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**PUTTING ENERGY
EFFICIENCY FIRST –
LEARNING FROM
INTERNATIONAL
EXPERIENCE**

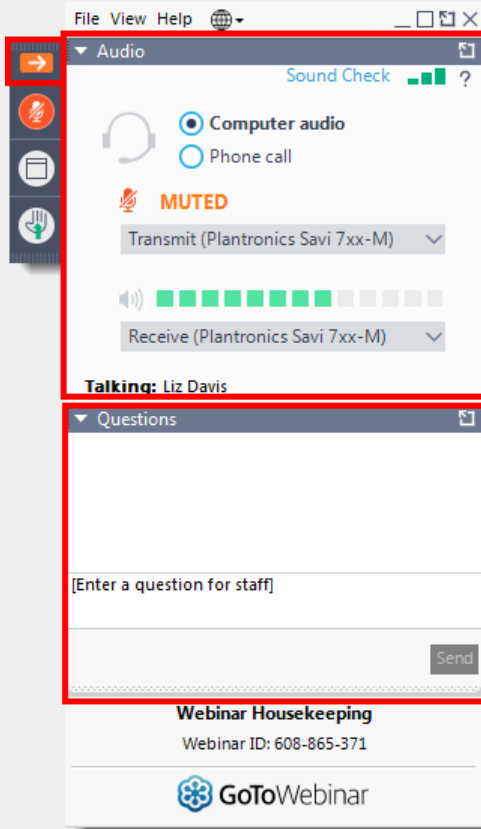
**WEBINAR
28 MAY 2020**

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MAKING THE ENERGY EFFICIENCY FIRST PRINCIPLE OPERATIONAL

GoToWebinar Housekeeping



The screenshot displays the GoToWebinar control panel. The top section is the 'Audio' panel, which includes a 'Sound Check' indicator, radio buttons for 'Computer audio' (selected) and 'Phone call', a 'MUTED' status, and dropdown menus for 'Transmit (Plantronics Savi 7xx-M)' and 'Receive (Plantronics Savi 7xx-M)'. Below the audio panel is the 'Questions' panel, which contains a text input field with the placeholder '[Enter a question for staff]' and a 'Send' button. At the bottom of the interface, it shows 'Talking: Liz Davis', 'Webinar Housekeeping', 'Webinar ID: 608-865-371', and the GoToWebinar logo.

Your Participation

Open and close your control panel

Join audio:

- Choose **Mic & Speakers** to use VoIP
- Choose **Telephone** and dial using the information provided

Submit questions and comments via the Questions panel

Note: Today's presentation is being recorded and will be provided within 48 hours.

The European Green Deal: Europe's new Growth Strategy

- Proposed in December 2019
- Aims to tackle climate and environmental-related challenges, to create a new growth strategy, and protect health and well-being of citizens from environment-related risks and impacts
- Climate law proposed in March 2020 looks to enshrine climate-neutrality by 2050
- [Renovation Wave strategy now priority for Covid-19 Recovery Strategy which will dedicate total €1.85 trillion for long-term recovery](#)



Learn more about the Renovation Wave...



BUILDINGS SHOULD BE AT THE HEART OF THE EUROPEAN GREEN DEAL. HERE'S WHY

Discussion Paper

The European Green Deal (EGD) offers the opportunity to create a carbon-neutral Europe, a fairer society and a regenerated industrial powerhouse. Europe's citizens must be at its heart – and nowhere is this more apparent than in the buildings sector. Buildings are where we spend most of our time, and much of our money; for those who can afford it, having a home is likely to be the biggest investment of a lifetime.

Making our buildings climate-proof is not only about reducing the 36% of CO₂ emissions they are responsible for, but about doing so while caring for the people that live in them. That's why the transformation of the building sector must have a prominent role in the EGD. We need to transform our buildings and cities in response to the climate emergency [and here's why](#).

The European Parliament and ensure they are resilient to climate change impacts – but we also need to ensure that the decarbonisation of the sector benefits European citizens and keeps housing affordable.

Delivering a zero-carbon building stock will require significant changes in the way the construction industry provides services and solutions. We also need new mechanisms to trigger investments in building upgrades. The EGD must make it clear that the built environment is a priority infrastructure for Europe. This would accelerate the shift to a decarbonised, highly efficient, interconnected and decentralised energy system. The EGD should therefore include these seven principles:

1. THE RIGHT TO HEALTHY AND SUSTAINABLE BUILDINGS FOR ALL CITIZENS

The EGD must recognise the right to live, work, play and rest in healthy, highly efficient and innovation-powered buildings which are fit for purpose. Deep and draught-free homes, schools and offices without air quality guarantees and hospitals without active air-seal temperature management must become a

building of the past. A commitment to renovate at least 3% of the European building stock per year is necessary to transform the 37% of all European buildings that are currently not fit for a zero-carbon future.

2. A JUST TRANSITION TO A ZERO-CARBON BUILDING STOCK

Transforming our building stock must be an inclusive process that protects the rights of vulnerable citizens. Social mechanisms and new financing models need to ensure that renovation policies don't lead to tenants being priced out of their homes due to rent increases, or homeowners being unable to afford the

necessary improvements. Fair renovation models will not only reduce the societal costs of our living environment but will also provide new economic opportunities for regions and industries which are going through structural transformation as they phase out carbon-intensive value chains.



COVID-19 RECOVERY: INVESTMENT OPPORTUNITIES IN DEEP RENOVATION IN EUROPE

As Europe is discussing the scale of an unprecedented recovery programme to mitigate the damage of the Covid-19 pandemic, it has become clear that renovation of the European building stock would create a triple benefit. It would lead to an increase in economic activity, retaining and creating employment; it would support the achievement of Europe's climate and energy targets; and it would provide Europeans with better and healthier buildings. The scale of the investment opportunity is enormous, and while large figures for the economic recovery are currently featuring high in the political debate, the question remains what investment is needed to deeply renovate Europe's buildings.

The total amount to trigger a significant scaling up of the renovation rate and depth would add up to €30 billion per year, allocated to support mostly deep renovation, advisory services for owners/investors and technical assistance in member states, as well as innovation in serial renovation solutions. This funding would support an annual investment in mostly deep renovation of € 283 billion in €1-27.

A significant push for serial renovation is necessary to increase speed and depth of renovation while keeping the required work force at a realistic level. Industrial/serial renovation delivers cost-effective net-zero renovation at high quality by making use of prefabricated building modules, innovative financing and business models, and digitalisation across the value chain. This

paper presents an estimate to contribute to the discussion and to support decision-making.

