



Miguel Á. GARCÍA-FUENTES  
CARTIF Technology Centre

# **SMART CITY PROJECTS AND THEIR EVOLUTION FROM NZEB TO PED**

INDUSTRY  
CULTURAL HERITAGE  
INFRASTRUCTURES  
WELLBEING AND HEALTH



**DIGITAL SYSTEMS AND  
INDUSTRY**

ENERGY POLICY  
ENERGY EFFICIENCY  
RENEWABLE ENERGY  
SMART CITIES  
SMART GRIDS

**ENERGY**



AGROFOOD  
BIOTECHNOLOGY  
NATURAL RESOURCES  
CIRCULAR ECONOMY



**AGROFOOD AND  
NATURAL PROCESSES**



## EE IN INDUSTRY

**REEMAIN**  
RESOURCE AND  
ENERGY EFFICIENT  
MANUFACTURING

**BRICKER**

**BRESAER**

**E2VENT**

## EFFICIENT TECHNOLOGIES

**3encult**  
EFFICIENT ENERGY FOR EUROPEAN CULTURAL HERITAGE

**renerpath**  
República de España  
Ministerio de Industria,  
Turismo y Comercio

**inception**  
Inclusive Cultural Heritage in Europe  
through 3D semantic modelling

**iNSPIRe**

**REZBUILD**

**CommONEnergy**

**OptEEemAL**  
OPTIMISED ENERGY EFFICIENT DESIGN  
PLATFORM FOR REFURBISHMENT  
AT DISTRICT LEVEL

**DIRECTION**  
DIRECTING TRANSITION FROM OLD TO NEW BUILDINGS

## METHODS AND TOOLS FOR EEB

**R2CITIES**  
RESEARCH FOR  
CITY EFFICIENT DISTRICTS

**CITYfIED**  
ReplCable and iInnovative  
Future Efficient Districts and cities

**my  
SMART  
Life**

## E-MOBILITY

**Green  
eMotion**

**REMO  
URBAN**  
Regeneration Model for smart  
cities transformation

**smar+  
en  
ci+y**

**MATCHUP**

## SMART AND SUSTAINABLE CITIES



### Energy Saving Measures

**Glass Wall + Isolation + Louvers**

**Geothermal Heat Pump**

**High Efficient Lighting**

**Free-Cooling**

**HVAC Management (BEMS)**

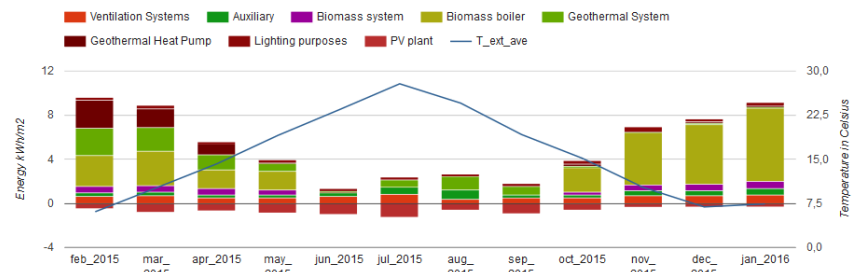
**Variable flow ventilation (BEMS)**

**Lighting management (BEMS)**

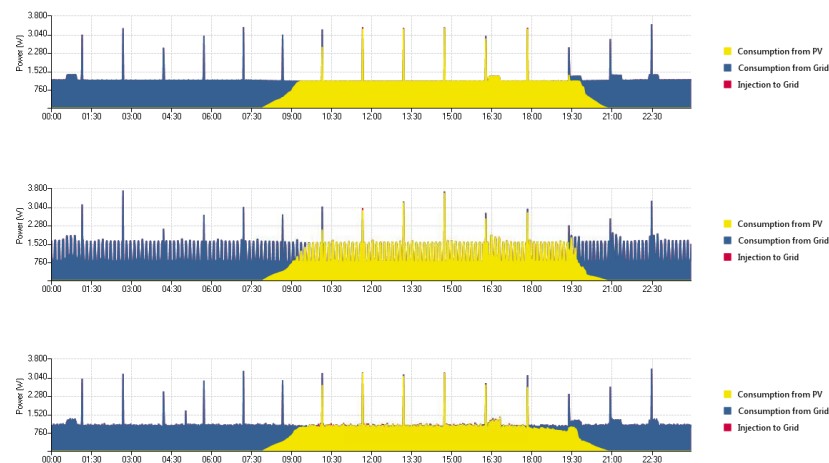
**RES poligeneration Biomass + Geothermal**

**PV plant 45 kWp (15 kWh/m<sup>2</sup>yr)**

Monthly Primary Energy(kWh/m<sup>2</sup>)



31 agosto 2014





Façade insulation

PV façade (BIPV)

Biomass based DH (1000 kW)

