

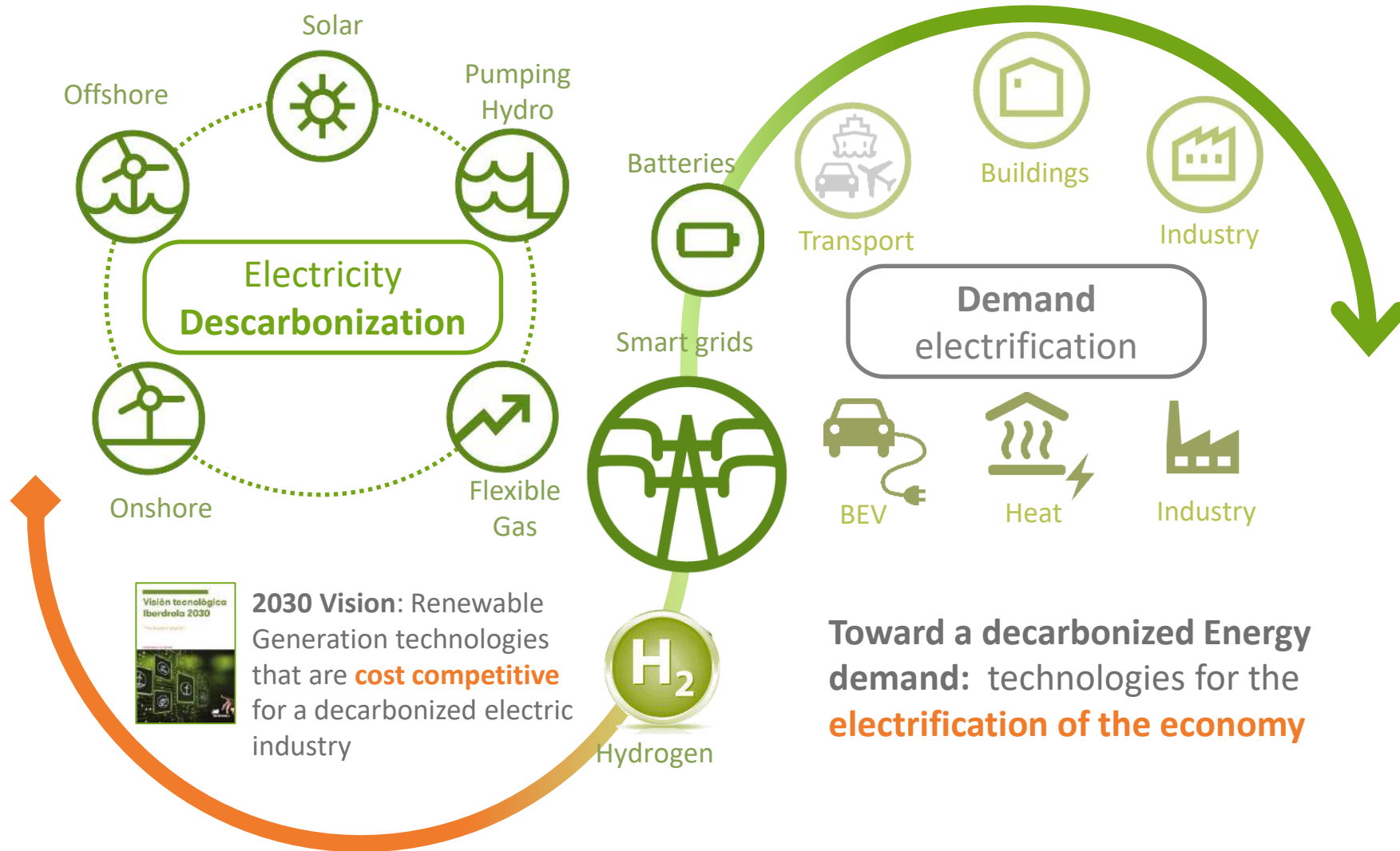
Assessing the Impact of Electrification in Spanish Distribution Networks



5th July 2021

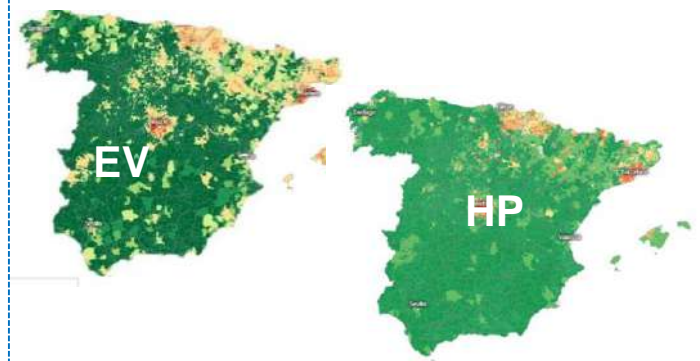
The lights will stay on with
50 million heat pumps

Utility of the Future vs Energy Company of the Future




Inputs

Clustering of EV and Heat Pumps at individual supply points



EV HP

Demand Patterns 

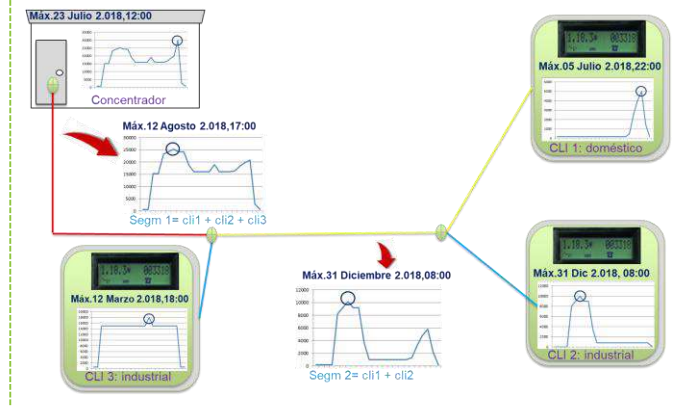
Network Connectivity

Smart Meters

Simulation Model

LV Network Power Flow Simulation Model

110.000 MV-LV Transformers
150.000 km LV network



Máx.23 Julio 2.018,12:00
Concentrador

Máx.12 Agosto 2.018,17:00
Segm 1= cli1 + cli2 + cli3


Máx.12 Marzo 2.018,18:00
CLI 3: industrial

Máx.31 Diciembre 2.018,08:00
Segm 2= cli1 + cli2

Máx.05 Julio 2.018,22:00
CLI 1: doméstico

Máx.31 Dic 2.018, 08:00
CLI 2: industrial

Outputs

Network constraint identification 

- Overloaded Transformers
- Network overloads and voltage excursions

Strategic Investment Planning 

4M Heat Pumps &
5M Electric Vehicles in **Spain**



~2% secondary transformers

**Localised network
reinforcements ahead of need**



~1% LV Networks

Short and medium terms: **Not problematic**
Long term: **Enhanced digitisation**

Leveraging the previous
digitalization of the system



Estimating the future demand
framed by Spanish NECP

Localised “weaker”
points in the network

The network is continuously updated to meet new demand requirements and the reinforcements needed will be within the network investment plans.

On the long term, enhanced digitalization, smart charging and smart heat pumps will be key enablers.

“Fit for 55” Package offers a unique opportunity to boost momentum on electrification of the building and industry sector