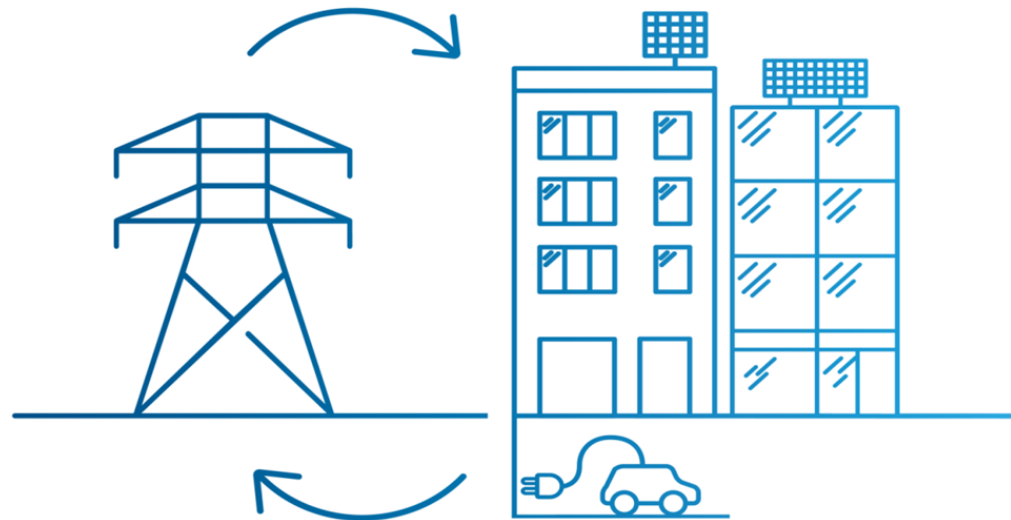


Clean energy transition in Catalonia



Francesc Vidal

Institut Català d'Energia (ICAEN)

Barcelona, May 8th 2018



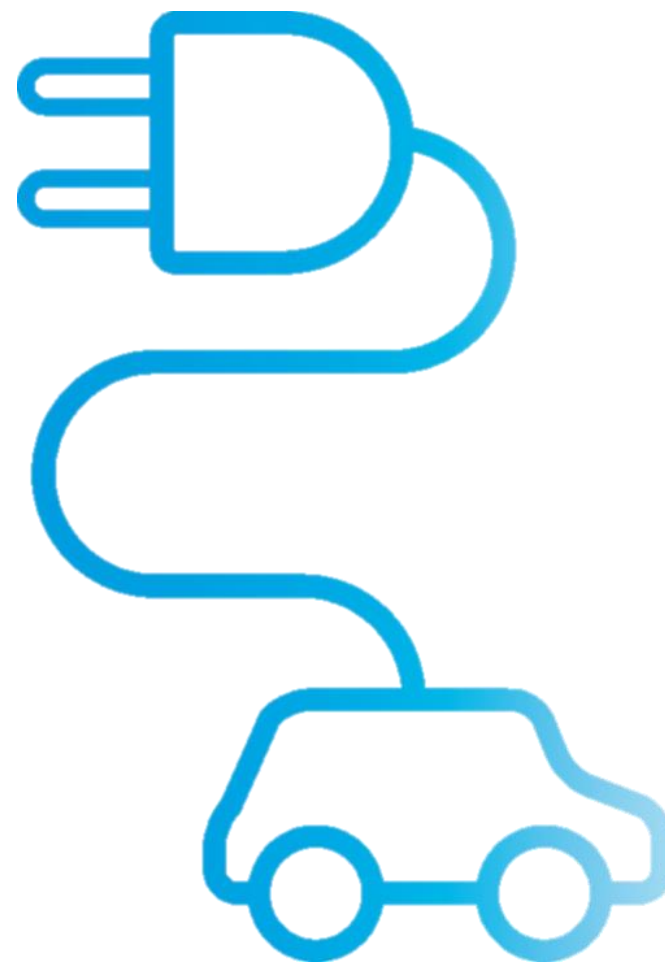
Generalitat de Catalunya
Institut Català d'Energia

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CLEAN ENERGY TRANSITION IN CATALONIA



1. Energy in Catalonia
2. National Agreement for the energy transition of Catalonia
3. EV charging station plan - PIRVEC
4. SOLARCAT
5. What the future holds?



