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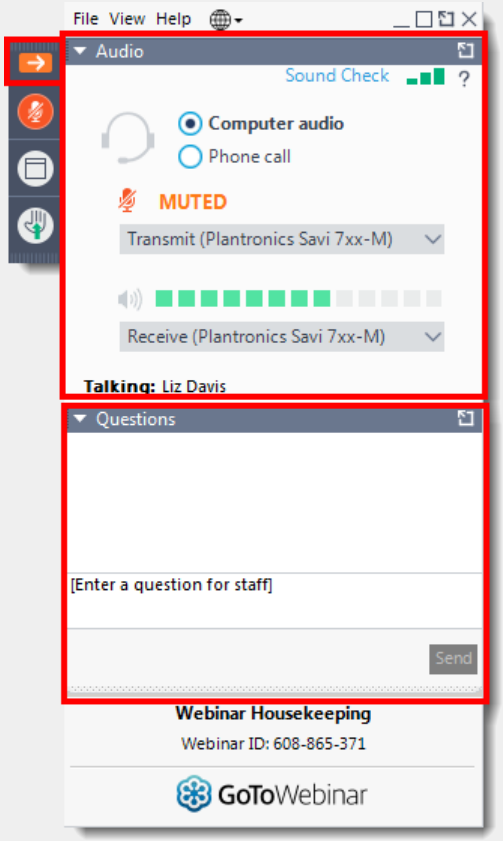
PUTTING ENERGY EFFICIENCY FIRST – LEARNING FROM INTERNATIONAL EXPERIENCE

WEBINAR
28 MAY 2020

enefirst.

GoToWebinar Housekeeping



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 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…

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

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

2010's: something more is needed

need to take into account **demand-side resources more systematically**

Energy Efficiency First

2016: EC communication on Clean Energy for All Europeans

2018: Governance Regulation

See the first ENEFIRST report for more details !

Introducing ENEFIRST 'making the E1st principle operational'

