Be part of the conversation!
Follow APSE on X and LinkedIn

@apseevents

@apsenews

@APSE - Association for Public Service Excellence

Guess the Solar Generation. WIN FREE consultancy for a Solar PV model for one of your council's buildings!

Visit the Salvis/ APSE Energy stand to find out more and enter the competition.

SALVIS®

apse energy

Decarbonising Blocks of Flats

By Nonso Obuekwe and Alan Barber

APSE Energy Associates & Employees of Salvis

Agenda

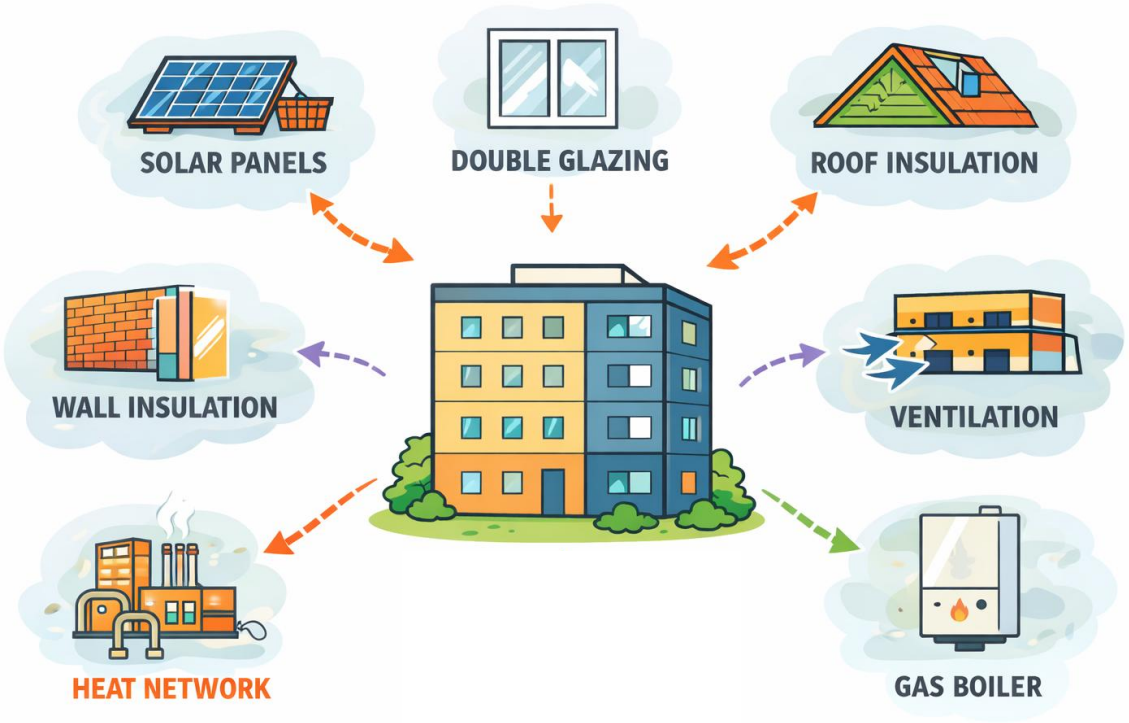
- Introduction
- Fabric considerations
- District heating through centralised energy centre with air source heat pumps
- Shared rooftop PV
- Expansion for wider district heating

Introduction & Project Scope

- Anonymised case study
- Net Zero Target & carbon emissions reduction
- Minimum Energy Efficiency Standards (EPC C or better)
- Alleviate fuel poverty
- Value for money
- Future proofing

