



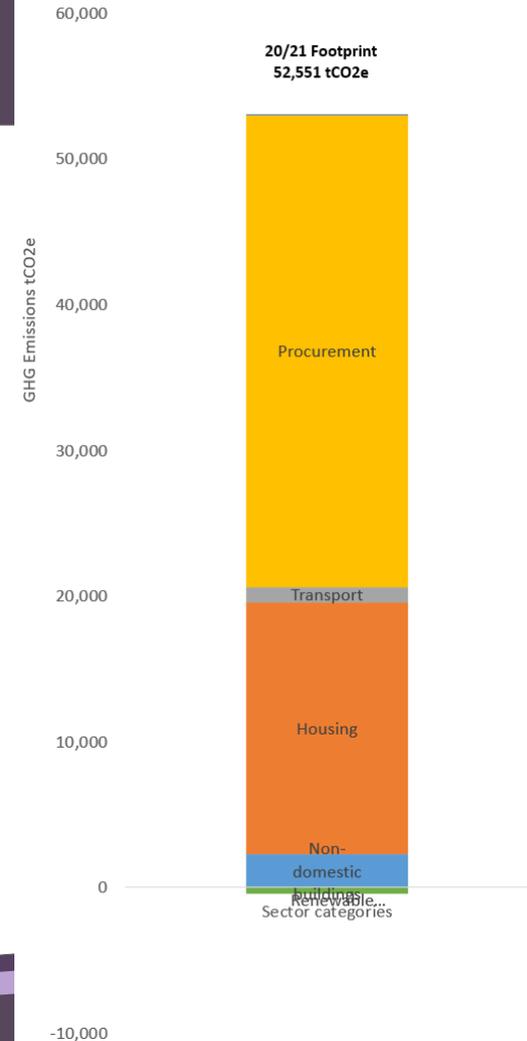
# Achieving “net zero” for Exeter City Council’s corporate carbon footprint by 2030

ECC Strategic Scrutiny Committee  
29<sup>th</sup> September 2022

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Centre for Energy and the Environment

# Corporate Carbon Footprint Scope

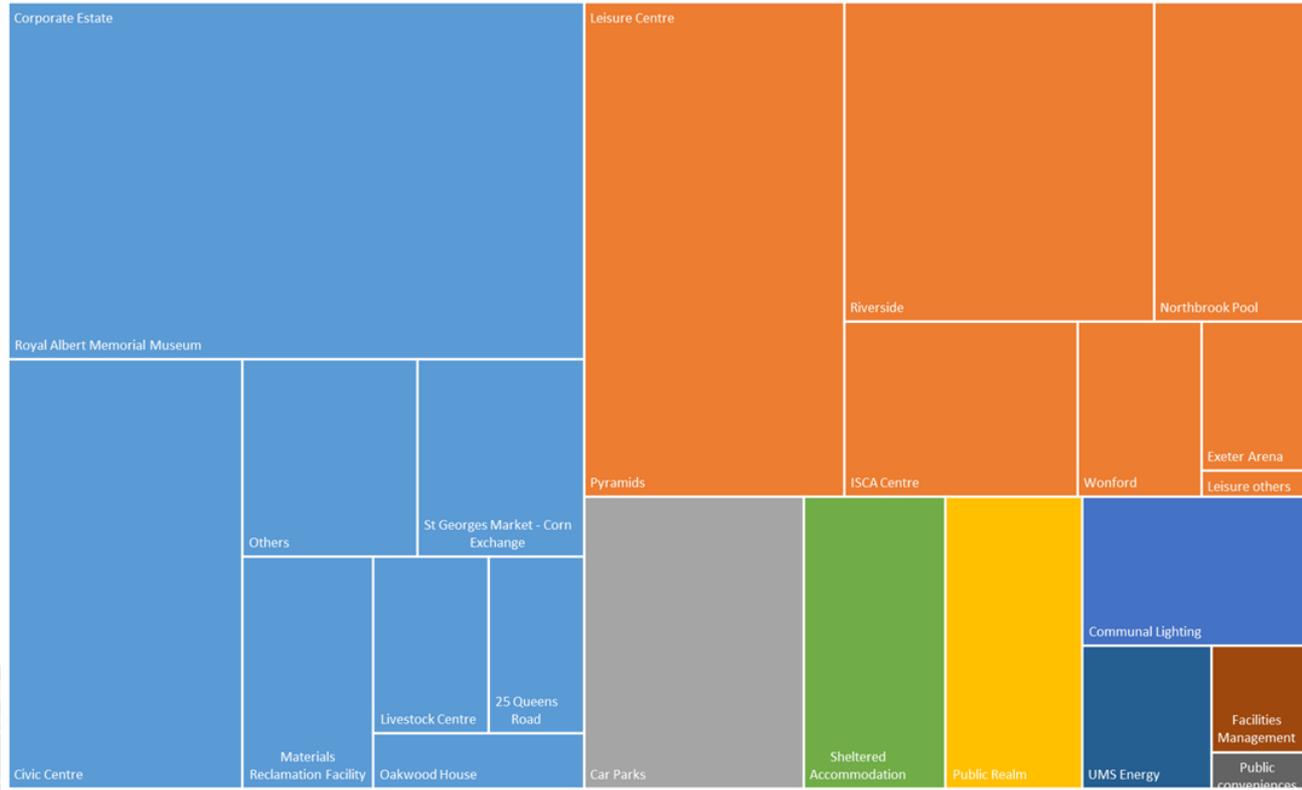
- ECC declared Net Zero by 2030 (**corporate footprint** direct and indirect emissions including supply chains)
- UoE commissioned to assess potential to achieve this
- Assessment based on:
  - Consultation of key ECC documents and data sources
  - Appraisal of central Government policy
  - Input from ECC service leads and officers
- Analysis split into seven sectors:
  1. Non-domestic buildings (4%)
  2. Housing (33%)
  3. Transport (2%)
  4. Procurement (62%)
  5. F gas and waste (< 0.1%)
  6. Renewable energy (offsets < 1%)
  7. Land use change and afforestation (0%)