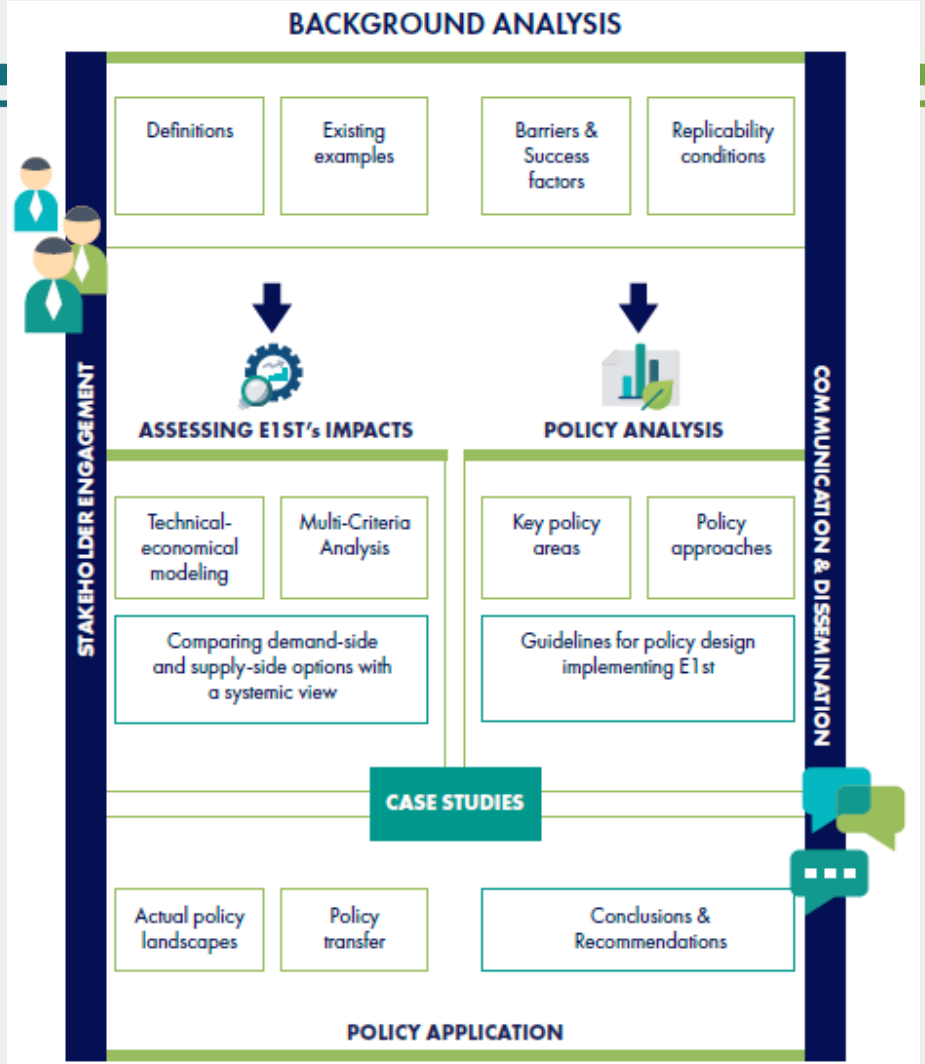
Objectives

- 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



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

RAP®

BPIE

+ communication & dissemination

CEU CENTRAL EUROPEAN UNIVERSITY

IEECP
INSTITUTE FOR EUROPEAN ENERGY AND CLIMATE POLICY

Coordinator

+ stakeholder engagement

"modelling" team

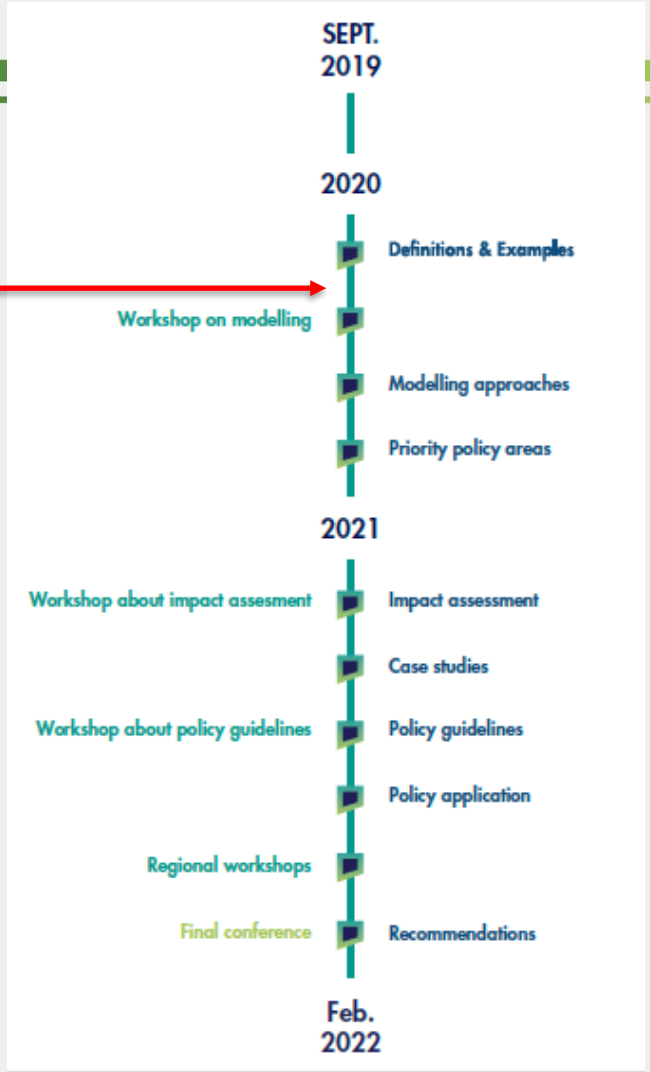
Fraunhofer ISI

TU WIEN TECHNISCHE UNIVERSITÄT WIEN Vienna | Austria

IREES
Institute for Resource Efficiency and Energy Strategies

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

