

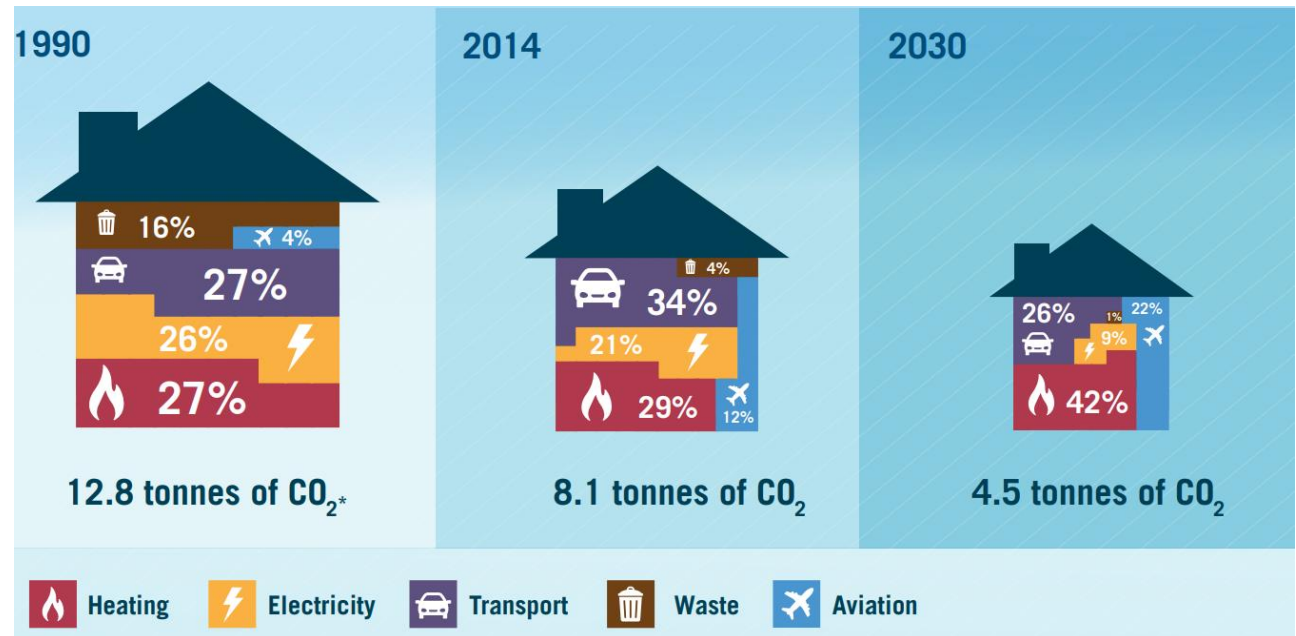
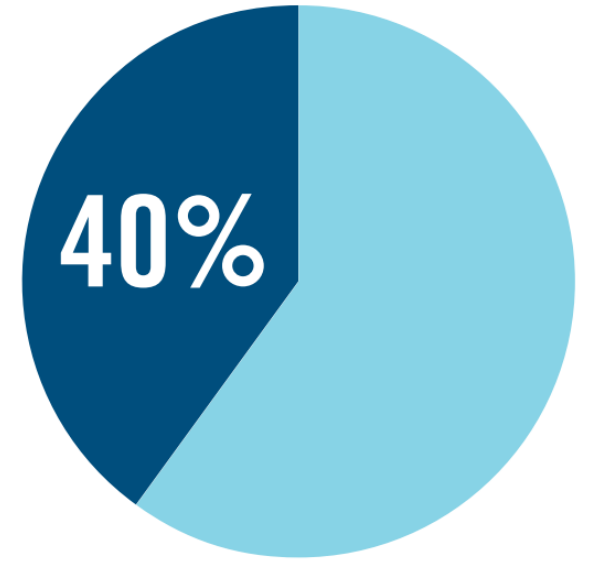


