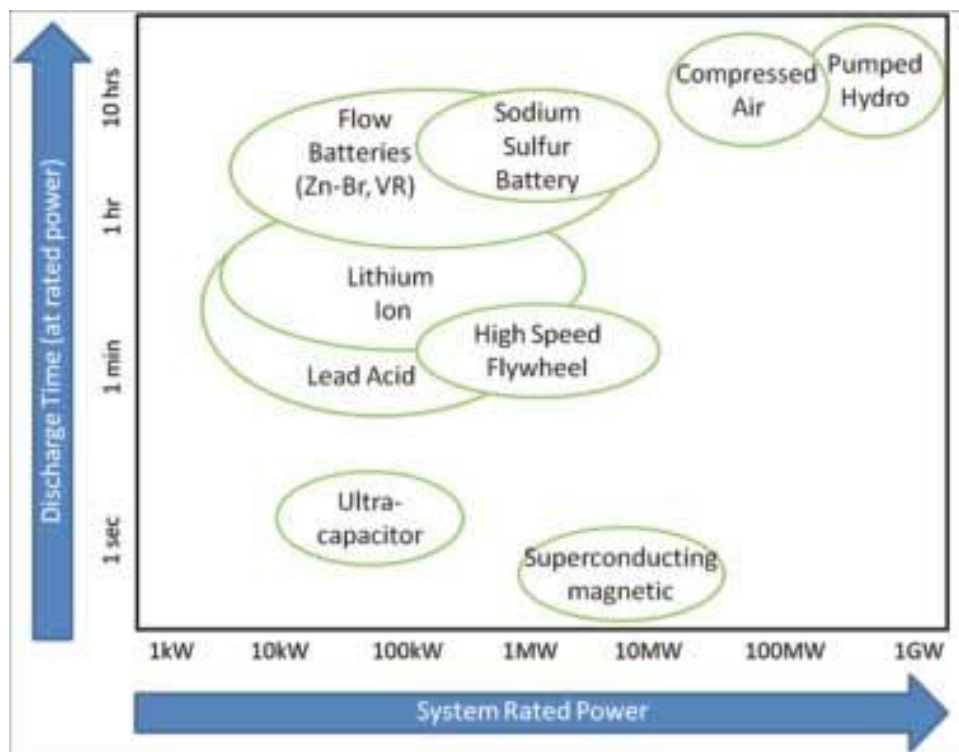
Not **business critical** – won't get you a promotion

Someone else needs to manage it for them

# How could it work in practice?

## Suppliers, Traders and Energy Services Companies will have important role

- “Package” electricity services into saleable commodities
- Appropriate charging and payments for electricity and services
- Communicate to consumers and small generation
- Cover up-front costs?



Grid Scale Energy Storage:  
Technologies and Forecasts Through 2015  
[www.greentechmedia.com](http://www.greentechmedia.com)

# What is stopping us?

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- Market participants and technology are (almost?) there... we know what we want to do
- *Why isn't it happening already?*

## **Market incentives aren't there yet**

- Pricing does not reflect cost of electricity at that point in time
- Distributed generators do not provide services to grid in the same way as conventional generators

# What is stopping us?

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## Barriers in the market?

- Suppliers are large and vertically integrated
- Central control only for large consumers and generators
- Consumers don't care enough to demand energy services
- High upfront costs of technology and infrastructure
- Strict requirements for grid & system constrain innovation

**Governments and Regulators** may need to...

- influence the way that markets operate
- cover (some) infrastructure costs

**let participants make money from the smart grid**

# Contact

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