Variable flow pumps

Distribution network renovation

Replacement of substations

Thermal storage

DHW centralisation

Installation of heat allocators and  
thermostatic valves



Political support

D&C activities

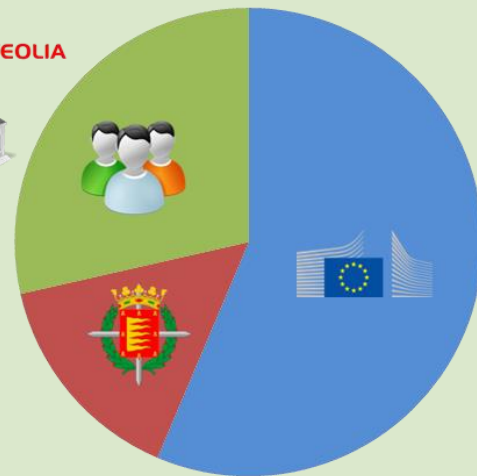
Technical support

Financial support

VEOLIA



acciona  
Infraestructuras



VA! Ayto. de Valladolid  
AyuntamientoVLL

Siguiendo

#ConcejalUrbanismo @manuel\_saravia en reunión con vecinos del #PolígonoFASA, abordando el Proyecto @Remourban\_EU



Nueva Propuesta de Rehabilitación del Distrito FASA  
Proyecto REMOURBAN

Fundación CARTIF  
Cristina de Torre: critor@cartif.es - Teléfono: 983 54 89 11  
Ayuntamiento de Valladolid / Agencia de Innovación y Desarrollo Económico de Valladolid  
Ángela Rivada: arivada@ava.es - Teléfono: 983 24 74 01  
<http://es.remourban.eu>

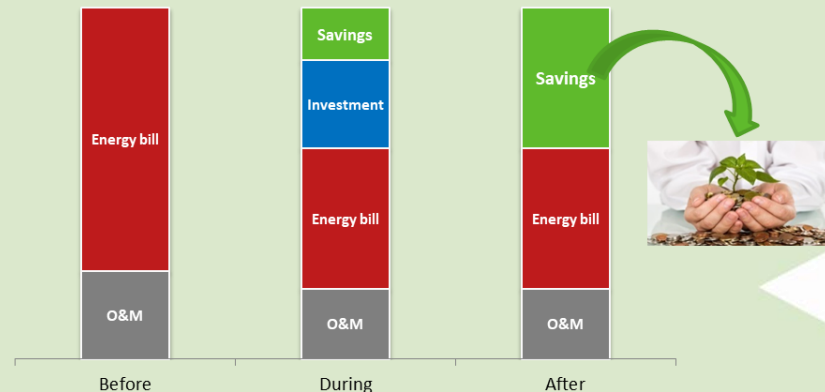
de su vivienda es el  
onde conectaremos  
na (caldera o termo  
or individual.


alguna de Duero, han  
res a las planteadas

de su consumo en  
ne oportunidad, ¿no

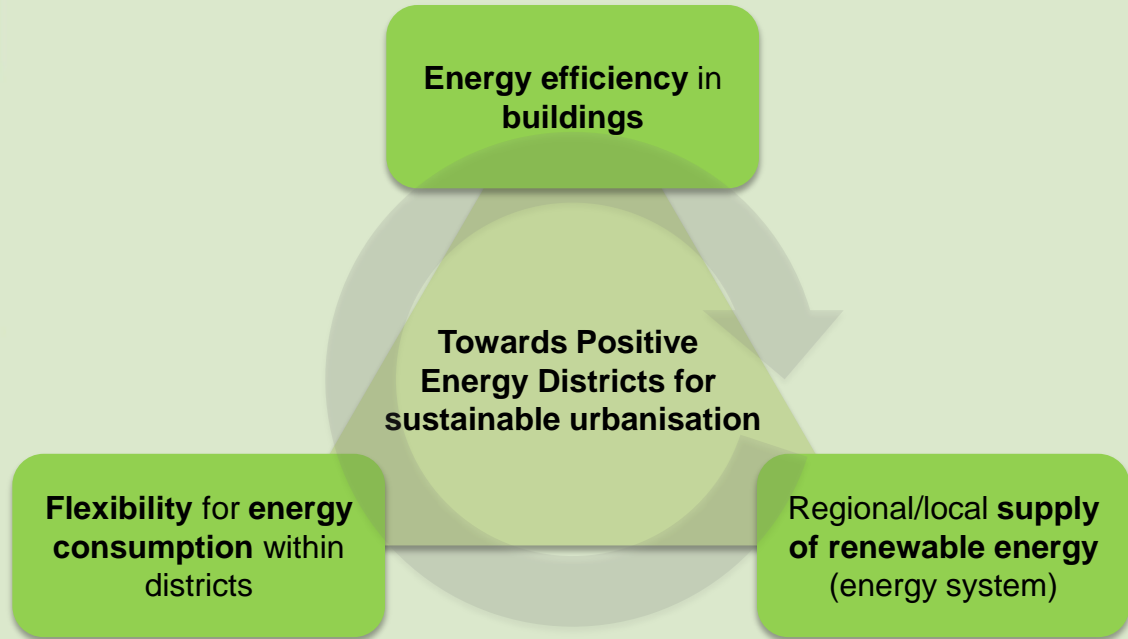
Si tiene alguna más...

amos por su vivienda  
de contactarnos en:





A **PED** is seen as a district with annual net zero energy import, and net zero CO2 emission working towards an annual local surplus production of renewable energy.





**nZEB**

**nZED**

**PED**



- Mix of uses and storage are key elements to ensure flexibility and coupling demand and production
- There are still important social, economic and regulatory barriers that prevent the full deployment of nZEB, nZED and PED concepts
- New technologies are still needed (as RES, storage or ICTs) but technology is not the main barrier
- Engagement of users is essential to ensure the success of Positive Energy Districts





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**THANK YOU FOR YOUR ATTENTION!**