All figures presented in this paper are related to either medium or deep renovation as that renovation efforts are aligned to the requirements of the Paris Agreement. We are assuming that renovations of some building types will only lead to a medium energy saving due to architectural and/or technical constraints. This makes the decarbonisation of heating even more important; however, this investment opportunity is not the topic of this paper. Further, we are not making any assumptions whether renovation measures are implemented in a comprehensive way at a single point in time or whether they are realized in a stepwise approach. Our approach assumes a linear investment over time, meaning that the same amount will be invested in each of the coming years. However, reality will likely be different; we consider our approach sufficient to define which share of the European recovery package should be allocated to building renovation in the current decision-making process.

Renovation activities will only see a significant increase if demand for renovations and supply of business offers from the construction industry match. An economic stimulus package should therefore address both. Our suggestion to allocate a share of the recovery funds to renovation therefore has two pillars: One providing support to owners/investors, and a second providing support to stimulate and scale up serial renovation.

Agenda

10:00 Welcome and introduction, [Caroline Milne](#) (BPIE)

10:05 Introduction to the enefirst project, [Jean-Sébastien Broc](#) (IEECP)

10:10 Implementing *Efficiency First* in practice: [Zsuzsanna Pató](#) (RAP)

10:30 Guest presentation: Social Constraint Management Zones (SCMZ) in the UK to harvest local demand flexibility, [Charlie Edwards](#) (SSEN)

10:45 Guest presentation: Implementing the Fabric First Approach in the Better Energy Communities scheme in Ireland, [John Flynn](#) (SEAI)

11:00 Q&A, Discussion with participants

11:15 Conclusions & next steps

Introducing ENEFIRST

Jean-Sébastien Broc
IEECP

28 May 2020

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MAKING THE ENERGY EFFICIENCY FIRST PRINCIPLE OPERATIONAL

A brief history of the Energy Efficiency First concept

From the 1980's, development of approaches for energy planning to take into account that **acting on the demand is possible**

Mostly about the electricity sector + US + vertical integration / monopolies

Demand-Side Management

Least-Cost Planning

Integrated Resource Planning

Energy Efficiency as a Resource

Late 1990's / early 2000's: liberalization of the energy markets → new context to develop energy efficiency activities

Energy Efficiency Obligation Schemes

First Fuel

Energy Efficiency First

2010's: **something more is needed** need to take into account **demand-side resources more systematically**

2016: [EC communication](#) on Clean Energy for All Europeans


2018: [Governance Regulation](#)



Introducing ENEFIRST

‘making the E1st principle operational’

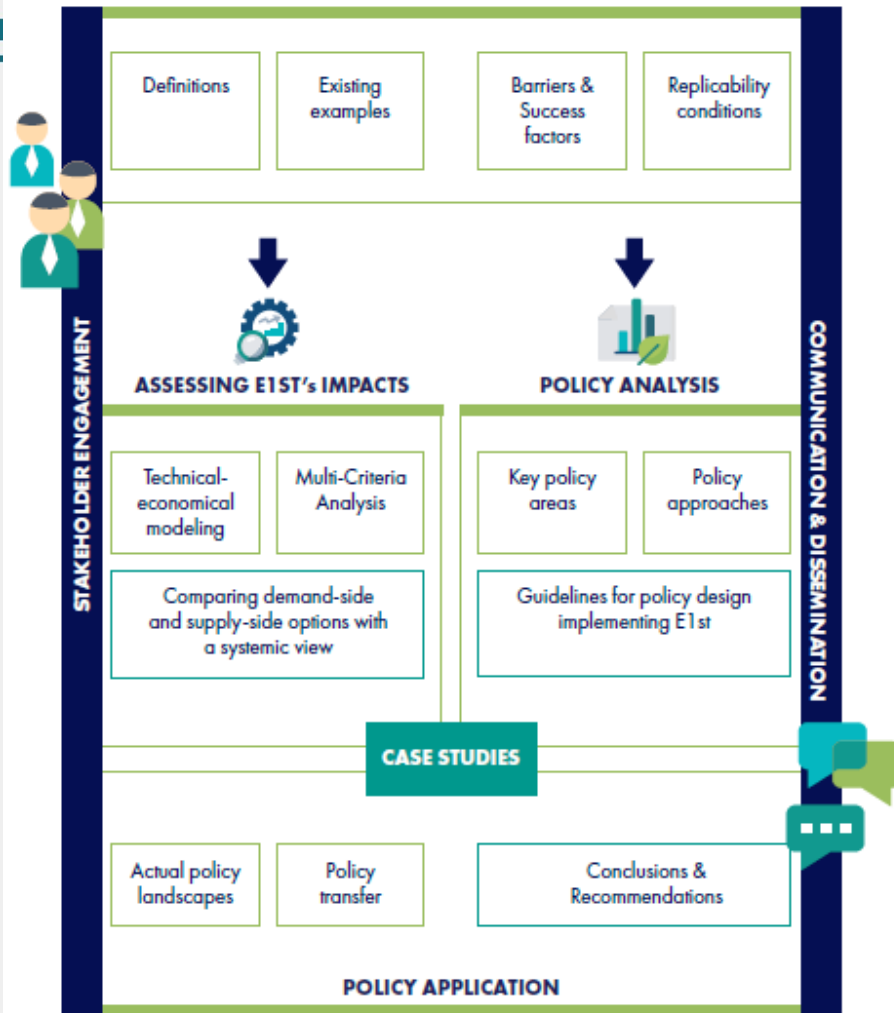
Objectives

- To **define** the principle of E1st in practical terms
 - To **map** how E1st has been applied internationally and in the EU
- 
- To **assess** the value of applying E1st across different policy areas and to **quantify potential impacts** for buildings' end use and related energy systems

- 
- To develop **policy proposals** for the implementation of E1st

Focus on **buildings'** end use and **related energy systems**

BACKGROUND ANALYSIS



IDENTIFICATION of the most relevant policy areas where the E1st principle can be applied to achieve the highest impact in terms of energy system benefits

APPLICATION of E1st in existing policy instruments, through assessing the applicability & transferability of international E1st approaches and quantifying the impacts of E1st

ENGAGEMENT with stakeholders to apply E1st through the design of new policy instruments and analyse their application in country case studies

Introducing the ENEFIRST team

“policy analysis” team



+ *communication & dissemination*



Coordinator
+ *stakeholder engagement*

“modelling” team



ENEFIRST Timeline

Where we are now

Already available on the website:

- Report on **background analysis and definition:**

<https://enefirst.eu/reports-findings/>

- **First examples:**

<https://enefirst.eu/examples/>

- **Brochure** in 7 languages

<https://enefirst.eu/newsroom/>



Coming soon:

- Report on the examples
- Report on barriers
- Report on modelling approaches



Website:

<https://enefirst.eu/>

Newsletter:

<https://enefirst.eu/stay-in-touch/>

Thank you

Jean-Sébastien Broc



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What is E1st?