ENERGY IN CATALONIA



Catalonia. General information

- Population: 7.5 million
- Area: 32.108 km² (6,3% of the of Spain)
- GDP: 204,000 million € (18,9% of Spain)
- Total primary energy supply: 23.2 milion toe
- Fossil fuel dependence: 66,1%

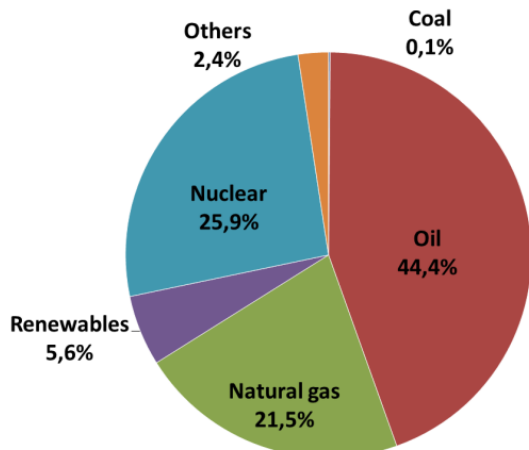


ENERGY IN CATALONIA

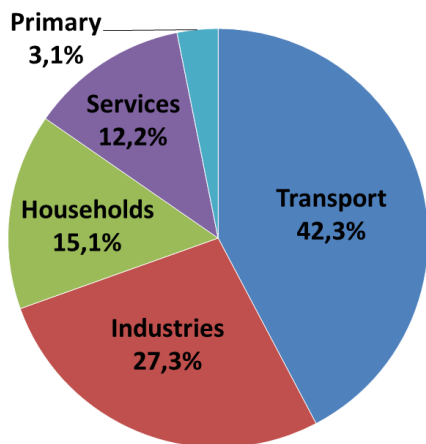


Catalonia. Energy data

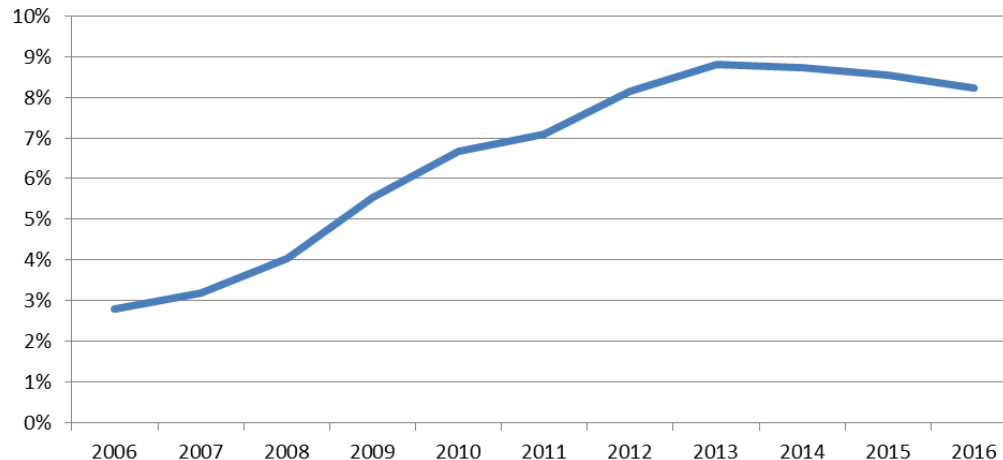
Total primary energy supply



Total final consumption



Renewable energy sources in terms of EU Directive



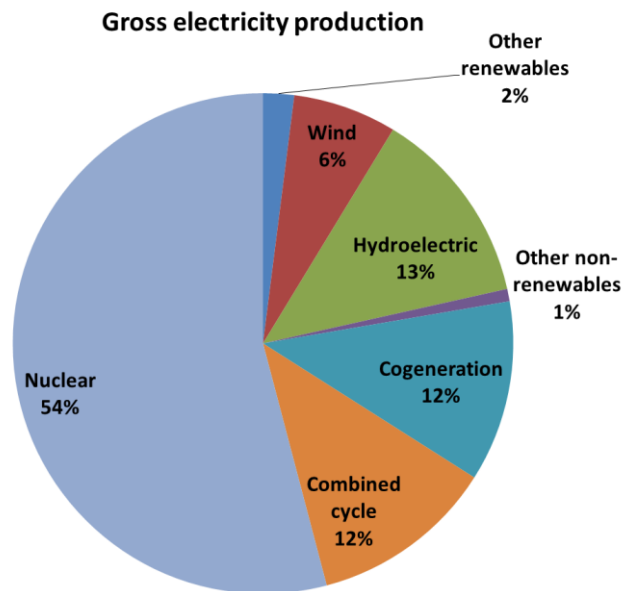
Renewable energy sources
(2016): **8,2 %**