ClwydAlyn

Decarbonisation and innovative
technology for sustainable living

UK Carbon Emissions

- 40% of UK carbon emissions come from households – construction and use.
- Efforts to minimise emissions include reduction in embodied carbon (materials, construction, transport, etc), and operational carbon (heating, power, waste, etc)





Scale of Challenge for ClwydAlyn

- 6,800 homes spread across North and Mid Wales.
- Care homes, extra care facilities, supported living, sheltered housing, women's refuge, affordable homes, group homes, general needs.
- Cost to achieve net zero by 2050 is in the region of £120million
- Every journey begins with a single step





New build

- Build low carbon homes – around 500 on site at any time
- Embodied carbon – timber frame, off site construction, locally sourced materials, recycled bottles in tarmac, eliminating use of sacrificial kerbs, minimal concrete raft foundations
- Operational Carbon – EPC 'A', very low heating demand, super insulated with natural materials
- Energy generation and usage – solar PV, battery storage, air source heat pumps.





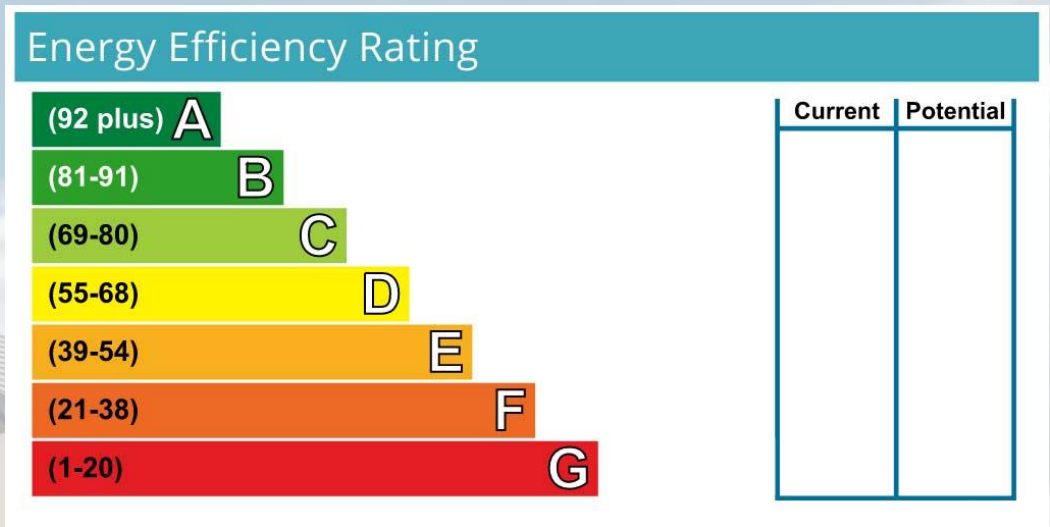
Lifetime homes

- A resident should be able to remain in the same property for as long as they choose. This includes the property being adapted to meet changing needs.
- Considered at build stage – floor joists will accommodate through floor lift, reinforced walls strong enough for stair lift and grab rails especially in bathrooms, door widths, level access thresholds



Retrofit of existing stock

- Scale of issue – legacy stock, individual issues
- Considered the EPC rating of the property – worst first
- Replacement of LPG and oil boilers.
- Worked with housing teams on a person centred approach.
- Regulatory requirement – SAP75 by 2030





Decarbonisation measures

- Solar PV, battery storage, insulation, air source heat pumps
- Benllech, Anglesey
 - Over 55's accommodation
 - 20 bungalows (1 & 2 bed)
 - Approach
 - Reduce energy demand
 - Improve fabric efficiency
 - Install low carbon technologies