Zsuzsanna Pató
RAP

28 May 2020



MAKING THE ENERGY EFFICIENCY FIRST PRINCIPLE OPERATIONAL

Growing population in Brooklyn-Queens

Requires additional substations, fuel cells

DRon saving at a cost of \$200 m

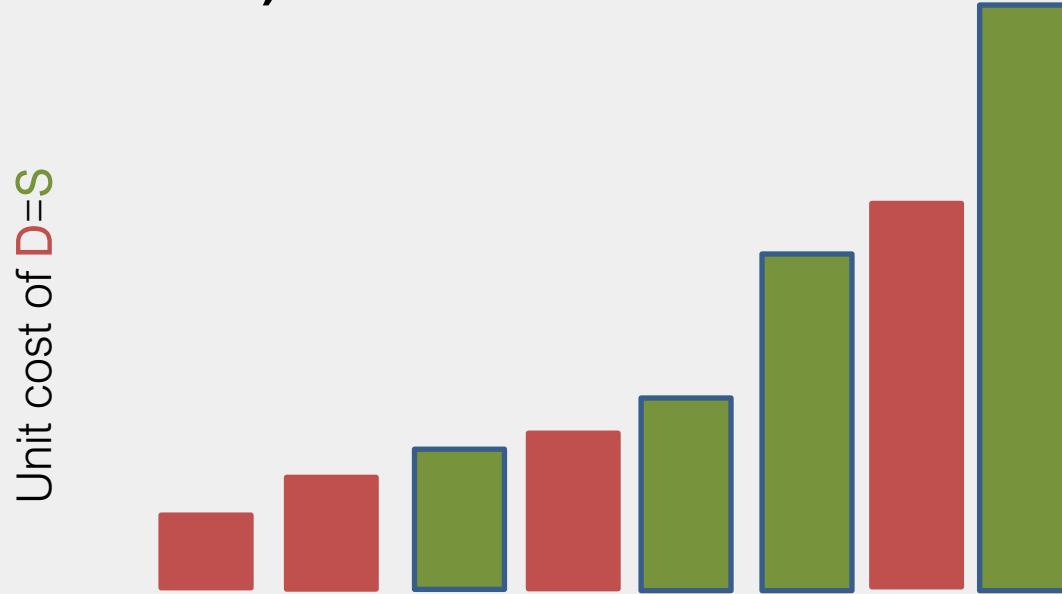
Peak load reduction by 52 MW in ANY WAY

S = D

- Not only in aggregate but also coincidentally
- S aligns with given D
- S means fuel availability AND infrastructure to deliver it

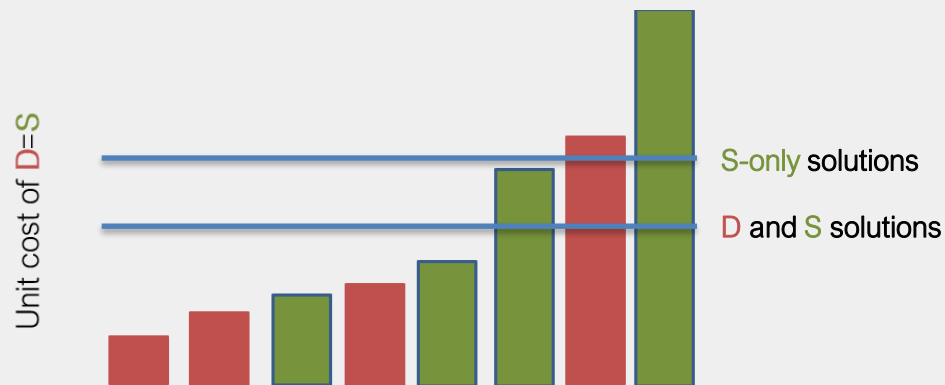
- D is not fixed:
 - Consumers have certain willingness to pay for energy and might be happy to limit their demand instead
 - If they are given the chance

A (yet theoretical) commonsense



Barriers of equal treatment

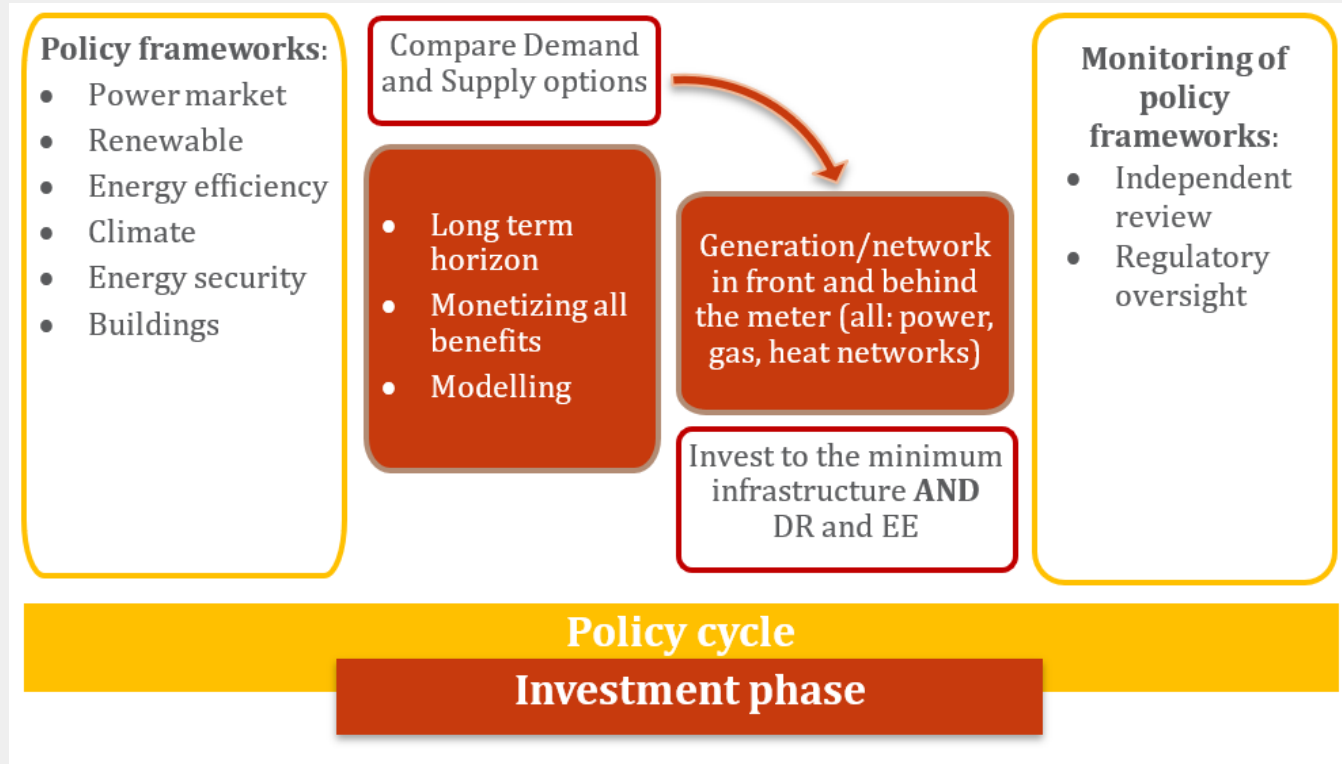
- Mental: new, not reliable
- Structural: smaller units, multitude of actors, various technologies
- Regulatory: limited access to markets, biased incentives
- Result:



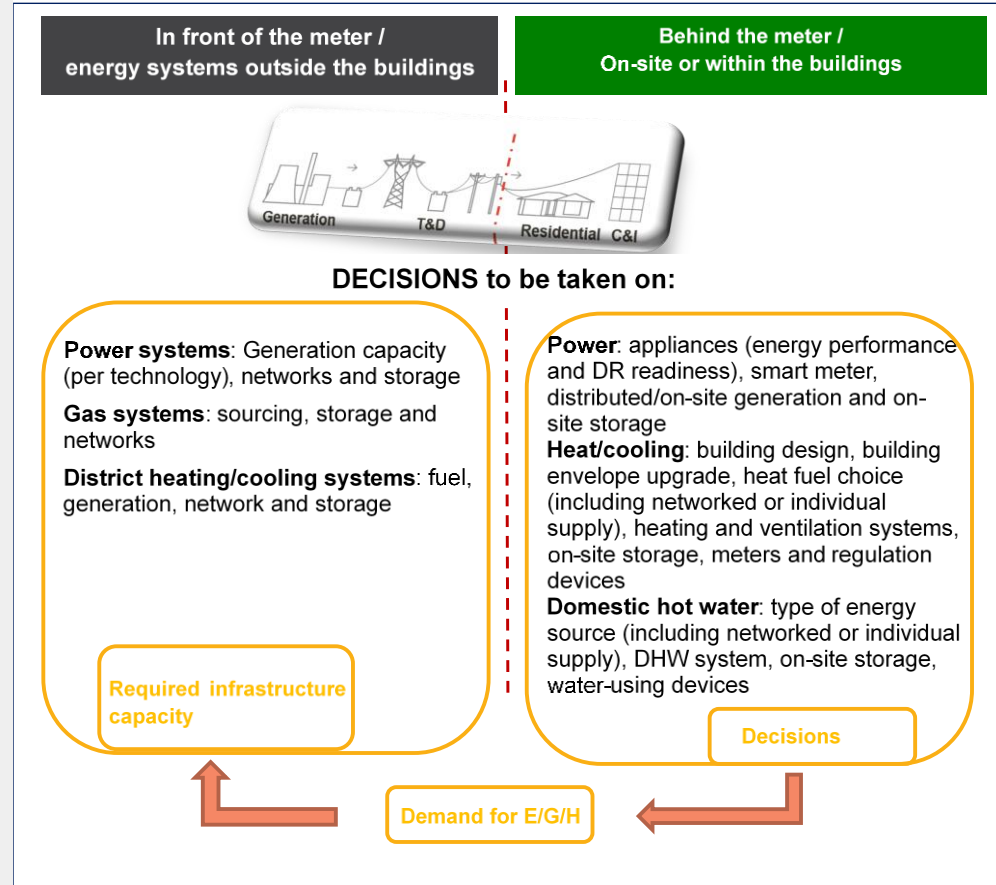
Efficiency First (E1st) is not just another name for energy efficiency.

*Efficiency First gives priority to demand-side resources whenever they are more **cost effective** from a **societal perspective** than investments in energy infrastructure in meeting policy objectives. It is a decision principle that is **applied systematically** at any level to energy-related investment planning and enabled by an 'equal opportunity' policy design.*

Investments and policies



Investment into what?