Energy dependence
(2014): **91,8 %**

ENERGY IN CATALONIA

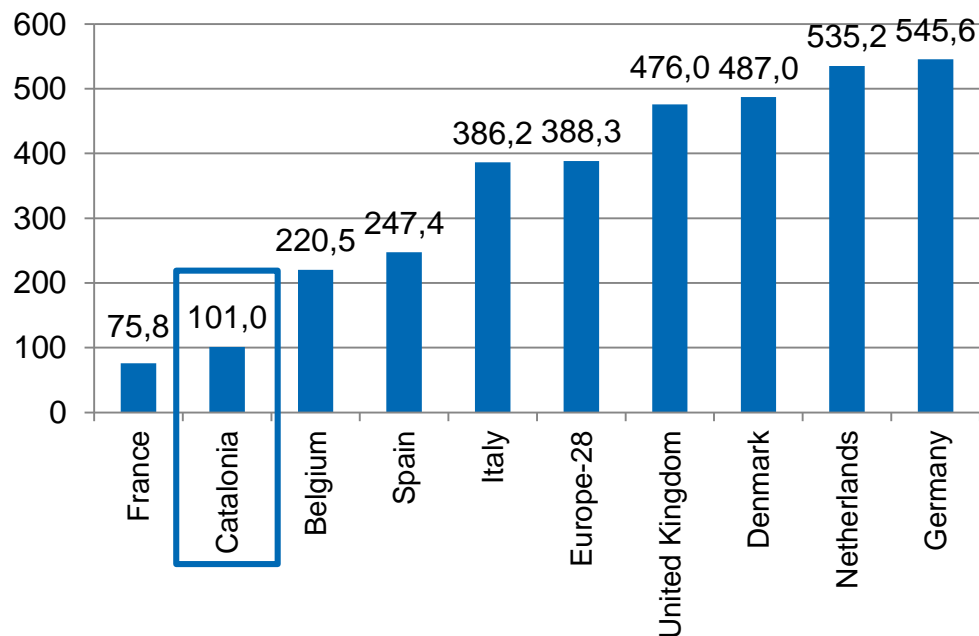


Catalonia. Electricity data



Source: Institut Català d'Energia (ICAEN)

CO2 emissions related to electricity generation.
Year 2013 (g CO2/kWh)



Source: Institut Català d'Energia (ICAEN) with data from IPCC

We are in a comfort zone, but Catalonia as a EU Member State is far from achieving the Europe Energy and Climate targets.

CATALONIA COMMITMENT WITH THE ENERGY TRANSITION AND THE FIGHT AGAINST CLIMATE CHANGE



New Catalan energy model for 100% renewable energy by 2050

On Monday, 31 January 2017, the Catalan Government approved the final document of the Covenant for the Catalan Energy Transition with the aim of reaching 100% renewable energy by 2050. The priorities

Bases for constituting the

National Agreement for the
**energy
transition**
of Catalonia



Generalitat
de Catalunya

2050:
100% renewables

Catalan parliament passes climate change law



Parlament Catalunya

@parlament_cat

Segueix

El#Parlament aprova la Llei del canvi climàtic. La major part per 122 vots a favor (JxSí,Cs,PSC,CSQP,CUP i no adscrit) i 11 abstencions(PPC)

12:24 - 27 jul. 2017

2027:
0 nuclear power plants

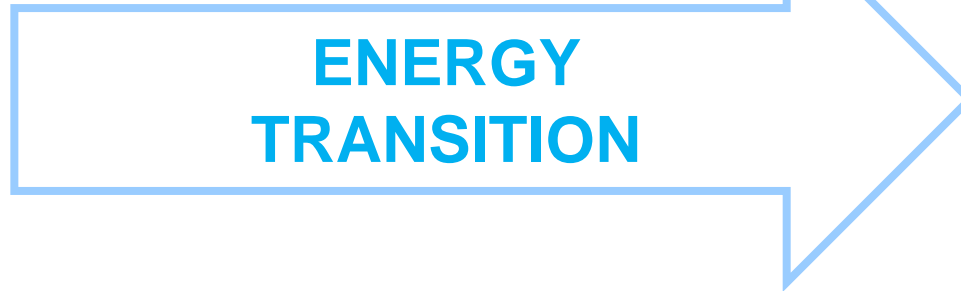
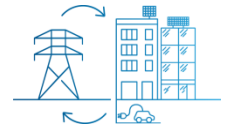