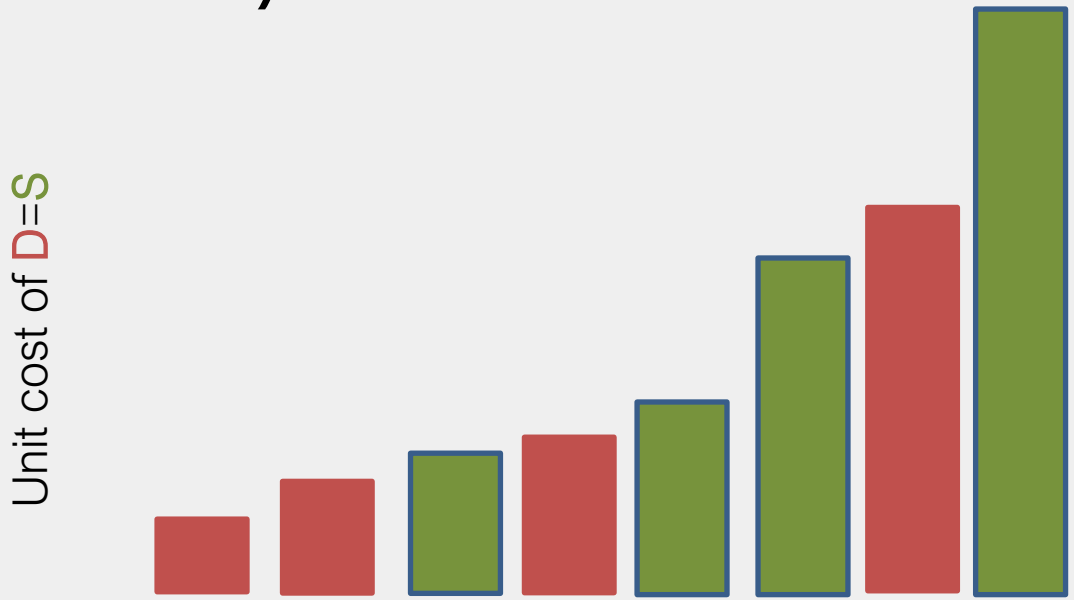
Photo by Meriç Dağlı on Unsplash

S = D

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

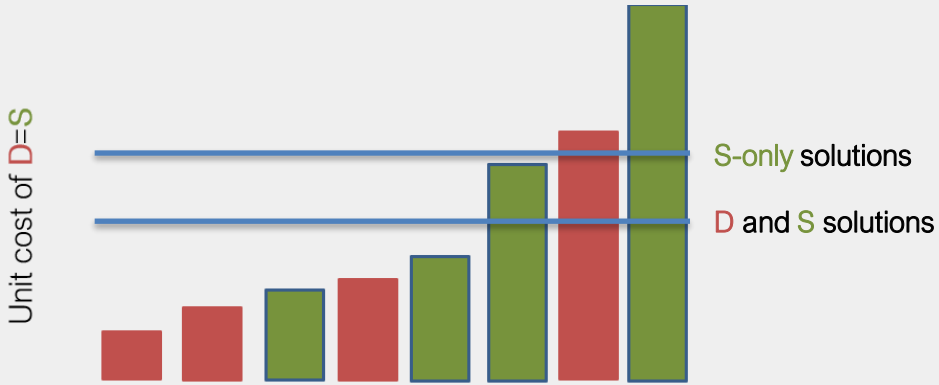
- D is not fixed:
    - Consumers have certain willingness to pay for energy and might be happy to limit their demand instead
    - If they are given the chance

A (yet theoretical) commonsense



Barriers of equal treatment

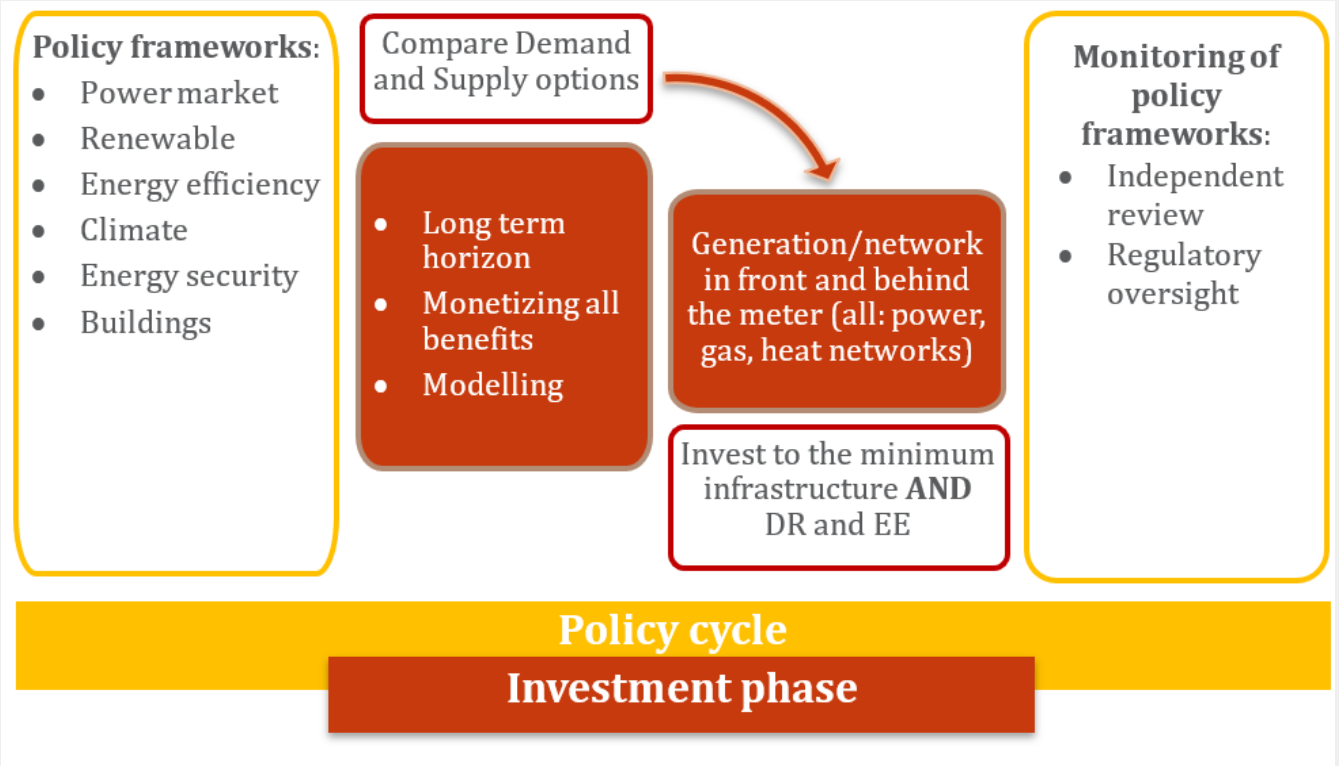
- Mental: new, not reliable
- Structural: smaller units, multitude of actors, various technologies
- Regulatory: limited access to markets, biased incentives
- Result:



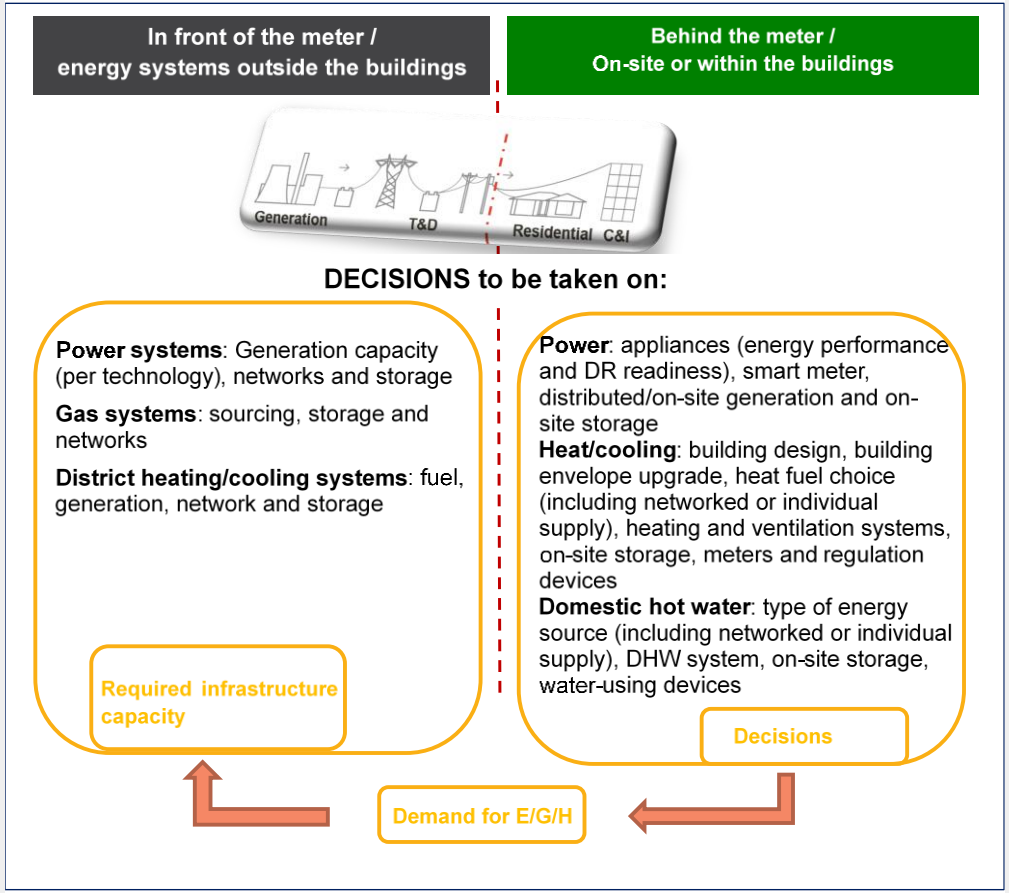
Efficiency First (E1st) is not just another name for energy efficiency.

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

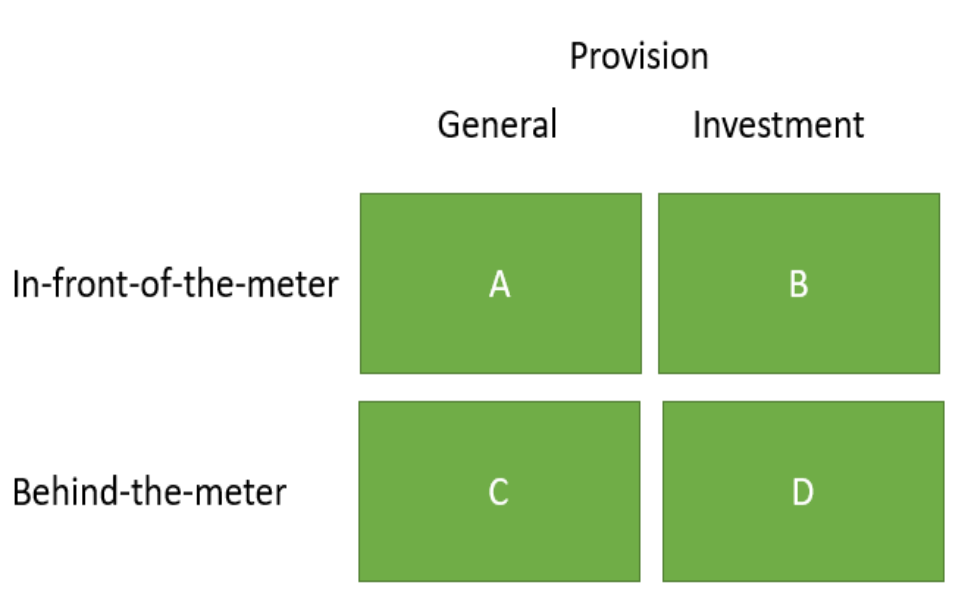


Investment into what?



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



Best practices

1. **Allowing E1st**: allowing experiments or voluntary schemes promoting alternatives to investments in energy infrastructures
2. • **Enabling E1st**: ensuring a level playing field between supply- and demand-side resources by removing the barriers to use and/or by revising the rules, criteria or conditions that make demand-side resources disregarded
3. • **Requiring E1st-proof assessments**: Requiring the consideration/analysis of demand-side resources as alternatives to investments in energy infrastructures
4. **Evidence-based approval**: Approving only the investment or option that get the best rank in a substantiated cost-benefit analysis (e.g., based on cost-effectiveness or multi-criteria analysis), regardless of whether it is a behind-the-meter or in-front-of-the meter asset
5. **Encouraging E1st**: Providing incentives in favour of demand-side resources (recognising its hard-to-quantify benefits)
6. **Requiring E1st**: Requiring a minimum EE level/investment prior to investments in energy systems