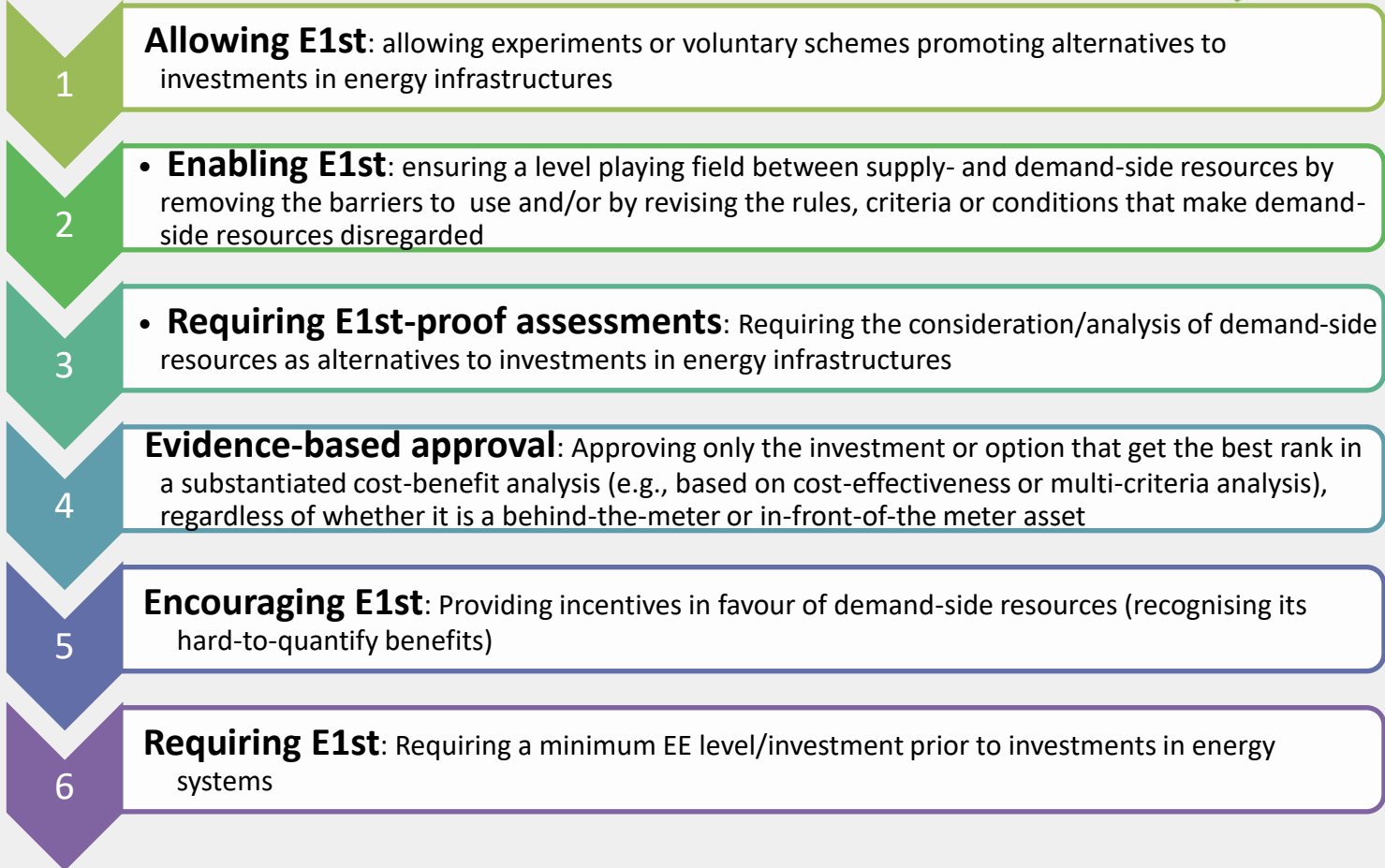


No.	Case
1.	Ecowatt programme (voluntary Demand Response through instant messaging)*
2.	Using ToU (Time-of-Use) tariffs to engage consumers and benefit the power system
3.	Social Constraint Management Zones to harvest demand flexibility
4.	Demand flexibility in District Heating networks
5.	FACE (French fund for rural electrification) allowing Demand-Side Management projects as an alternative*
6.	Participation of Demand Response (DR) in French wholesale electricity market
7.	Enabling rules for Demand Response (DR) aggregators
8.	Decoupling utility sales and revenues
9.	Energy Efficiency Obligation Schemes as a way to involve energy companies in behind-the-meter investments*
10.	Replacing a polluting power plant with behind-the-meter resources
11.	Updating distribution system planning rules in Colorado and Nevada
12.	Assessing the value of demand-side resources
13.	Water heaters as multiple grid resources
14.	Building Logbook – Woningpas: Exploiting efficiency potentials in buildings through a digital building file
15.	Optimising building energy demand by passive-level building code
16.	Energy Efficiency as infrastructure*
17.	Deferring T&D (Transmission & Distribution) infrastructure investments through local end-use efficiency measures
18.	Building energy performance requirements of the Irish Heat Pump System grant
19.	Fabric First approach under the Better Energy Communities grant scheme
20.	Linking RES (Renewable Energy Sources) support to building energy performance

Categorizing the best practices

	Provision	
	General	Investment
In-front-of-the-meter	A	B
Behind-the-meter	C	D

Best practices



Efficiency First (E1st) in the pipeline

1. *“A more circular energy system, with “energy-efficiency-first” at its core“*

(Creating the foundation for a climate-neutral economy: An EU Strategy for Energy System Integration - draft)

2. **TEN-E Revision:** not proposing grid projects but bottlenecks/problems and assess all options:

- Reduction of demand (EE and DR)
- Higher utilization of existing network assets (smarting technologically and regulatory-wise)
- Capacity extension



Where to find the reports:
<https://enefirst.eu/reports-findings/>

Where to find the examples:
<https://enefirst.eu/examples/>

How to register to the ENEFIRST
newsletter:
<https://enefirst.eu/stay-in-touch/>

Thank you

Zsuzsanna Pató



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Energy Efficiency and Flexibility

May 2020



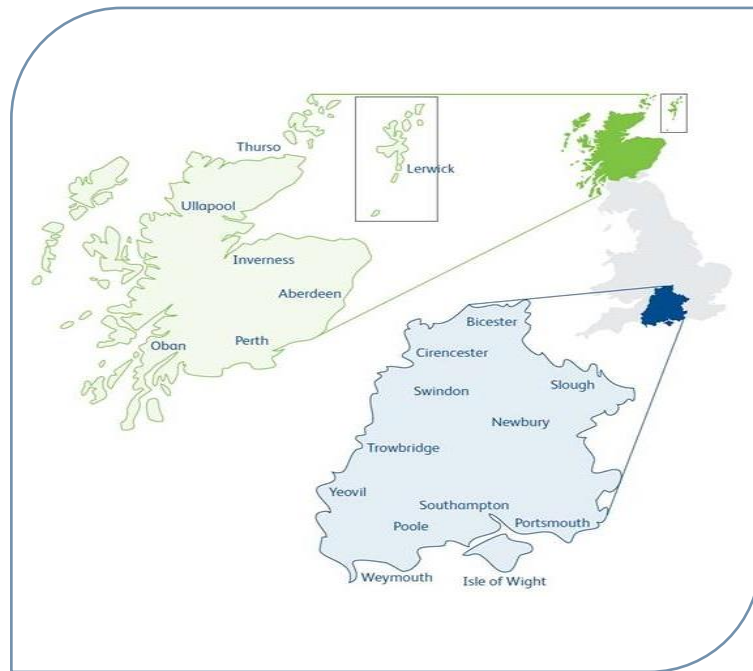
Charlie Edwards- Flexibility Markets
Manager



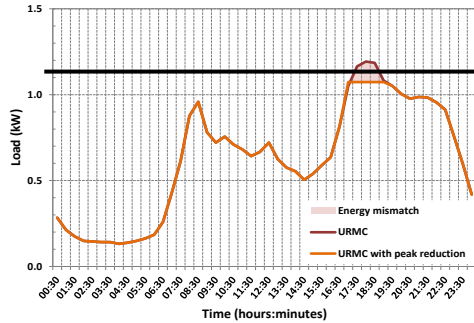
Scottish & Southern
Electricity Networks