Retrofit Options

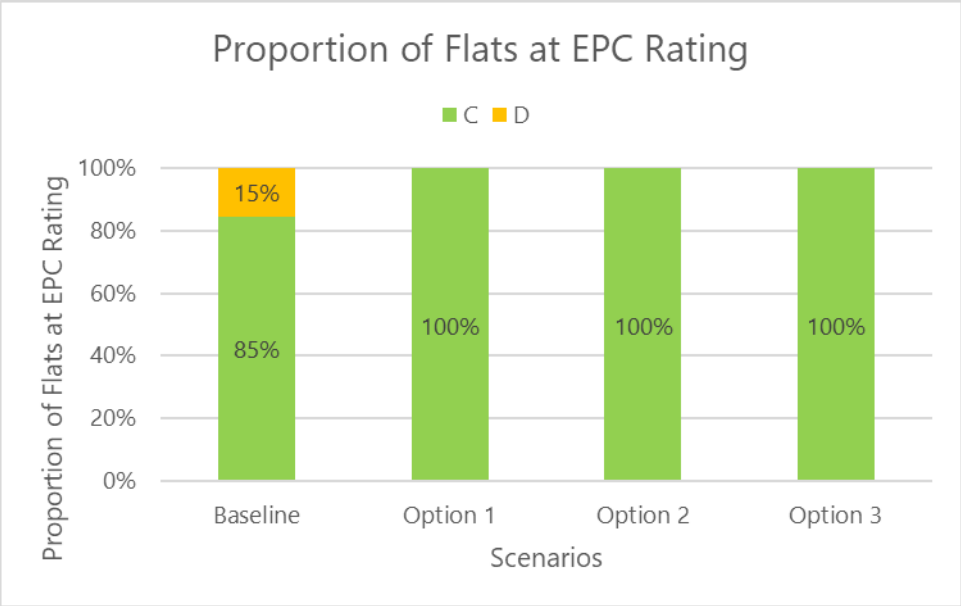
Retrofit Measures	Option 1	Option 2	Option 3	Life Expectancy of Measure (Years)
Fabric Efficiency				
Undercroft (Under floor insulation – UFI)	✓	✗	✓	42
Window	✓	✓	✓	20
Solid Door	✓	✓	✓	30
Glazed Door	✓	✓	✓	20
Heating System				
New Gas-fired boilers	✗	✗	✓	16
Heat network (Heat Generator: ASHP)	✓	✓	✗	40
Renewable Power Generation				
Solar Photovoltaics (PV) with SolShare	✓	✓	✓	25
Discounted Measures				
Roof	✗	✗	✗	20
Wall (External or Internal insulation incl. party wall)	✗	✗	✗	36 - 42
Ground floor (Solid floor insulation – SFI)	✗	✗	✗	42



Retrofit Cost for One Block

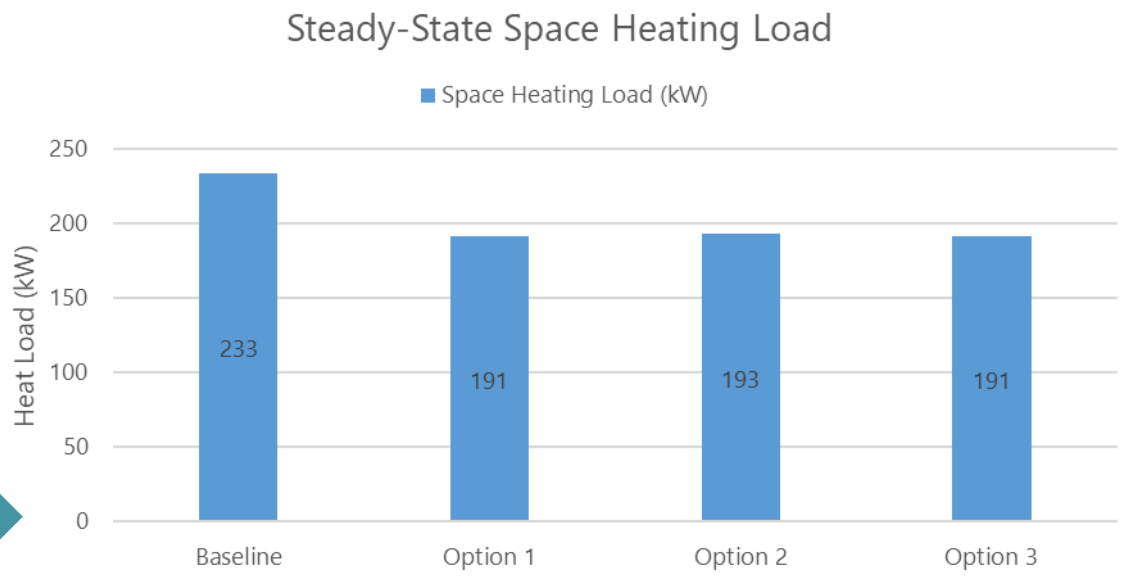
	Retrofit Option 1	Retrofit Option 2	Retrofit Option 3
Capital Cost	£2,910,000	£2,900,000	£900,000