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NATIONAL AGREEMENT FOR THE ENERGY TRANSITION

Towards a new energy model



8%
renewable
energy
sources

2017

centralized
#cleanenergy



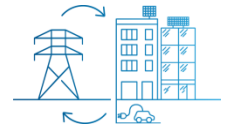
100%
renewable
energy
sources

2050

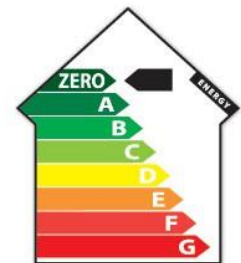
distributed



NATIONAL AGREEMENT FOR THE ENERGY TRANSITION

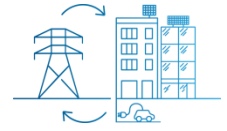


Renewable energies, electric vehicle, energy storage, self-consumption, active consumer....



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NATIONAL AGREEMENT FOR THE ENERGY TRANSITION



...it's in our hands: **ACCELERATE IT** or **SPEED IT DOWN** ...

- How do we **generate** energy
 - ✓ 100% renewable
 - ✓ Distributed
 - ✓ Democratic
- How do we **transmit** energy
 - ✓ Smart grids
 - ✓ Digitalization
 - ✓ Blockchain
- How do we **consume** energy
 - ✓ Demand response
 - ✓ Generation located at or near the point of consumption

Bases for constituting the

National Agreement for the
energy transition
of Catalonia



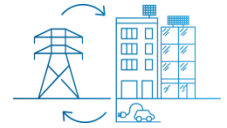
Generalitat
de Catalunya

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Institut Català d'Energia

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EV CHARGING STATION PLAN - PIRVEC

Public EV charging stations



El Pla vol superar les barreres tecnològiques, legals, administratives i econòmiques que limiten el desenvolupament de la mobilitat elèctrica al país

5,8 M€ per posar en marxa la instal·lació de:



81 punts de recàrrega ràpida d'accés públic i directe des de la xarxa viària



360 noves estacions de recàrrega semi-ràpida en xarxes urbanes i centres d'oci



21.000 nous punts de recàrrega vinculats (actualment n'hi ha 4.000)
Amb línies dojut de fins al 50% del cost de la instal·lació en els casos on hi ha barreres per a la seva implantació, com en els aparcaments de les comunitats de propietaris



Sistema d'identificació i de pagament unificat

Es desenvoluparà perquè els usuaris tinguin un accés senzill des del telèfon intel·ligent, a tota la xarxa d'estacions de recàrrega



Es crea la **Taula per al desplegament d'Infraestructura de Recàrrega per als Vehicles Elèctrics**

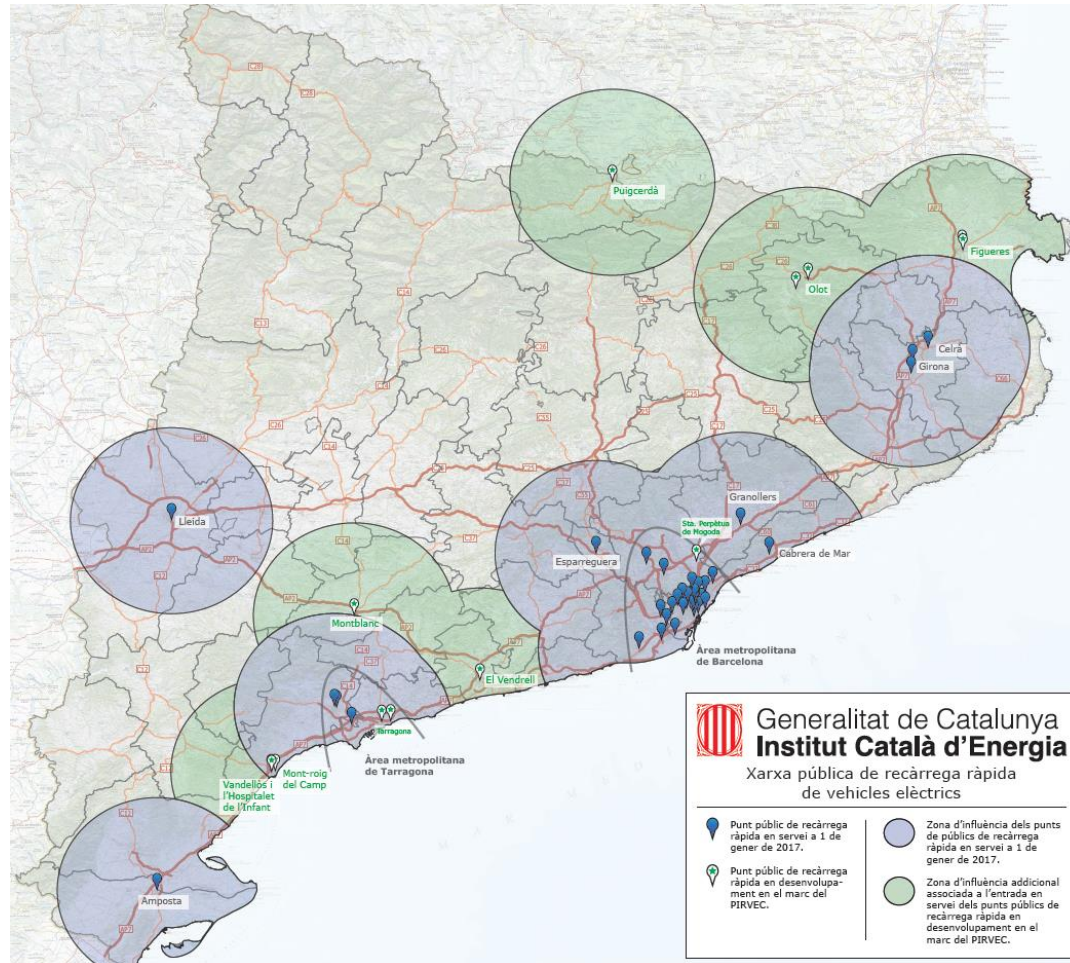
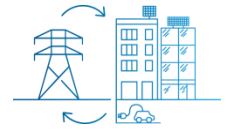
S'encarregarà del compliment del Pla i reunirà 70 agents públics i privats relacionats amb mobilitat elèctrica.