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

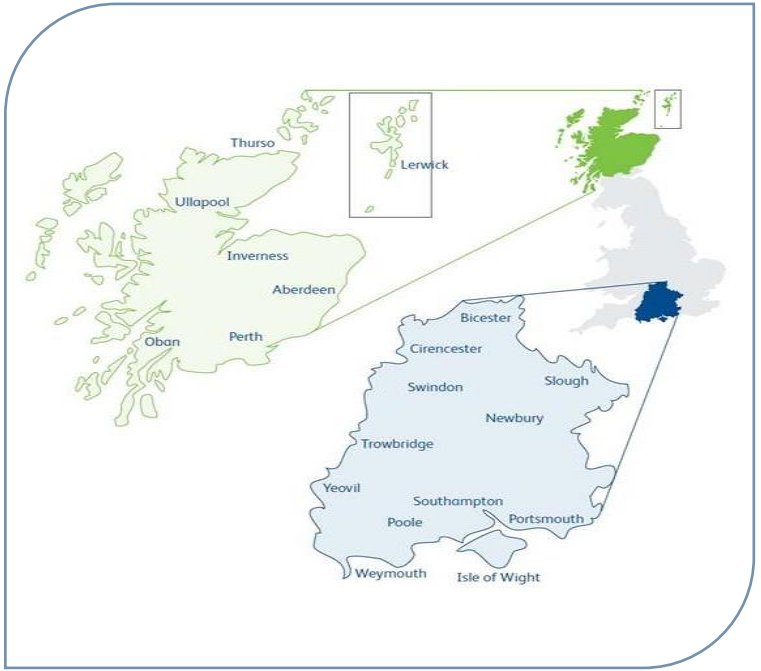
Scottish & Southern Electricity Networks

Charlie Edwards- Flexibility Markets Manager

Who are SSEN

- Scottish and Southern Electricity Networks owns:

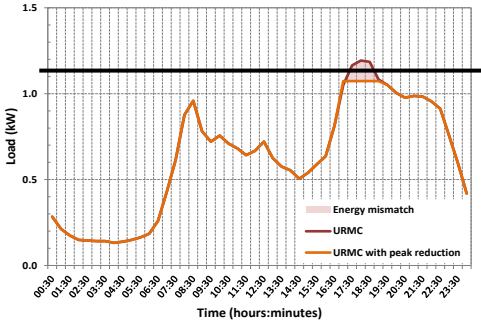
- two electricity distribution networks
- one electricity transmission network
- +100,000 substations
- +130,000 km of overhead lines and underground cables
- +100 submarine cable links



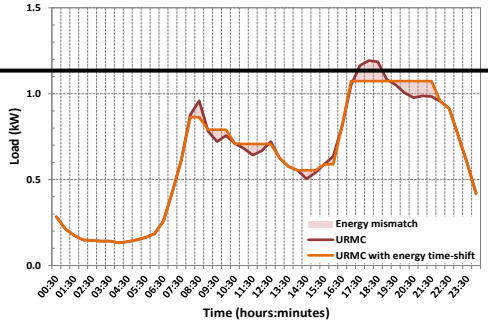
- We serve 3.5 million customers across one third of the UK's landmass.

Scottish & Southern Electricity Networks

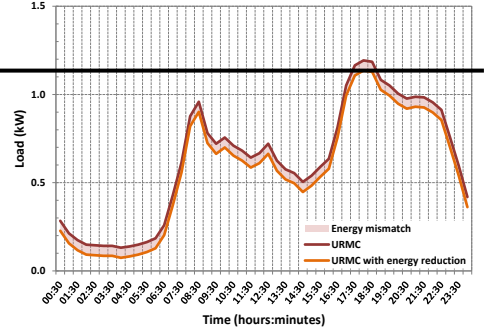
The Issue



(a) Peak reduction



(b) Electricity time-shifting



(c) Electricity reduction

Scottish & Southern Electricity Networks

SAVE Project

SAVE

Solent Achieving Value from Efficiency

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

Scottish & Southern Electricity Networks

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%

7

AVERAGE NUMBER OF BULBS REPLACED

AVERAGE ANNUAL SAVING PER HOUSEHOLD:

90 kWh

ANNUAL EFFECT SIZE ACROSS VARIOUS METRICS

Household

SAVE project

SSEN customers

UK households

- Cost of national LED rollout £1 billion max
- New nuclear plant £5 billion

VULNERABLE CUSTOMERS

TREATMENT EFFECT

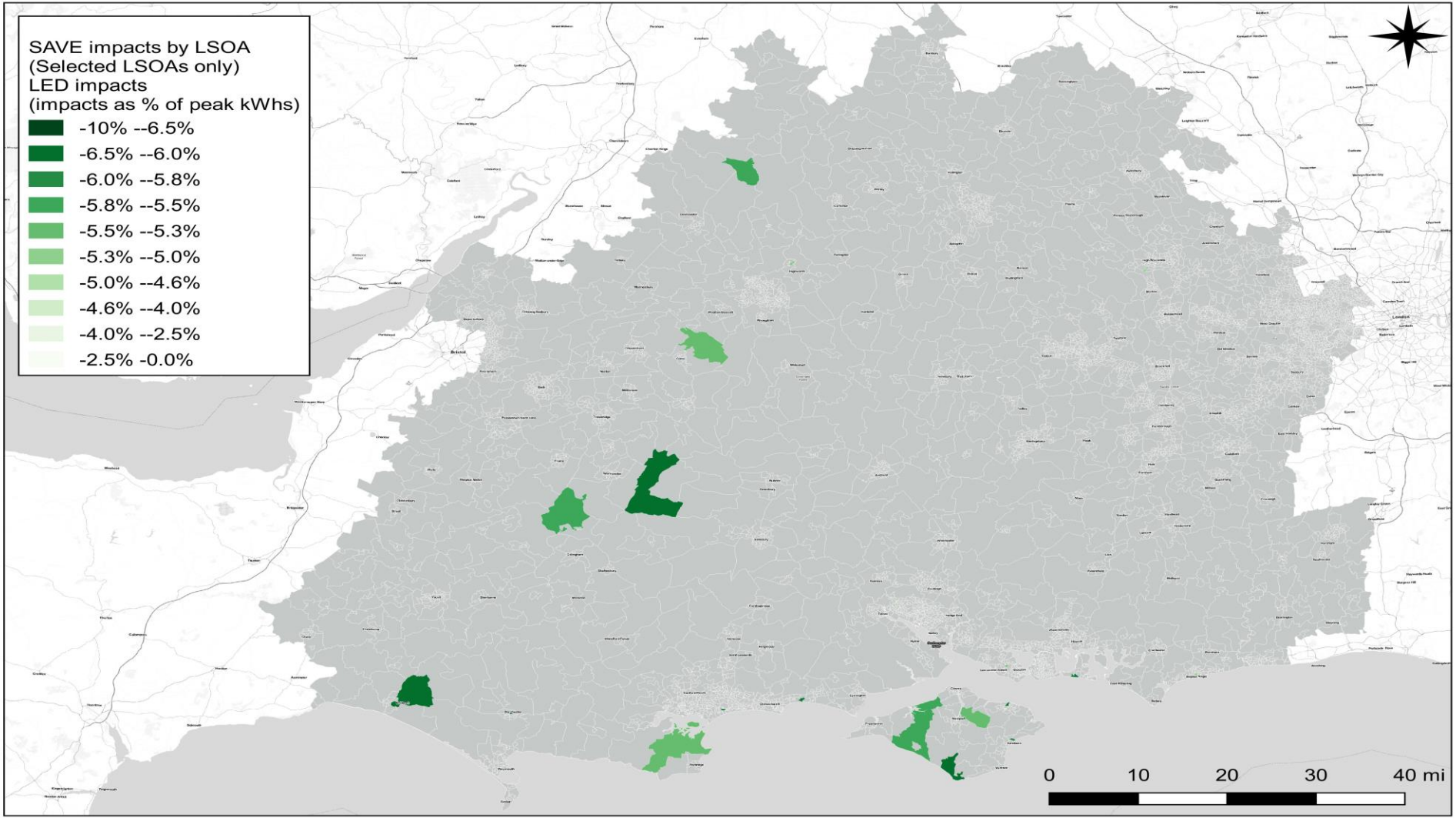
5%

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
Solent Achieving Value from Efficiency

Scottish & Southern Electricity Networks


SAVE impacts by LSOA
(Selected LSOAs only)
LED impacts
(impacts as % of peak kWhs)
-10% --6.5%
-6.5% --6.0%
-6.0% --5.8%
-5.8% --5.5%
-5.5% --5.3%
-5.3% --5.0%
-5.0% --4.6%
-4.6% --4.0%
-4.0% --2.5%
-2.5% -0.0%
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

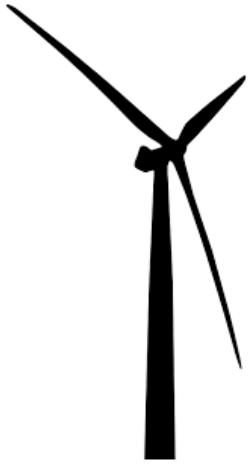
In 2018 SSEN has reviewed a further 14 schemes for potential CMZ application;

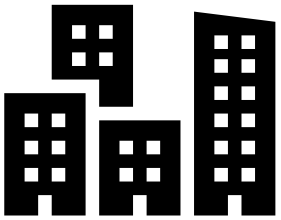
- 11 SHEPD schemes, value £14.5m
- 3 SEPD connection driven schemes, value £8.2m

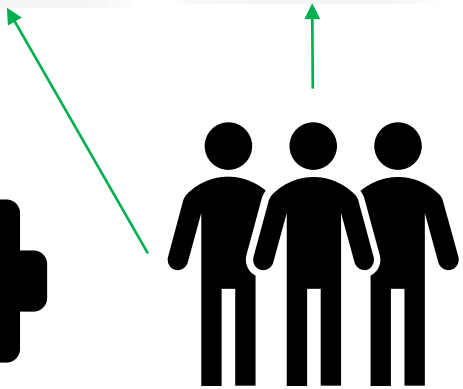
However within the current parameters none resulted in commercial values sufficient to progress to tender.

