



# SMART AND CLEAN ENERGY FOR ALL

Europe's urban energy – mobility transition  
Mark van Stiphout, DG Energy

## GOALS OF THE CLEAN ENERGY FOR ALL EUROPEANS PACKAGE

### LEADING THE ENERGY TRANSITION - CREATING VALUE FOR CITIZENS AND BUSINESS



Putting energy efficiency first



Demonstrating global leadership in renewables



Delivering a fair deal for consumers

## EMPOWERING CITIZENS AND COMMUNITIES

### A EU-LEVEL FRAMEWORK FOR RENEWABLE SELF-CONSUMPTION IN WHICH CITIZENS ARE AT THE CORE



Renewable self-consumers to be allowed to generate, store, sell and consume their own electricity



Renewable self-consumers in multifamily houses to be allowed to generate, store, sell and consume their electricity jointly



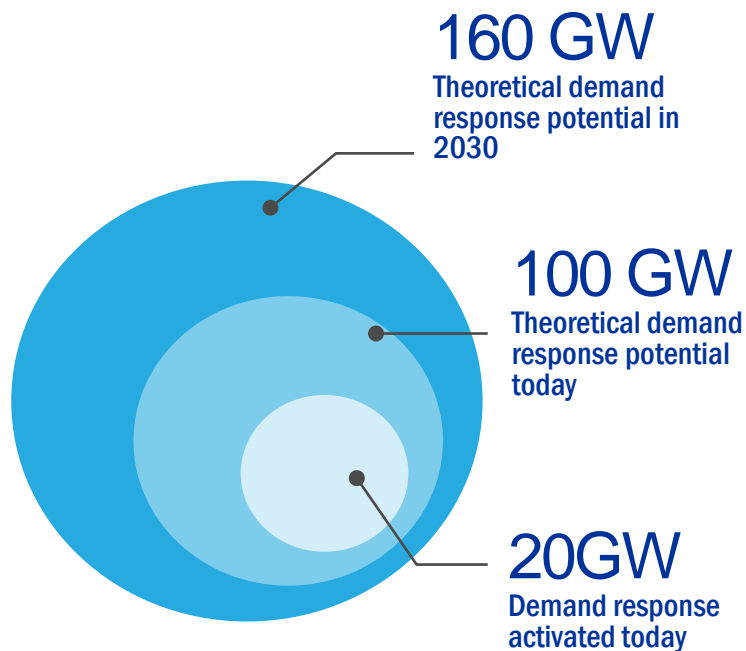
No disproportionate procedures and charges that are not reflective



Specific provisions for energy communities

## EMPOWERED CONSUMERS

### COMPETITIVE PRICES, DEMAND-RESPONSE, SELF-GENERATION, NEW SERVICES



- 17 Member States maintain some form of price regulation for either electricity or gas services for households.
- In some Member States self-generating and self-consuming electricity is effectively banned.
- Most consumers in the EU do not have access to independent aggregators which are the gateway to trading self-generated electricity and to effectively benefit from demand response schemes.