Objectives of the Plan for developing VE recharge infrastructure:

- 81 fast recharging stations
- 360 semi-fast recharging stations
- Interoperability
- 21.000 domestic and vehicle-linked points

EV CHARGING STATION PLAN - PIRVEC

Public EV charging stations



PIRVEC 2016-2019:

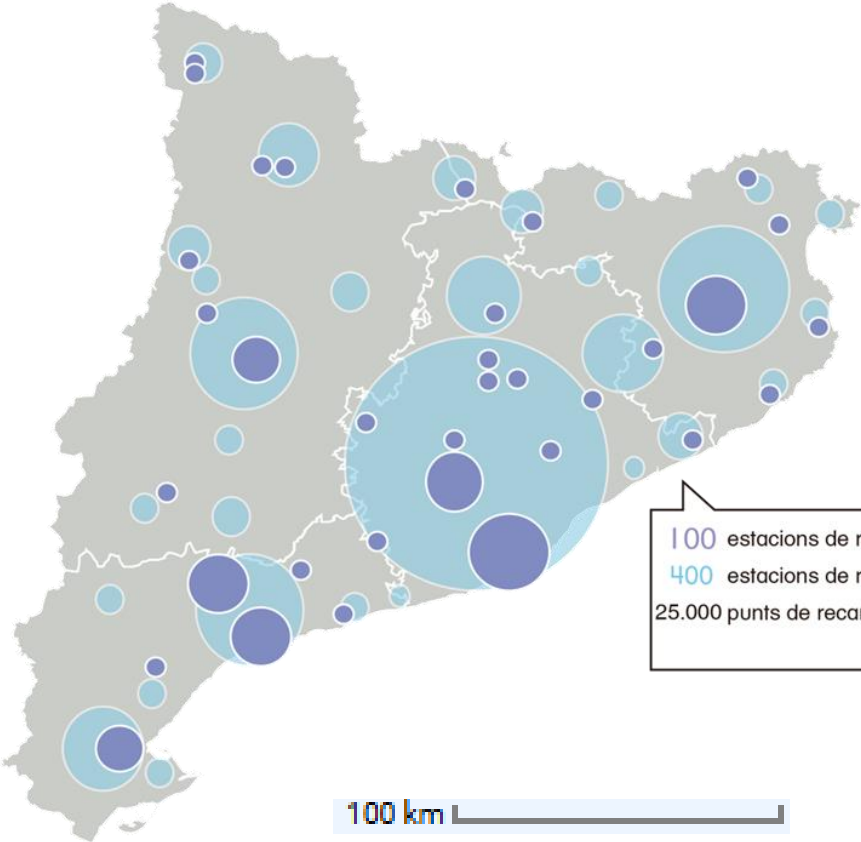
- 2016: 87
- 2017: 126



EV CHARGING STATION PLAN - PIRVEC

Estimate public EV charging stations

Target CATALONIA ~~2019~~ 2018

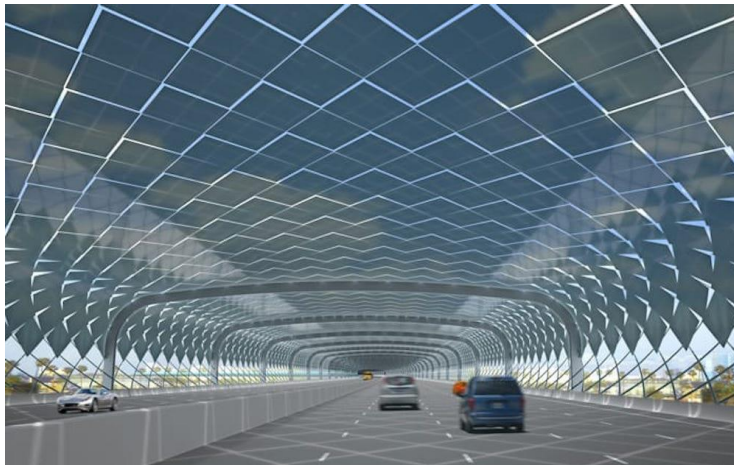
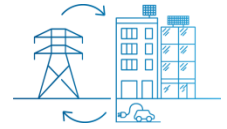


Travelling by electric vehicle all around

SOLARCAT

Distributed generation: solar + storage

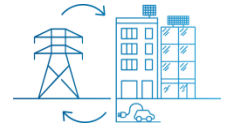
SOLARCAT strategy