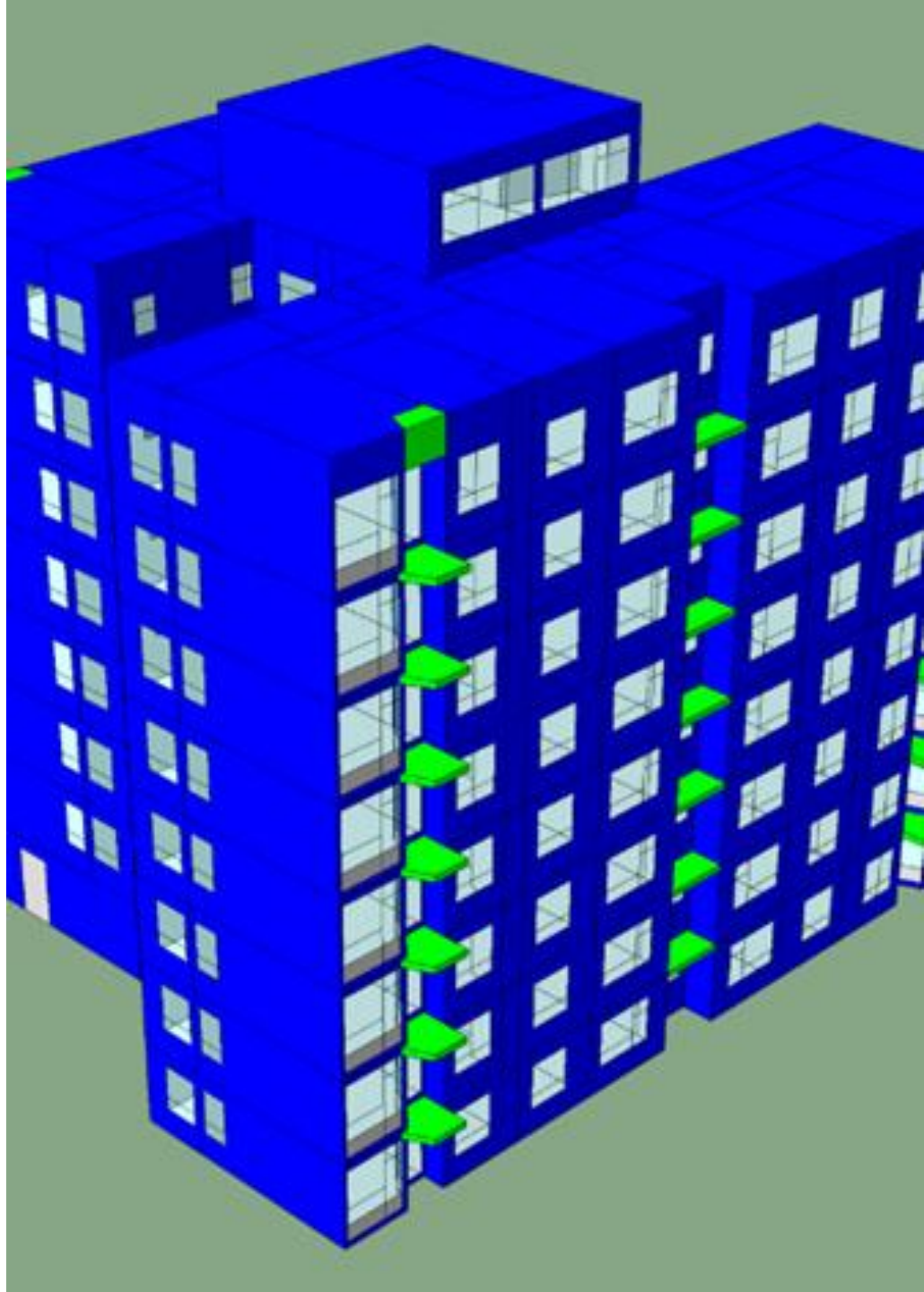
EPC Rating



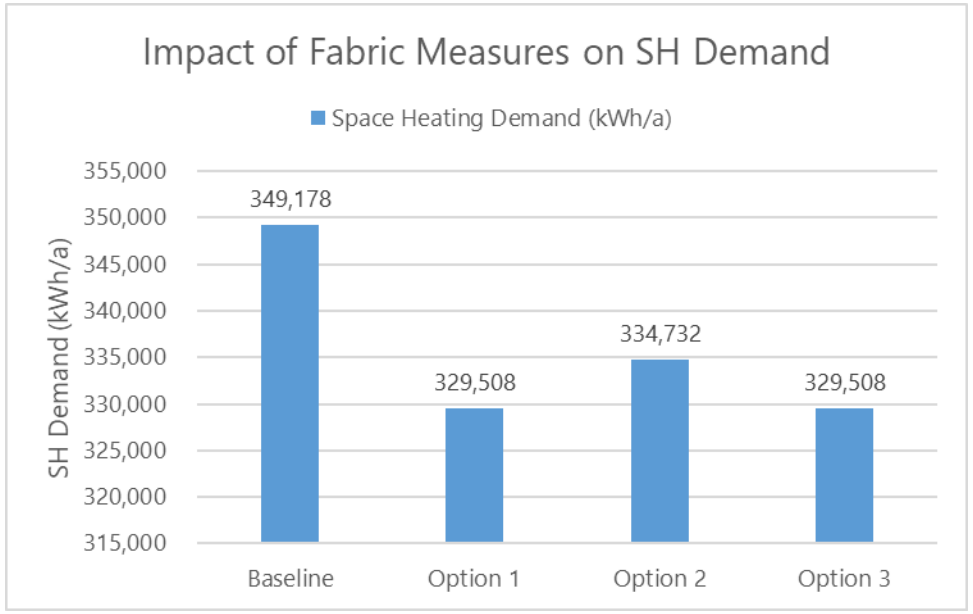
Score	Energy rating
92+	A
81-91	B
69-80	C
55-68	D
39-54	E
21-38	F
1-20	G