Resident Education

- Resident involvement is key
- Consultations -> Conversations
- Personalised approach
- Support throughout the whole process
- Lessons learned





iOpt – environmental sensors and energy clamps

Clwyd Alyn / Housing TOM.BOOME@CLWYDALYN.CO.UK

(PSRN):11 Min Yr Afon, 11 Min Yr Afon , , LL74 8TX

OVERVIEW AREAS KPIS SURVEYS

Property Code	Status	Alert Severity	Actions
104EWA027	Rental Unoccupied	Low Risk	👁
104EWA029	Rental Unoccupied	Low Risk	👁
104EWA031	Rental Unoccupied	Medium Risk	👁
104EWA033	Rental Unoccupied	Medium Risk	👁
104EWA035	Rental Unoccupied	Medium Risk	👁
104MDR002	Rental Unoccupied	Low Risk	👁
104MDR004	Rental Unoccupied	Low Risk	👁
104MDR006	Rental Unoccupied	Medium Risk	👁
104MDR008	Rental Unoccupied	Low Risk	👁
104MDR010	Rental Unoccupied	Low Risk	👁
104YAN002	Rental Unoccupied	Low Risk	👁
104YAN003	Rental Unoccupied	Medium Risk	👁
104YAN008	Rental Unoccupied	Medium Risk	👁
104YAN012	Rental Unoccupied	Medium Risk	👁
104YAN014	Rental Unoccupied	Medium Risk	👁
104YAN015	Rental Unoccupied	Medium Risk	👁
104YAN016	Rental Unoccupied	Medium Risk	👁
11 Min Yr Afon	Rental Unoccupied	Low Risk	👁
12 Min Yr Afon	Rental Unoccupied	Low Risk	👁
14 Min Yr Afon	Rental Unoccupied	Low Risk	👁

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Overview Graph

1 DAY 7 DAYS 30 DAYS 90 DAYS

From 2023-11-12 To 2023-12-11 APPLY

Temperature (°C) CO2 (ppm) Humidity (g/m3) Dew Point (°C)

100 3000
80 2500
2000
1500
1000
500
0

59 Dec 7 19:14:12 Humidity (g/...
20.4 Dec 7 19:14:12 Temperature ...
1182 Dec 7 19:14:12 CO2 (ppm)
12.11 Dec 7 19:14:12 Dew Point (°C)

12 Nov 15 Nov 18 Nov 21 Nov 24 Nov 27 Nov 30 Nov 3 Dec 6 Dec 7 Dec 9 Dec 12 Dec

By Area BEDROOM 1 LIVING ROOM

By Data Type TEMPERATURE HUMIDITY CO2 DEW POINT



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OVERVIEW AREAS KPIS SURVEYS SOLAR

15.48 kWh

£4.23

124.83 kWh

£34.14

550.06 kWh

£150.44

Overview Graph

1 DAY 7 DAYS 30 DAYS 90 DAYS From 2023-11-12 To 2023-12-11 APPLY

Bar Line

■ Mains ■ PV Production ■ Air Source Heat Pump

Date	Mains (kWh)	PV Production (kWh)	Air Source Heat Pump (kWh)
12 Nov	20.5	8.5	16.5
13 Nov	17.5	8.5	10.0
14 Nov	16.5	10.0	7.5
15 Nov	16.0	10.0	16.0
16 Nov	23.0	9.0	16.0
17 Nov	20.5	9.5	15.0
18 Nov	15.5	8.5	8.5
19 Nov	20.0	8.5	10.5
20 Nov	15.5	9.5	7.5
21 Nov	17.0	9.0	10.5
22 Nov	16.5	8.5	9.0
23 Nov	16.5	8.5	9.0
24 Nov	15.5	9.0	9.0
25 Nov	22.0	8.5	16.5
26 Nov	17.5	8.5	10.5
27 Nov	17.0	9.0	11.0
28 Nov	25.0	8.5	22.0
29 Nov	25.0	9.5	22.0
30 Nov	16.5	9.0	11.5
1 Dec	19.0	8.5	15.0
2 Dec	19.5	8.5	14.5
3 Dec	19.5	8.5	15.0
4 Dec	16.5	8.5	13.5
5 Dec	19.5	9.0	16.0
6 Dec	19.0	8.5	14.0
7 Dec	17.5	8.5	14.0
8 Dec	17.5	8.5	12.5
9 Dec	17.0	8.5	12.0
10 Dec	15.5	9.0	7.5