Objective: Prepare Catalonia for the **capture, utilization and storage of PV electricity** (approved by the Catalan Government on October 17, 2017)

- Creation of an Interdepartmental Commission.
- Grants for the implementation of PV batteries.
- Design and develop a public/private/citizen collaboration model, Power Purchase Agreement - PPA.

SOLARCAT



Creation of the Public-private collaboration table for enhancing self consumption.

This table works on the basis of solving barriers:

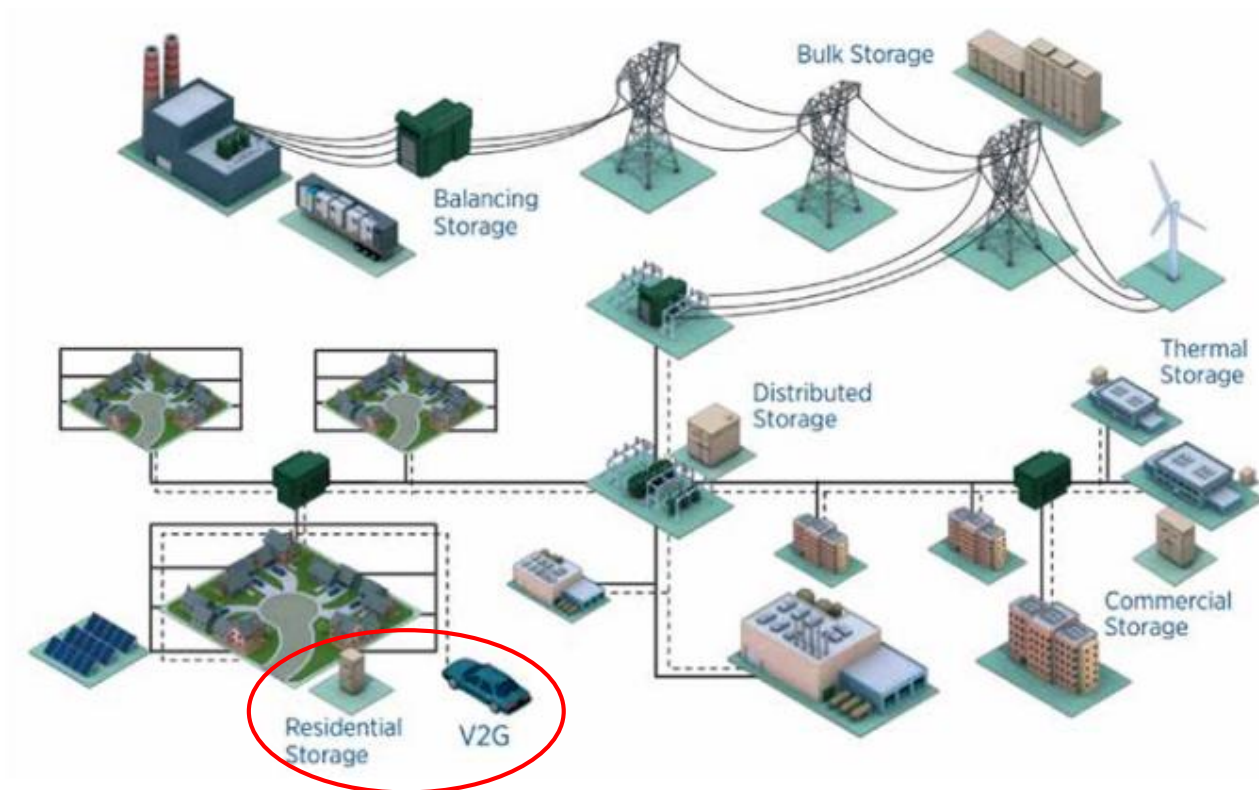
- Creating a technical group on a subject
- The group issues a proposal or a solution for the problem in a maximum of 3 months since its creation