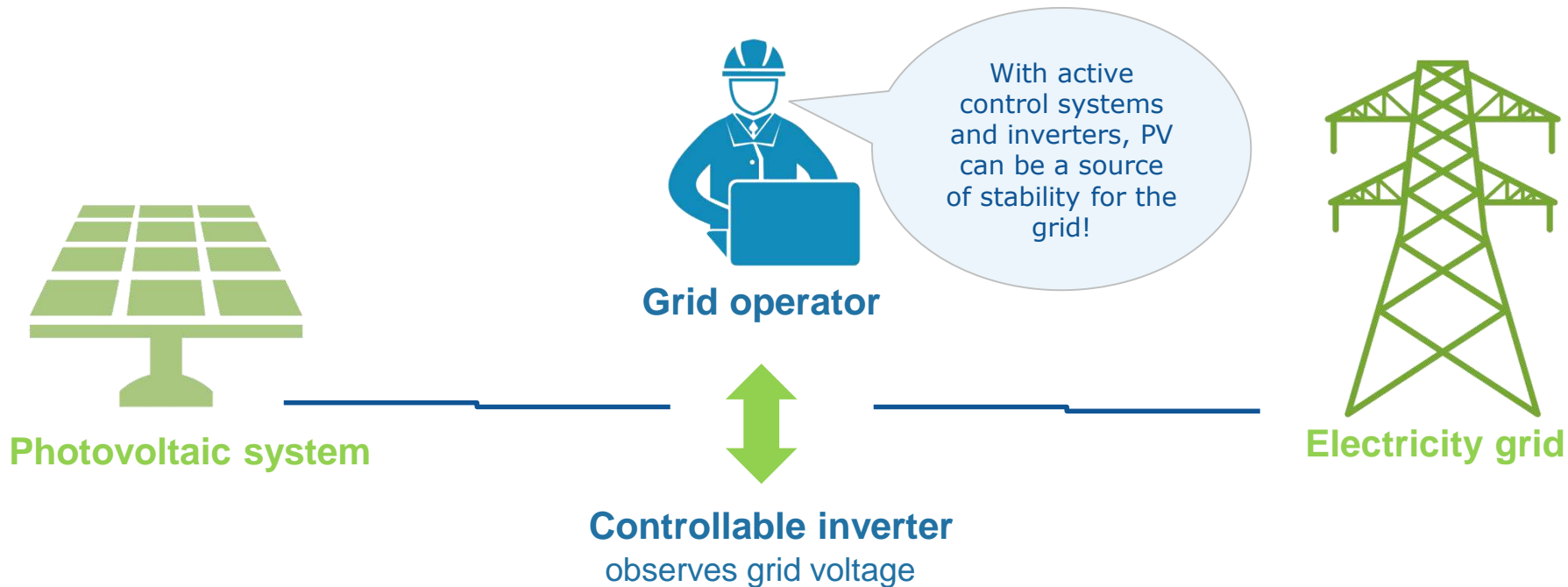
- Allow price signals to pass from wholesale to retail markets.
- Grant consumers the entitlement to generate electricity and either consume, store or sell back on the market.
- Ensure fair and full market access for independent aggregators and other third party service providers.

EC PROPOSAL

**Active consumers can gain more control over their energy consumption and spending and keep their energy costs in check**

# MetaPV project

Renewable energy can help secure our energy system



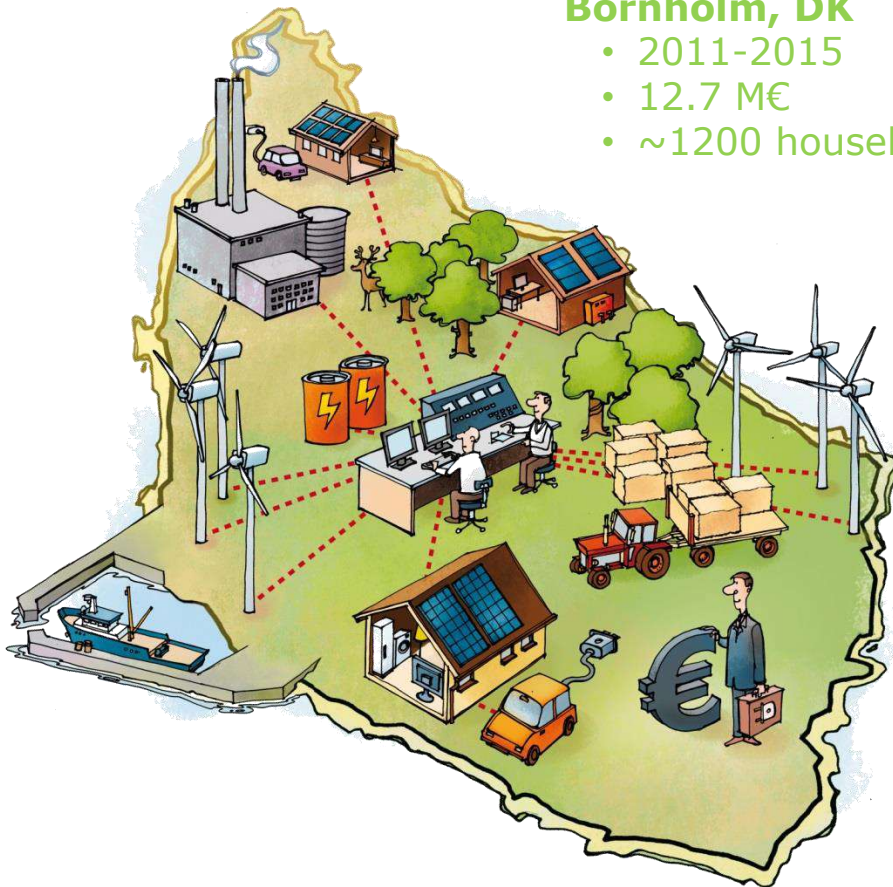
**Intelligent control of photovoltaic converters can increase the capacity of a network for hosting distributed generation by 50% (at the cost of 10% of traditional grid reinforcement)**