Who are SSEN

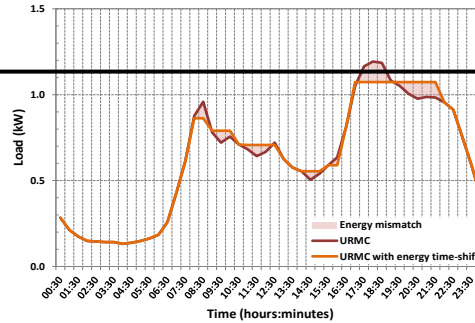
- Scottish and Southern Electricity Networks owns:
 - two electricity distribution networks
 - one electricity transmission network
 - +100,000 substations
 - +130,000 km of overhead lines and underground cables
 - +100 submarine cable links
- We serve 3.5 million customers across one third of the UK's landmass.



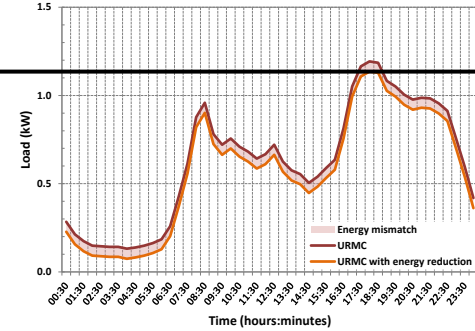
The Issue



(a) Peak reduction



(b) Electricity time-shifting



(c) Electricity reduction

SAVE Project



<https://save-project.co.uk/>



WE NEED
TO MAKE IT
VERY EASY FOR
OUR
CUSTOMERS

TRIAL DESIGN



Opt-out approach
(in-person visits door-to-door)



Installed by project staff



Up to 10 bulbs per household available



Free of charge

HOUSEHOLD UPTAKE

76%

AVERAGE NUMBER OF BULBS REPLACED

7

AVERAGE ANNUAL SAVING PER HOUSEHOLD:

90 kWh

ANNUAL EFFECT SIZE ACROSS VARIOUS METRICS



Household



SAVE project



SSN customers



UK households



► Cost of national LED rollout £1 billion max



► New nuclear plant £5 billion



VULNERABLE CUSTOMERS



TREATMENT EFFECT

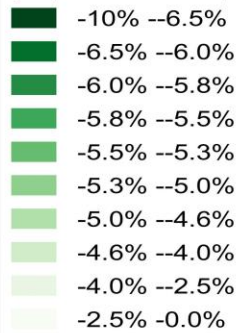
5%

GREATER FOR VULNERABLE CUSTOMERS THAN FOR THE AVERAGE CUSTOMER

CONCLUSION: if deployed in adequate quantities, and offered free and installed, LED bulbs can effectively reduce peak network load, save customers money on bills and reduce carbon emissions.



SAVE impacts by LSOA
(Selected LSOAs only)
LED impacts
(impacts as % of peak kWhs)



0 10 20 30 40 mi



Flex Markets

DRAYTON-MILTON-FULSCOT

33/11kV Reinforcement
Investment cost £2,480k
CMZ Value/Cost £256,760

COXMOOR WOOD

132/33kV Reinforcement
Investment cost £3,300k
CMZ Value/Cost £348,790



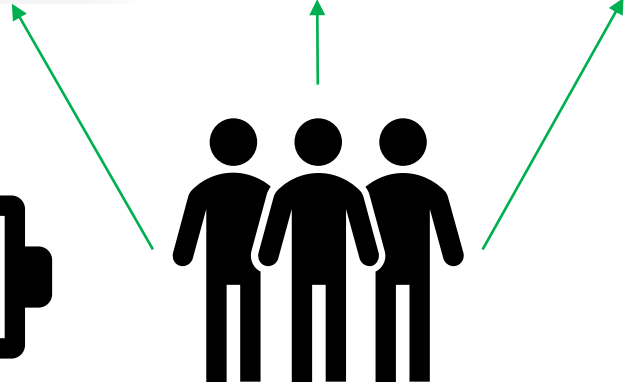
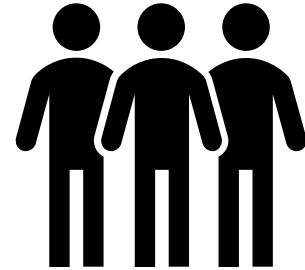
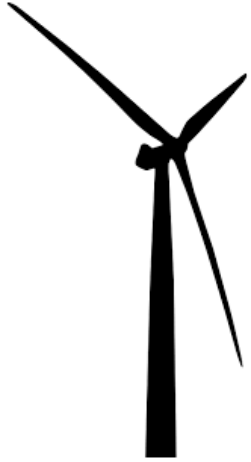
ZONES REVIEWED

In 2018 SSEN has reviewed a further 14 schemes for potential CMZ application;

- 11 SHEPD schemes, value £14.5m
- 3 SEPD connection driven schemes, value £8.2m

However within the current parameters none resulted in commercial values sufficient to progress to tender.