SOLARCAT

Distributed generation: solar + storage

CONSUMER



Source: Electricity storage and renewables: costs and markets to 2030. IRENA (2017)

SOLARCAT

Distributed generation: solar + storage



CONSUMER

In the **center** of the new energy system
Key role in the energy transition

Generate

Consume

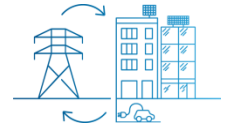


Share

Sell

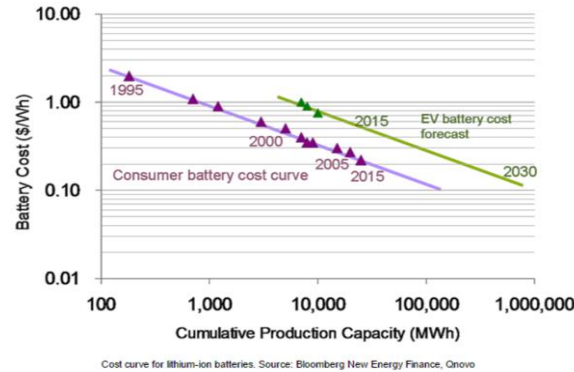
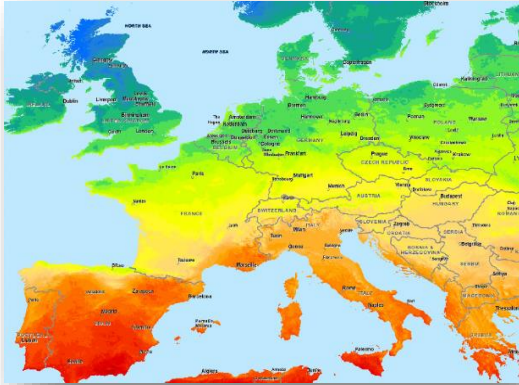
Store

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WHAT THE FUTURE HOLDS?

Is a 100% renewable energy model possible in Catalonia?