# ECOGRID EU project - I

Dynamic pricing brings down costs for consumers

## Bornholm, DK

- 2011-2015
- 12.7 M€
- ~1200 households



## Automatic demand-response...

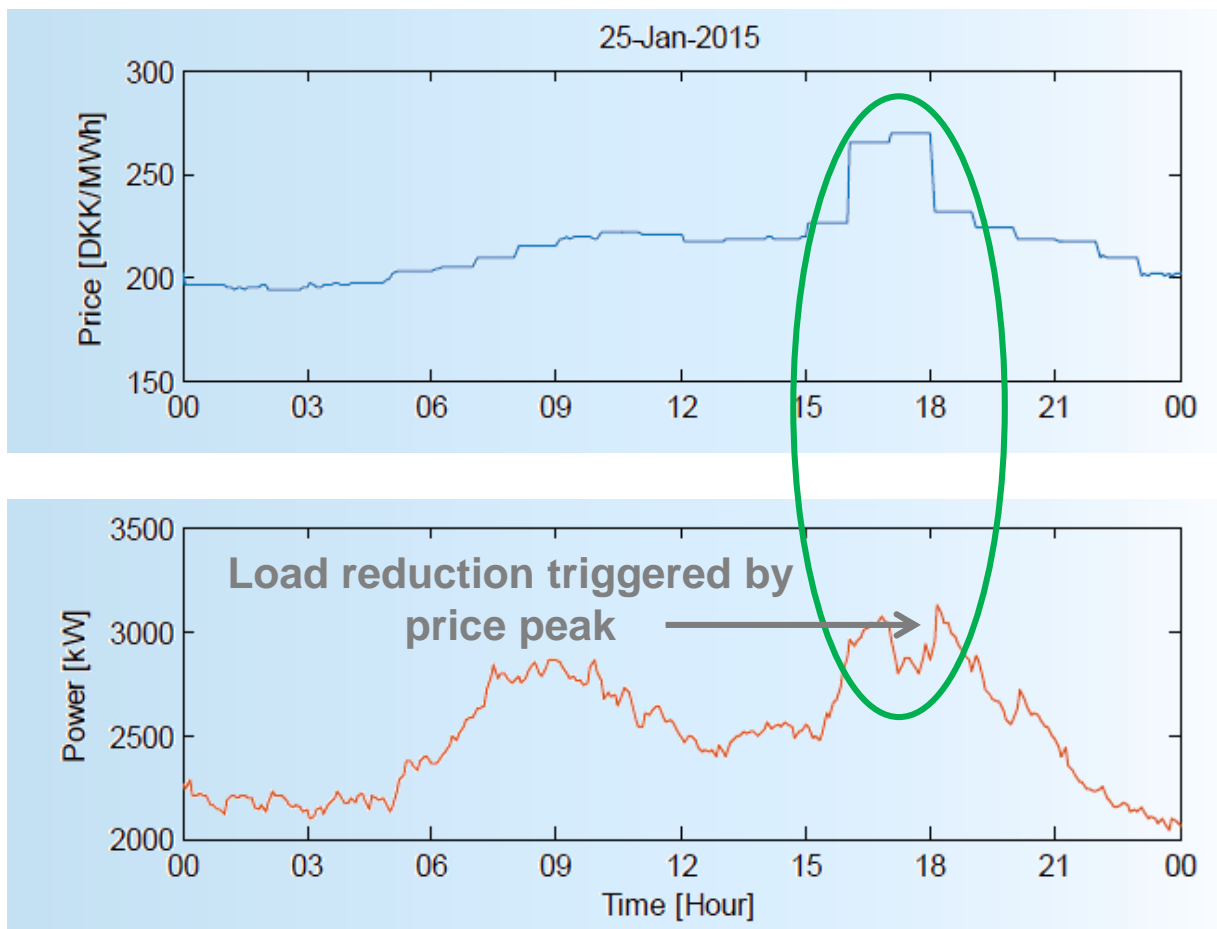
... is easy and convenient

... can lower household energy bills

... can lower balancing costs

# ECOGRID EU project - II

Dynamic pricing brings down costs for consumers



## Digitisation of the energy system

Multiplication of connected objects  
(Internet of Things)



Exponential increase in Generation of  
data (Big Data)