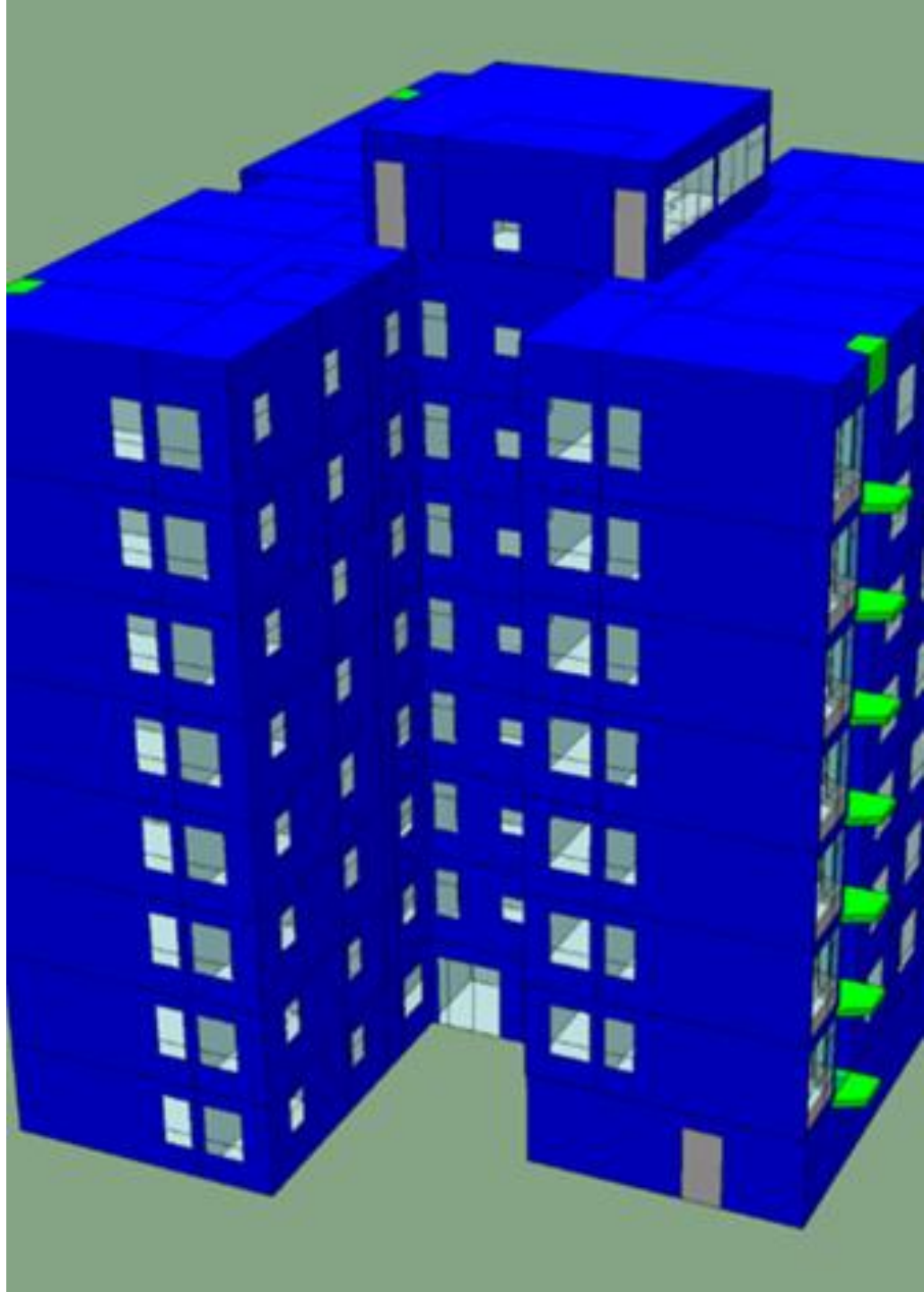
Thermal Modelling





Ventilation Upgrades





Heating System Efficiency

Heating System	Existing Gas-fired Boilers	Heat Network (ASHP)	New Gas-fired Boilers
	Baseline	**Retrofit Opt. 1 & 2**	**Retrofit Opt. 3**
Space Heating ŋ	89%	320%	89%
Water (DHW) Heating ŋ	89%	253%	89%

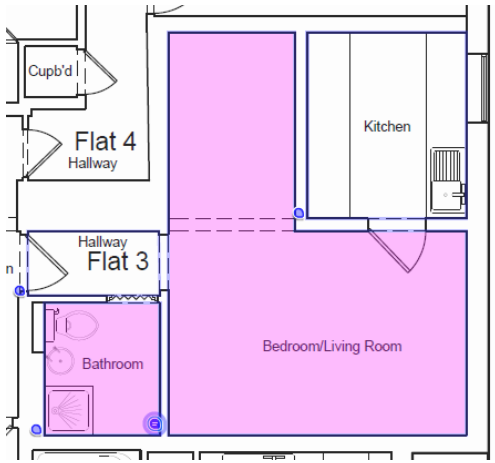
Radiator Capacity Check

	Gas-fired Boilers	Heat Network (ASHPs)
Flow temperature (°C)	80	55
Return temperature (°C)	60	35
Room design temperature (°C)	20	20
Mean water-to-air temperature Δt (°C)	50	25
Heat Emitter	Radiators	Radiators

Radiator Capacity Check

Bedsit

Heating System	Existing Gas Boiler (80/60°C)	Heat Network (55/35°C)	Heat Network (55/35°C)	New Gas Boiler (80/60°C)
Room	**Baseline**	**Retrofit Opt. 1**	**Retrofit Opt. 2**	**Retrofit Opt. 3**
Bathroom	TRUE	FALSE	FALSE	FALSE
Circulation				
Kitchen				
Studio	FALSE	FALSE	FALSE	TRUE



2-Bed

Heating System	Existing Gas Boiler (80/60°C)	Heat Network (55/35°C)	Heat Network (55/35°C)	New Gas Boiler (80/60°C)
Room	**Baseline**	**Retrofit Opt. 1**	**Retrofit Opt. 2**	**Retrofit Opt. 3**
Bathroom	TRUE	FALSE	FALSE	TRUE
Bedroom 1	TRUE	FALSE	FALSE	TRUE
Bedroom 2	TRUE	FALSE	FALSE	TRUE
Circulation	TRUE	TRUE	FALSE	TRUE
Cupboard 1				
Cupboard 2				
Cupboard				
Boiler				
Kitchen	FALSE	FALSE	FALSE	FALSE
Living	TRUE	FALSE	FALSE	TRUE