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Innovation

Mixergy – smart hot water cylinder

Reduce fuel poverty

Tenant savings of up to 40% on their hot water bills



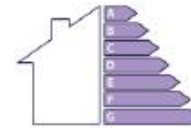
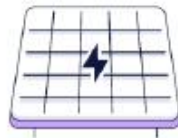
Hot water on demand

Faster heating of water when your tenants need it



Transition to net zero

Transition from gas or oil to solar PV and heat pumps, today or tomorrow



Improved energy performance

Improve the EPC rating of your housing stock



Compact and slimline

Typically, 30% smaller and available as slimline option

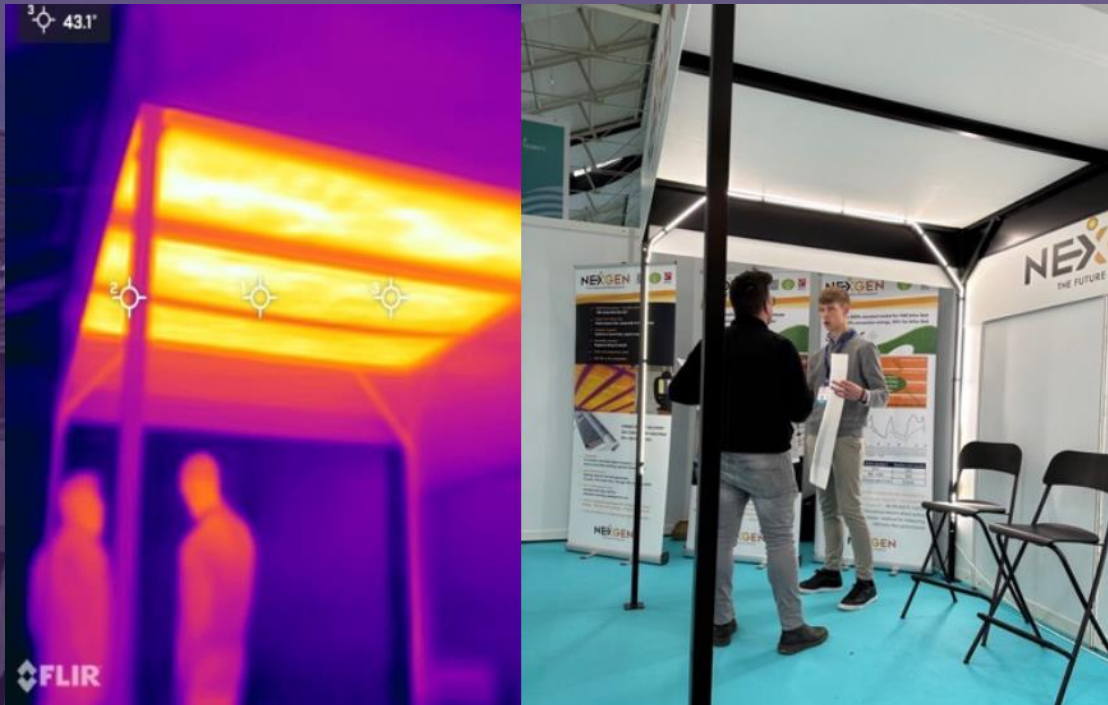


Easy maintenance

Lower field service costs through remote diagnostics



NexGen – infrared radiant wallpaper



NexGen One layer system – paint only to finish



NexGen - Near invisible installation



2-3 Day installs for flats / 3-5 Day installs for houses



NexGen Finished room with Infra-Red Camera





The future is green

- Airex – mechanically automated air brick
- Vericon systems – automatic boiler testing and monitoring
- Switchee – interactive thermostats
- SolShare – sharing the generation of a communal solar array to individual properties within the same building
- Wind powered housing scheme
- The future is green for all housing