Reliable & Secure energy & telco  
infrastructure

Develop the future energy system –  
increase the digital capacity of the  
energy sector for the benefit of a  
system that is able to integrate higher  
shares of RES and promotes energy  
efficiency

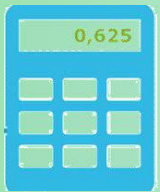


# Digitalisation

## TO SUPPORT THE ENERGY TRANSITION



Active network management: procurement of services by network operators in markets and on platforms



Optimisation of asset management through toolbox for data analysis, management and processing



Interoperability for smart homes, buildings and grids



Development, test and demonstration of cybersecurity technologies for the electricity system

## Horizon 2020 key calls in the work programme 2018 - 2020

- LC-SC3-ES-5-2018: TSO – DSO – Consumer: Large scale demonstrations of innovative grid services through demand response, storage and small-scale (RES) generation
  - Demonstrate at a large-scale how markets and platforms enable electricity TSOs and DSOs to procure energy services from large-scale and small-scale assets connected to the electricity network
    - **Opening date:** 05 December 2017
    - **Deadline:** 05 April 2018
- <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-es-5-2018-2020.html>

# Joint calls on digitalisation of the energy system

## DT-ICT-10-2018: Interoperable and smart homes and grids

- Challenge: smart homes, buildings and appliances, as well as electric vehicles can support the integration of RES in the energy system
- Scope: to combine home or building comfort services with energy management through digital technologies (IoT, AI, cloud and big data services, edge computing, blockchain technologies, etc.)
- Expected Impact: increasing use of renewable energy and increased energy efficiency, offering access to cheaper and sustainable energy for consumers and maximising social welfare.
  - **Planned opening**: 26 July 2018
  - **Deadline**: 14 November 2018

# Joint calls on digitalisation of the energy system

- DT-ICT-11-2019: Big data solutions for energy
  - To develop/pilot and deploy a reference architecture for large-scale multi-party data exchange, management & governance and real-time processing (including distributed/edge processing) in the electricity sector
    - **Planned opening:** 16 October 2018
    - **Deadline:** 02 April 2019
- <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/dt-ict-11-2019.html>

## Joint calls on digitalisation of the energy system

- SU-DS04-2018-2020: Cybersecurity in the Electrical Power and Energy System (EPES): an armour against cyber and privacy attacks
  - The proposals should demonstrate the resilience of the EPES through the design and implementation of adequate measures able to make assets and systems less vulnerable, reducing its exposure to cyberattacks
    - **Planned opening:** 15 March 2018
    - **Deadline:** 23 August 2018
- <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/su-ds04-2018-2020.html>

## Topics for future calls

- Cybersecurity
  - Workshop on 15 March 2018
- DC – Hybrid grids
  - Workshop organisation on-going
- Power electronics in the energy sector
  - Discussions on-going with follow-up group
- Blockchain
  - Seminar on 21 March 2018

# Conclusions

- Electrification, decentralisation and digitalisation
- Innovation and digitalisation can bring benefits and can boost the economy
- Digitalisation is set to greatly enhance demand flexibility, the integration of variable renewables, smart charging for EVs and distributed generation
- A thorough digitalisation of the energy system can happen if the cybersecurity threat is properly addressed

# Horizon 2020 key calls in the work programme 2018 - 2020

- ES-1-2019: Flexibility and retail market options for the distribution grid
  - Develop and demonstrate integrated solutions with flexibility measures and grid services, smart grid technologies, market mechanisms
    - **Opening date:** 05 September 2018
    - **Deadline:** 05 February 2019
- <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-es-1-2019.html>



## Horizon 2020 key calls in the work programme 2018 - 2020

- LC-SC3-EE-4-2019: Upgrading smartness of existing buildings through innovations for legacy equipment
  - Need for easy and cost-efficient integration of smart home energy management in existing buildings with installed systems and appliances
    - **Opening date:** 05 September 2018
    - **Deadline:** 05 February 2019
- <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-ee-4-2019-2020.html>

## Horizon 2020 key calls in the work programme 2018 - 2020

### ➤ LC-SC3-EE13-2018-2019: Enabling next-generation of smart energy services

- The emerging new energy technologies and services include, up-grade and valorise energy efficiency and demand-side flexibility; engage more and new actors and sectors; contribute to the verification of energy savings and flexibility

	Opening date	Deadline
CSA	25 January 2018	04 September 2018
IA	24 January 2019	03 September 2019

- <http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/topics/lc-sc3-ee-13-2018-2019-2020.html>