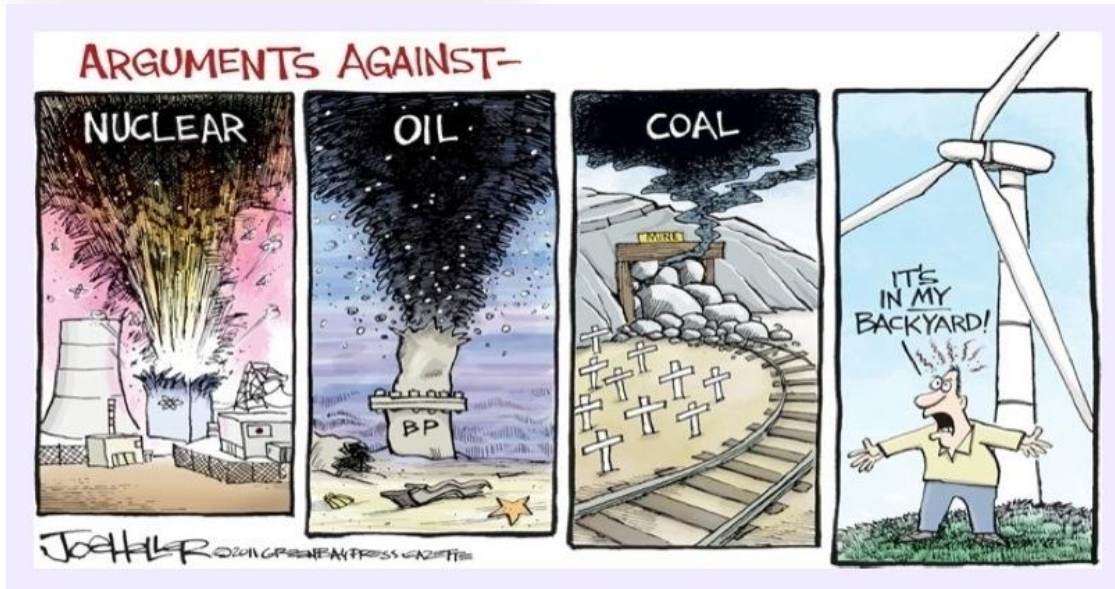


✓ Technologically

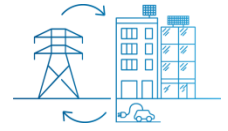
✓ Economically

? Socially

? Culturally



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WHAT THE FUTURE HOLDS?

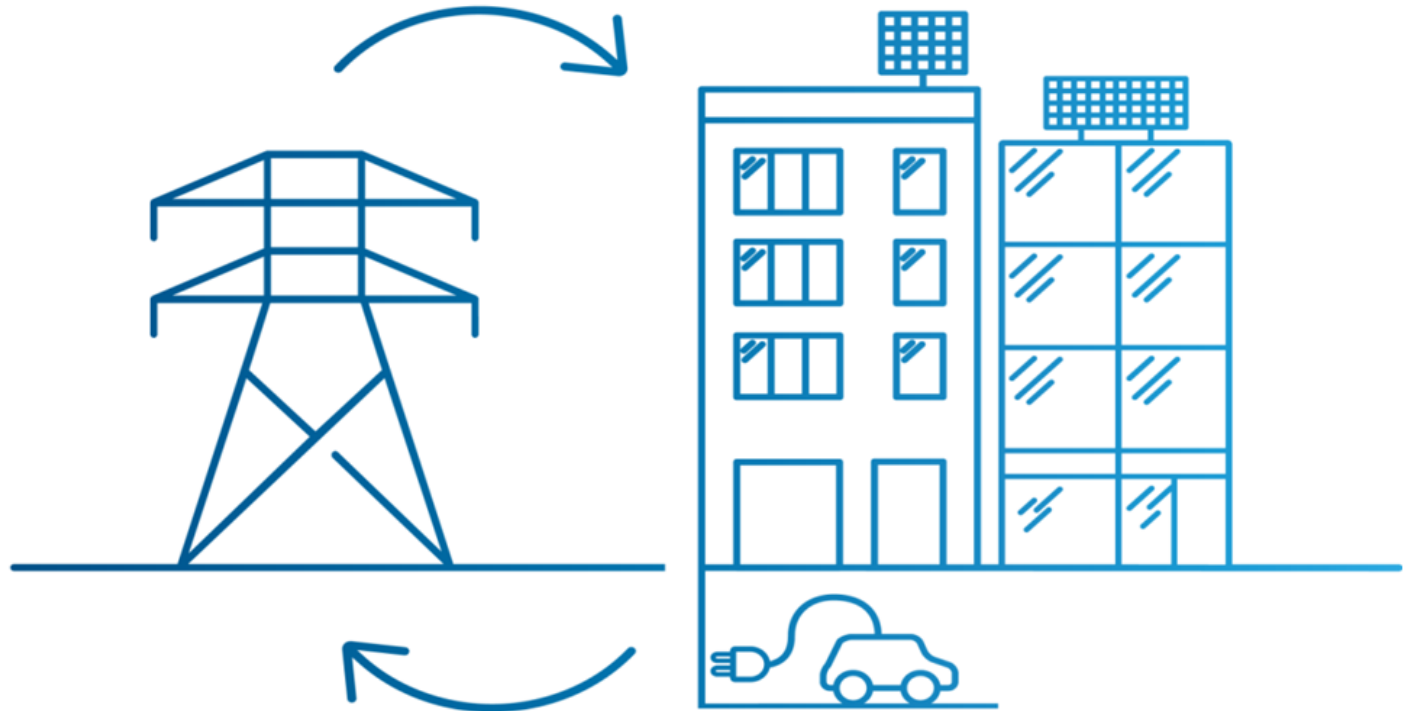
Is a 100% renewable energy model possible in Catalonia?



Future uses:

- Commercial buildings
- Residential area

**...renewable
energy
facilities?**



**Thank
you!**

Francesc Vidal
Institut Català d'Energia (ICAEN)

Barcelona, May 8th 2018



Generalitat de Catalunya
Institut Català d'Energia

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