Shared Rooftop PV

Facts and Figures

5-15

Typical SAP score increase

£1,500-3,500

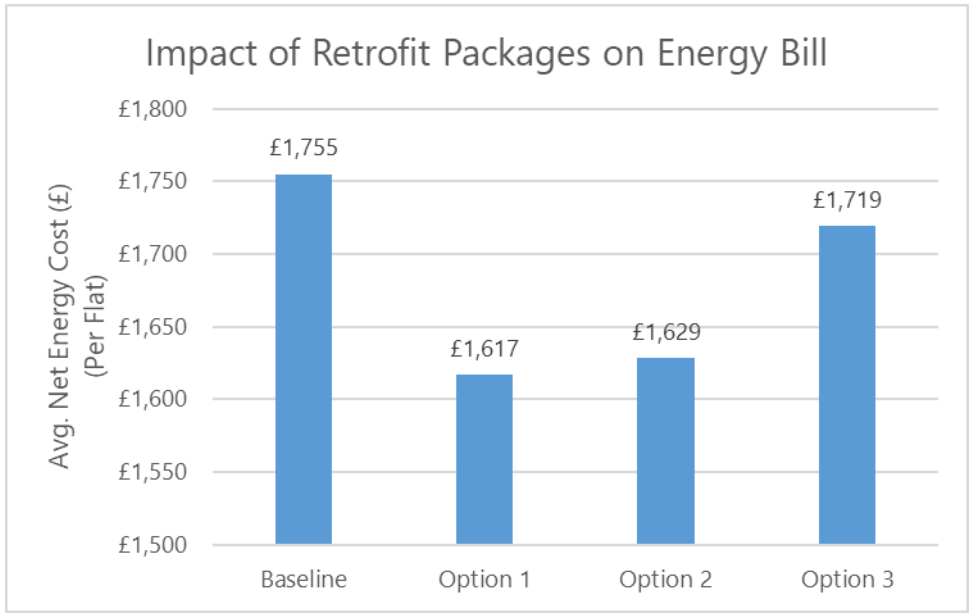
Typical fully installed costs per apartment

40 %

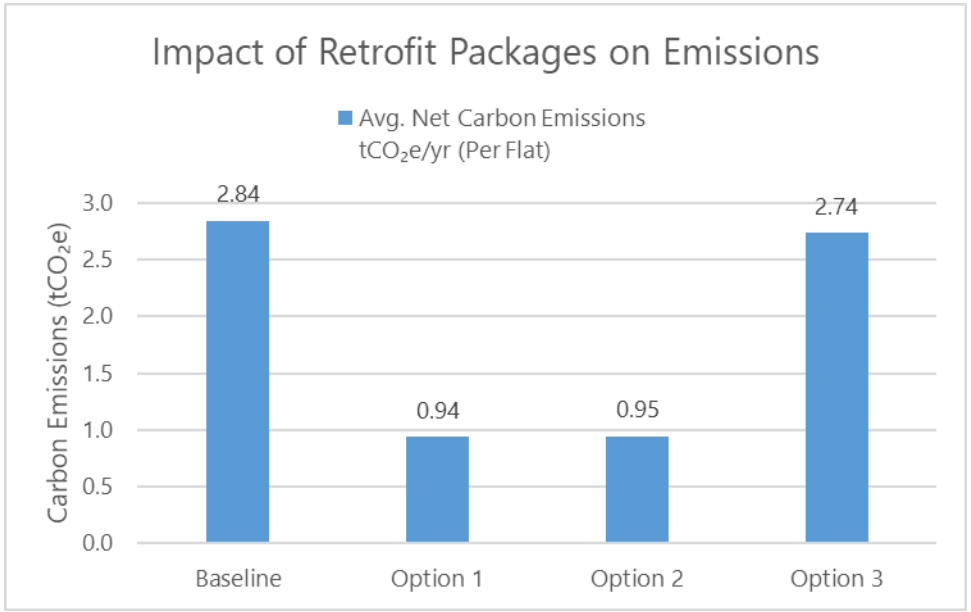
Typical bill savings

Source: UKGBC, 2021
Sharing rooftop solar to apartments | UKGBC

Tenant Energy Bill (per Flat)



Tenant Carbon Emissions (per Flat)