Scottish & Southern Electricity Networks

Flexibility to now







Engagement Process

Project Outputs

- 8 Applications applying for seed-funding
- 2 applicants at PQQ
- 1 applicant at ITT- domestic battery storage
- SSEN minimum flexibility procurement- 50kW
- Lessons Learned Document
- Energy Efficiency in flexibility borchure

Scottish & Southern Electricity Networks

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

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SUSTAINABLE ENERGY AUTHORITY OF IRELAND

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

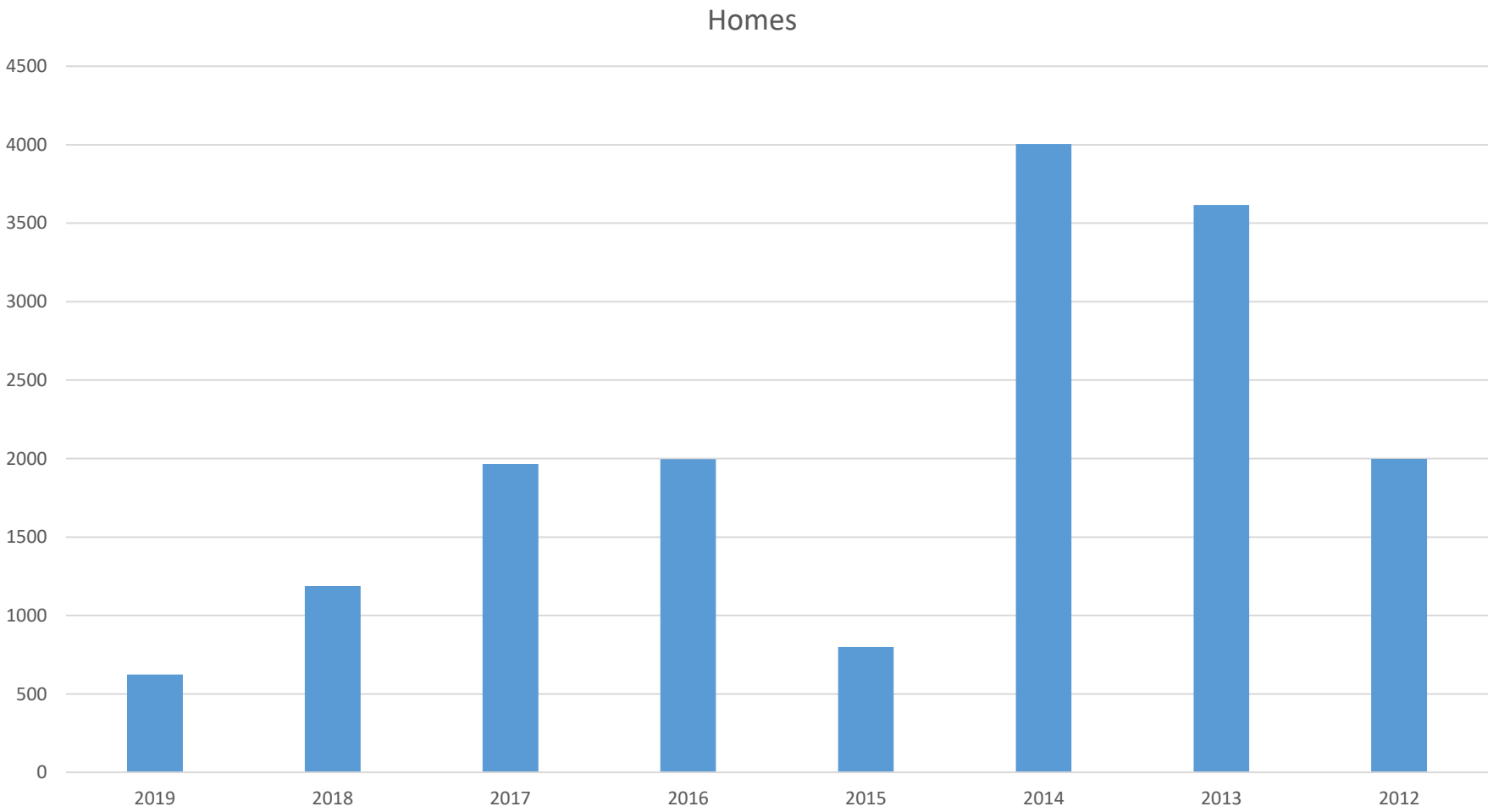
57 Contracts issued

Value of works supported €41M

Grant Support from SEAI €19M

Homes completed 650

Non Domestic works 475


Homes
4500
4000
3500
3000
2500
2000
1500
1000
500
0
2019
2018
2017
2016
2015
2014
2013
2012