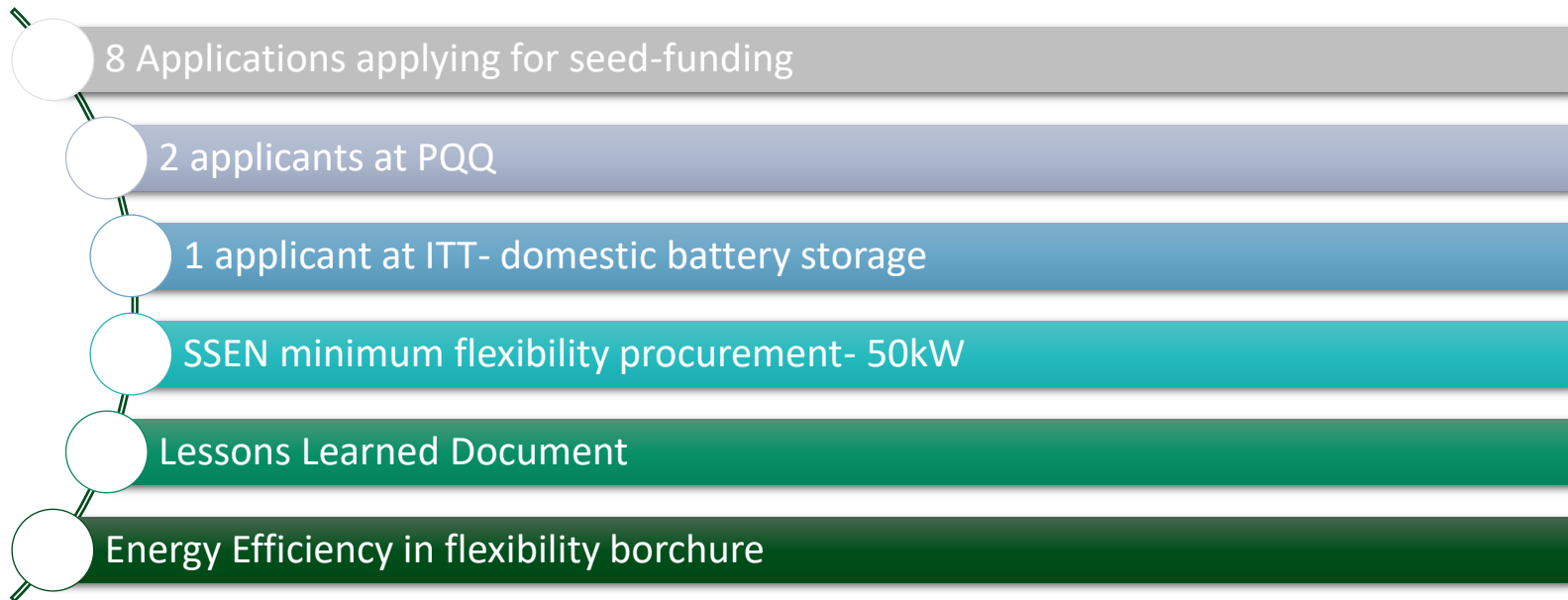
Flexibility to now



Engagement Process



Project Outputs



<https://www.ssen.co.uk/community/>



Scottish & Southern
Electricity Networks



SUSTAINABLE ENERGY COMMUNITIES



Communities 2012 to 2020



- 18,500 homes completed
- 2800 non domestic projects complete
- Total Project spend €400M
- Total grants €165M
- Energy savings 100GWh