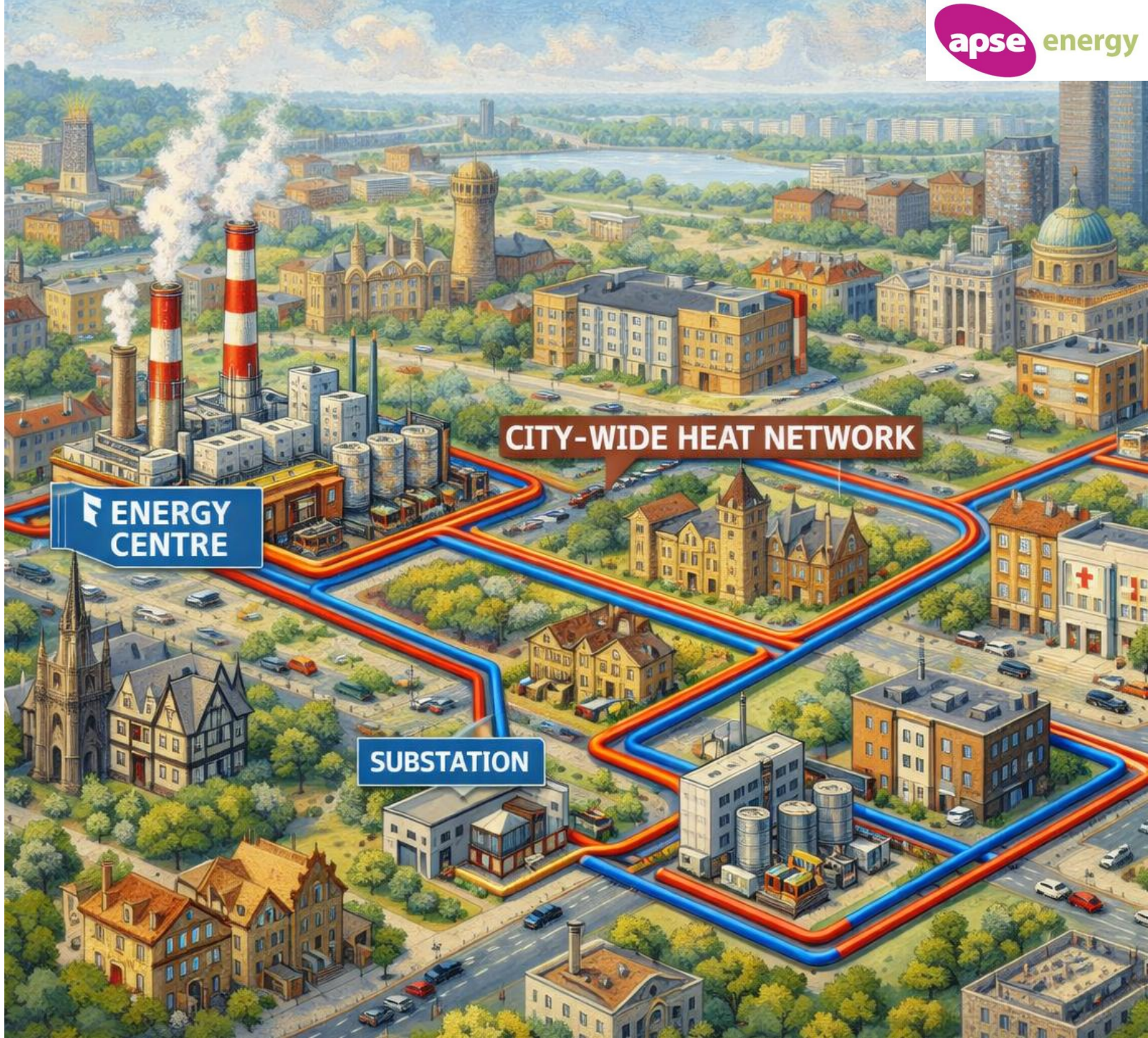


City Wide Heat Network

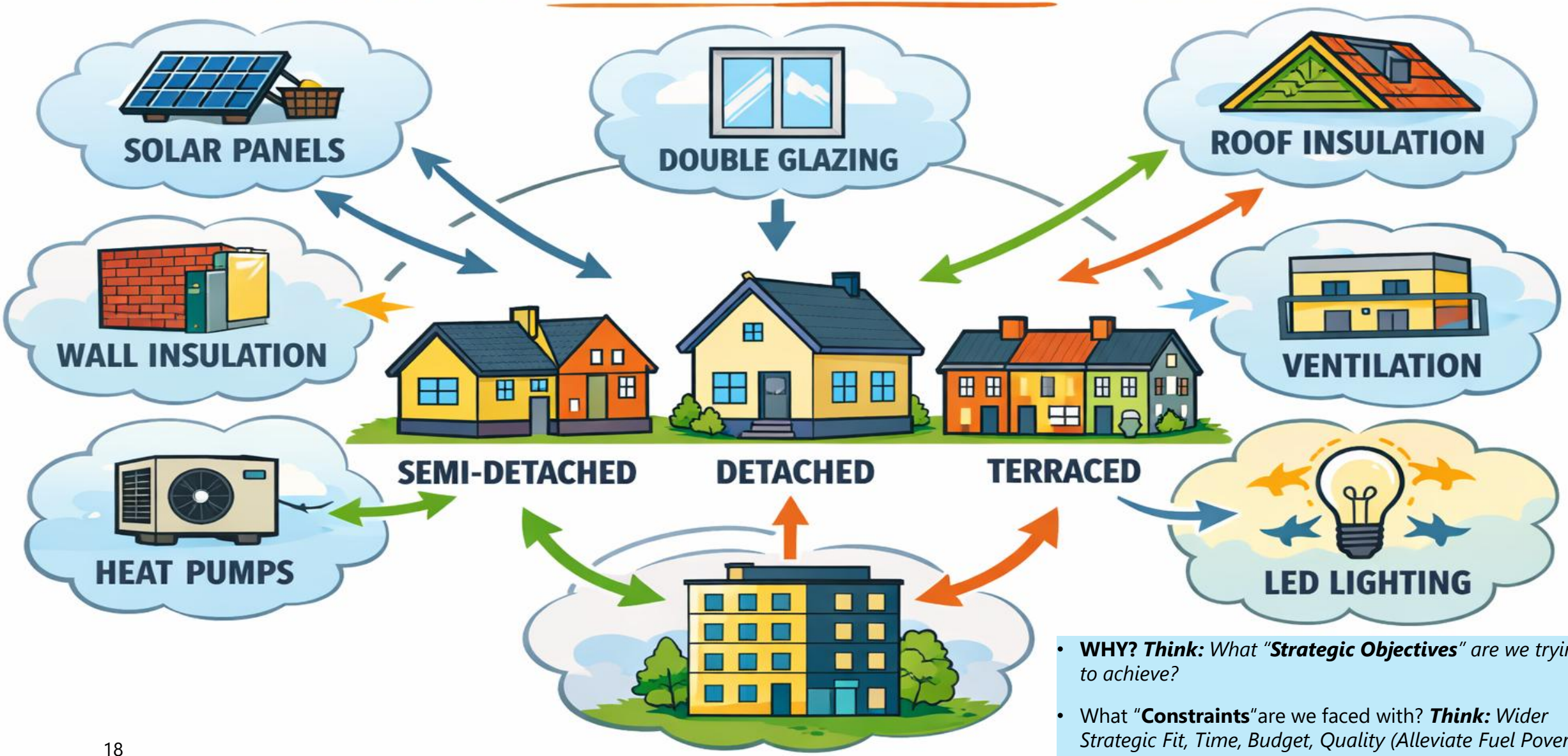
- Close to industrial estate
- Historic city centre is one mile away

Funding Opportunities

- Heat Network Delivery Unit (HNDU)
- Green Heat Network Fund (GHNF)



ONE SIZE DOESN'T FIT ALL NEEDS



- **WHY? *Think:*** *What "**Strategic Objectives**" are we trying to achieve?*
- What "**Constraints**"are we faced with? ***Think:*** *Wider Strategic Fit, Time, Budget, Quality (Alleviate Fuel Poverty, Improve Health & Wellbeing), Risk (Legal & Regulatory Compliance)*

Contact Details

APSE Energy Associates

Alan Barber
Director

alan.barber@salvisgroup.co.uk

Nonso Obuekwe
Sustainability Consultant

nonso.obuekwe@salvisgroup.co.uk

Heat Networks Consultant HNC31669

Low Carbon Consultant LCC150535

Next Steps

Ready to take action?

Contact Phil Brennan for further details on delivery of projects

Phil.Brennan@apse.org.uk

apse energy

INVESTORS IN PEOPLE | Gold Until 2020

ISO 14001 REGISTERED FIRM GB 11409

ISO 9001 REGISTERED FIRM GB 11132

ISO 27001 REGISTERED FIRM GB 14074