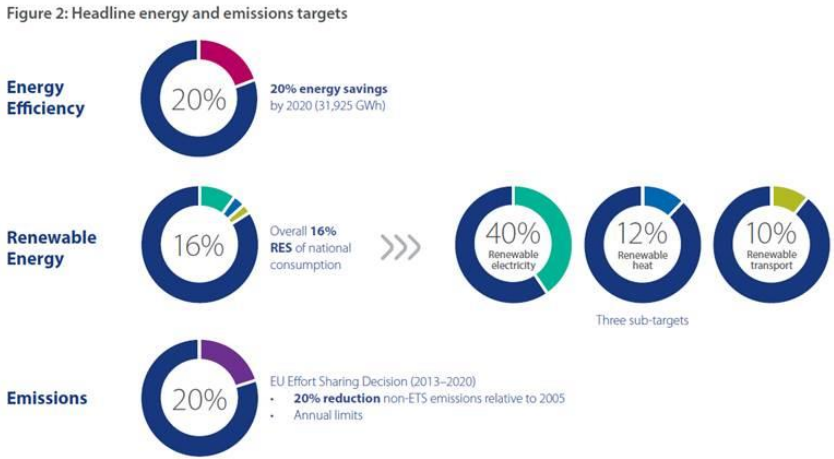
EU Targets/Government policy

Decarbonise our energy supply by 80-95% by 2050

EU Energy Efficiency Targets 2020

EU Renewables Targets 2020

EU Emissions Targets 2020



seai SUSTAINABLE ENERGY AUTHORITY OF IRELAND

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

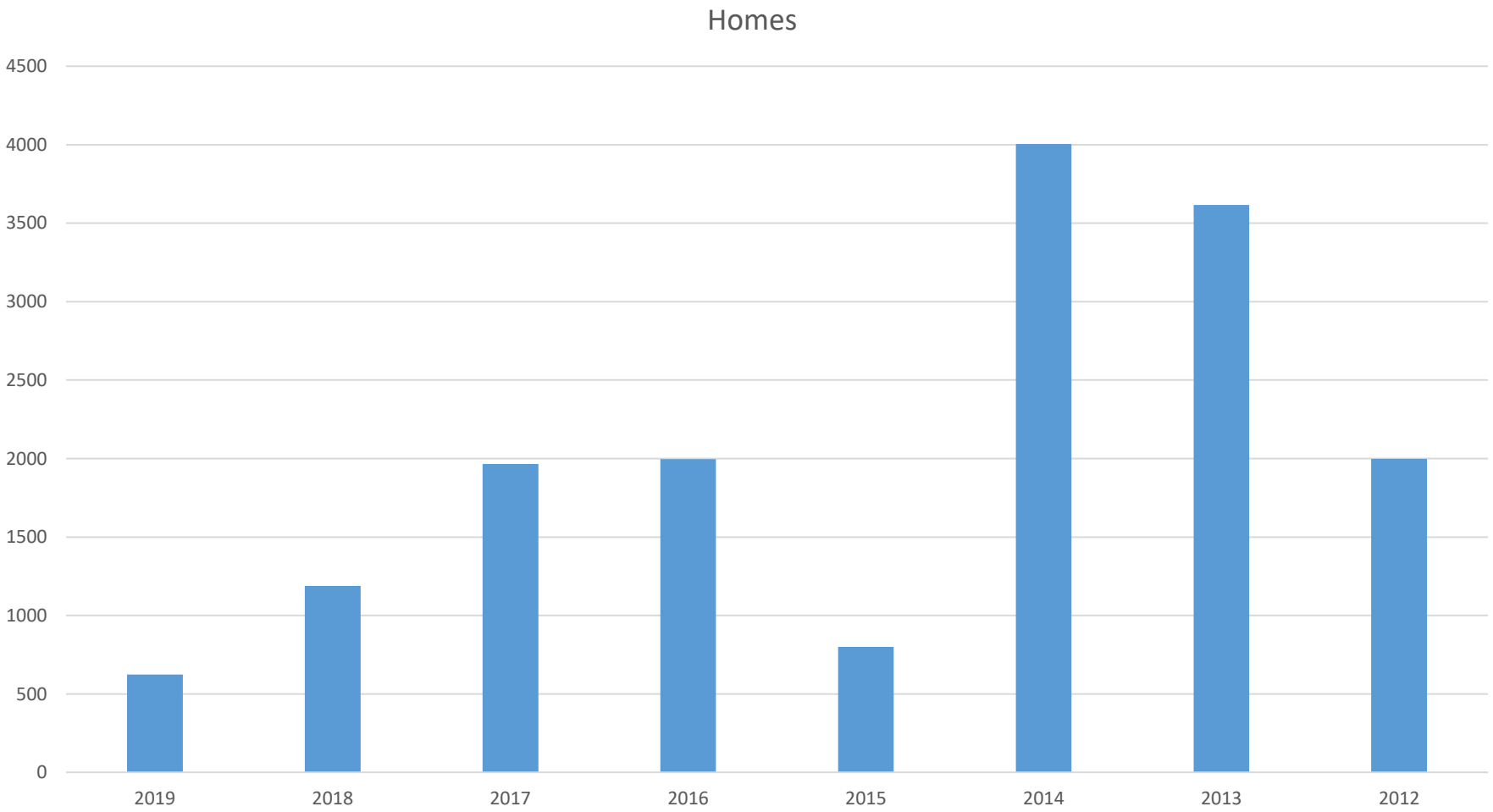
From 2015-2020 Fabric first approach

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
4500
4000
3500
3000
2500
2000
1500
1000
500
0
2019
2018
2017
2016
2015
2014
2013
2012

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

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From 2018 we insist on B2 BER rating in now mandatory

C1 where heating systems are not replaced

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Domestic costs

In 2014 Grant support per home €3,000

In 2109 Grant support per home €16,000

John.Flynn@seai.ie

Thank You

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Q&A

28 May 2020

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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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