In 2019 projects

57 Contracts issued

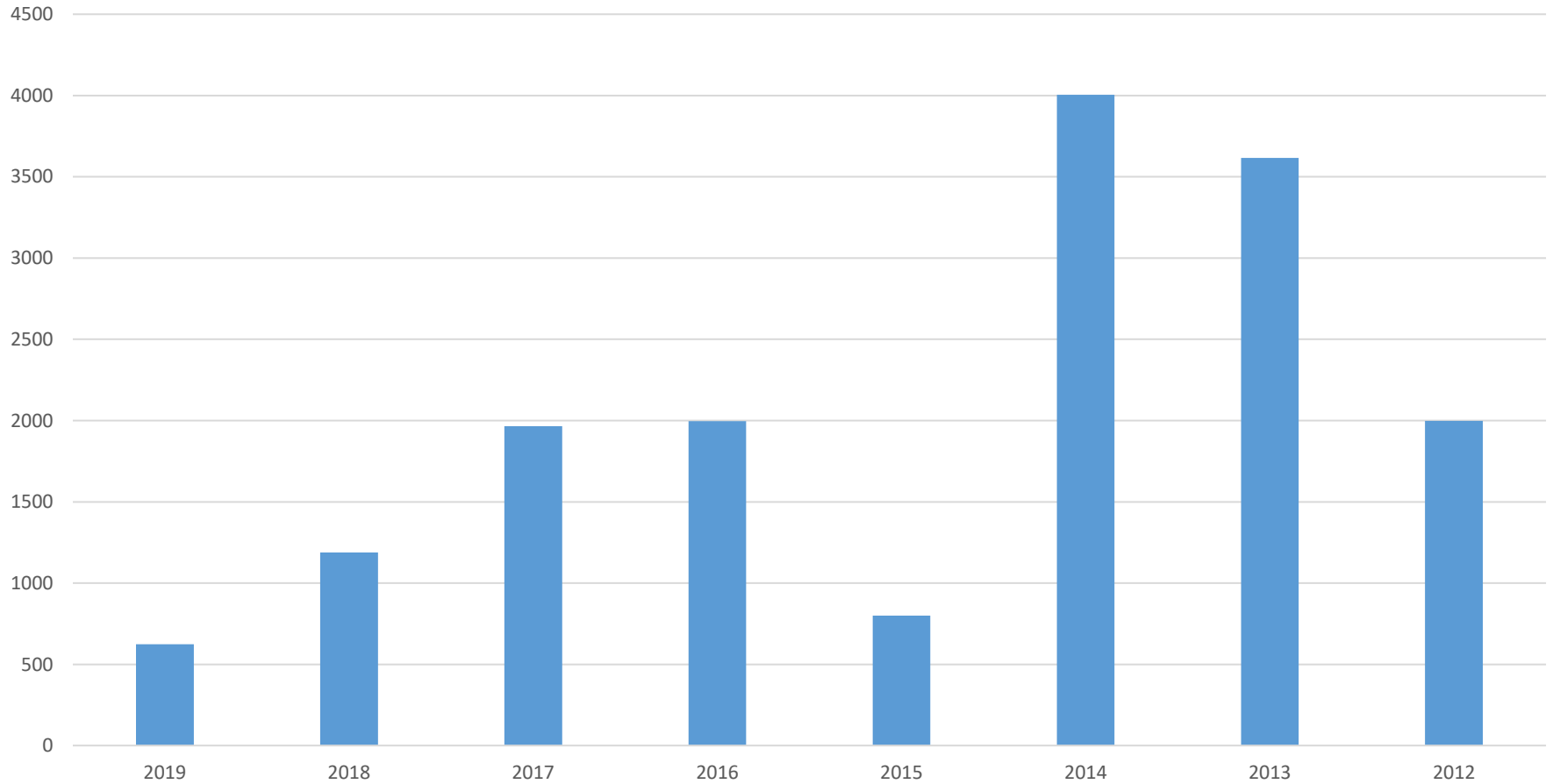
Value of works supported €41M

Grant Support from SEAI €19M

Homes completed 650

Non Domestic works 475

Homes



EU Targets/Government policy

Decarbonise our energy supply by 80-95% by 2050

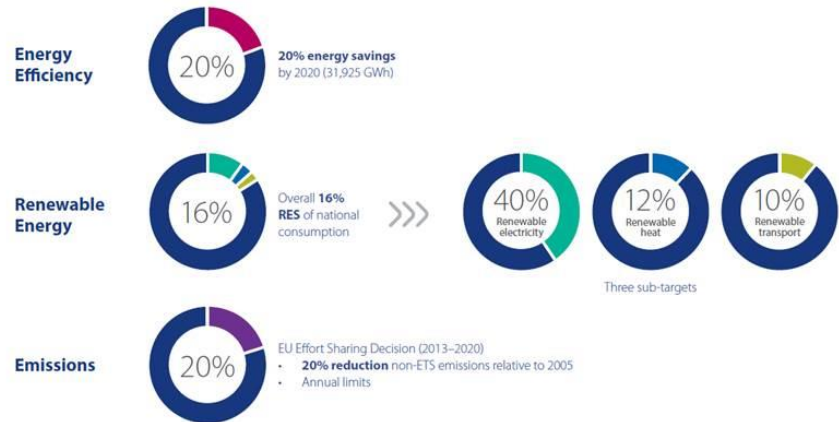
EU Energy Efficiency Targets 2020

EU Renewables Targets 2020



EU Emissions Targets 2020

Figure 2: Headline energy and emissions targets



SEAI Experience

Pre 2015

- Started with standard measures to homes
- Product and contractors started to pick and choose measures
- Product lead rather than homeowner or home lead
- Contractors picking easy measures

Post 2015

- Introduction of Minimum Home energy rating post works
- Shock to the system!!
- Removal of product lead participation in the scheme
- Scheme is now Rating driven
- Higher cost to deliver

From 2015-2020 Fabric first approach

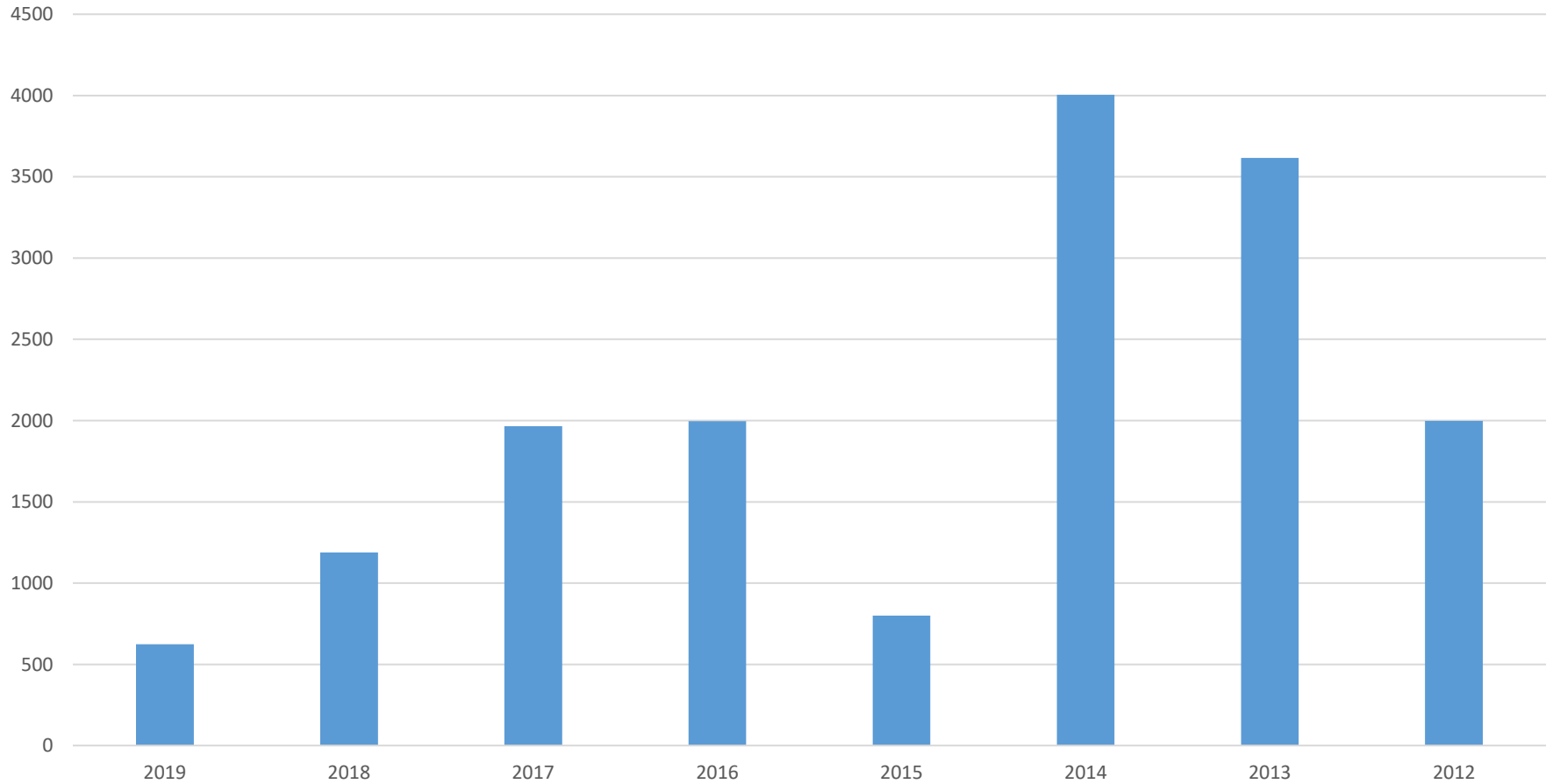
2015 -2017

- Shock as contractors adjusted to a new reality
- Harder to find homes to complete
- Bigger spend per home and therefore higher homeowner commitment
- Deeper measures for every home

2017- 2020

- Removal of fossil fuel systems
- Higher again costs for delivery
- Heat pump is now standard measure
- Fabric first approach is now mandatory
- Focus on home requirements external envelope is now priority

Homes



In 2015 SEAI
introduced Minimum
BER (Building Energy
Rateing) C1 minimum.



From 2018 we insist on
B2 BER rating in now
mandatory

C1 where heating systems are not replaced



Domestic costs

**In 2014 Grant support per home
€3,000**



**In 2109 Grant support per home
€16,000**



John.Flynn@seai.ie

Thank You

Q&A





Website:

<https://enefirst.eu/>

Newsletter:

<https://enefirst.eu/stay-in-touch/>

Thank you

Zsuzsanna Pato, Jean-Sébastien Broc, Charlie Edwards, John Flynn

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