# Non-Domestic Buildings

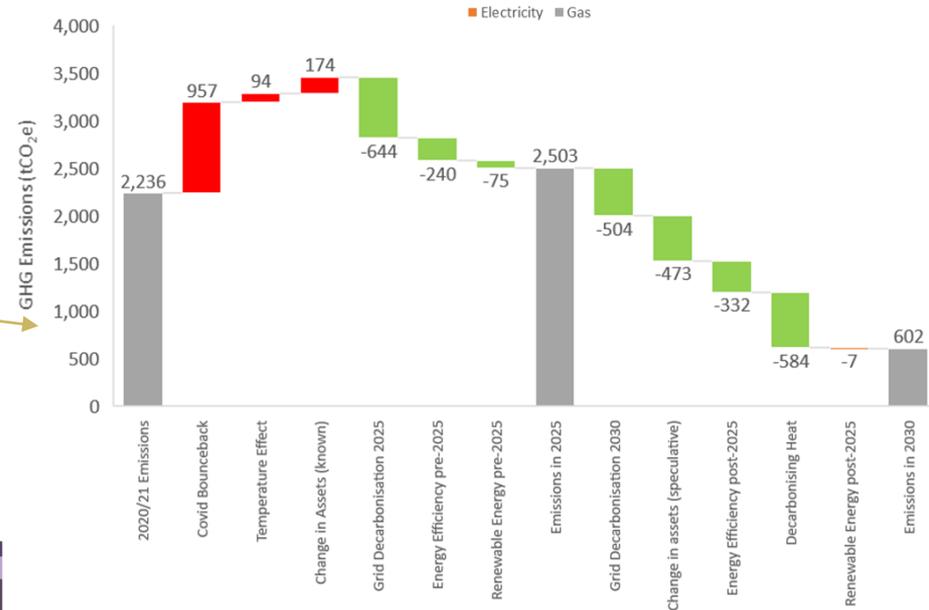
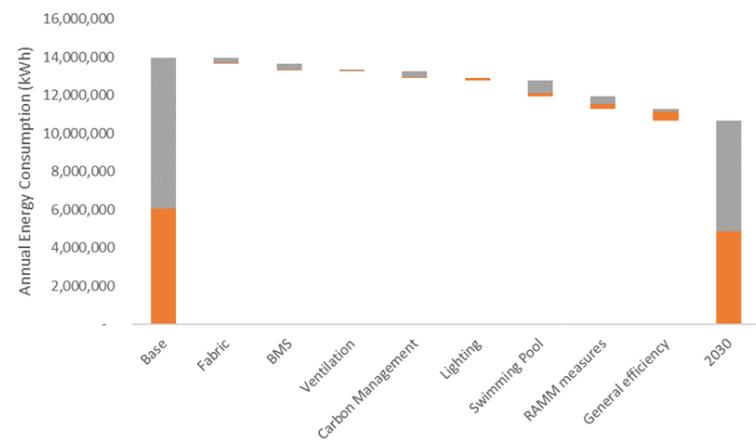


- Corporate Estate
  - Public Realm
  - UMS Energy
- Leisure Centre
  - Communal Lighting
  - Facilities Management
- Car Parks
  - Sheltered Accommodation
  - Public conveniences



# Non-Domestic Buildings

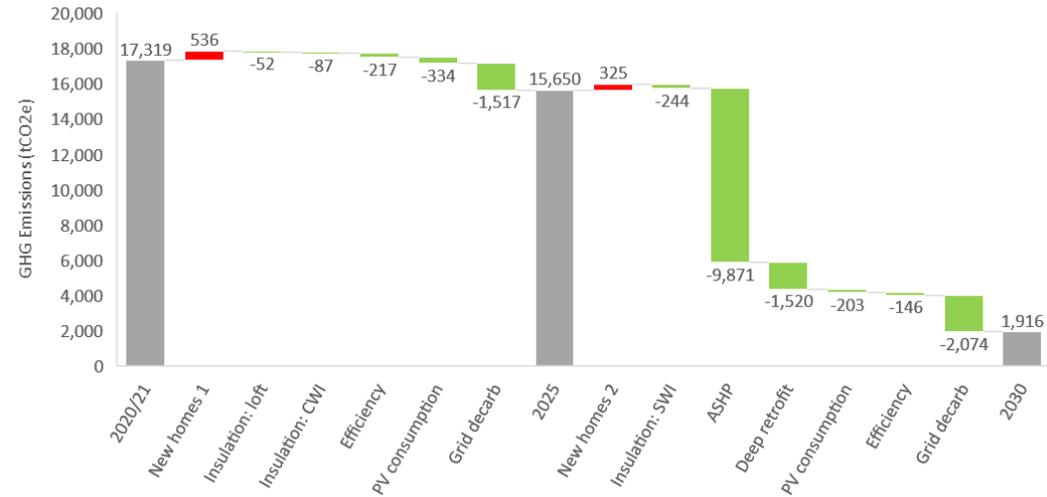
- Data to building level good
- 80% from “corporate estate” and “leisure centres”
- 60% emissions electricity, 40% gas
- Opportunities:
  - Grid decarbonisation
  - Asset management/change
  - Energy efficiency
  - Renewable energy
  - Decarbonising heat



# Housing

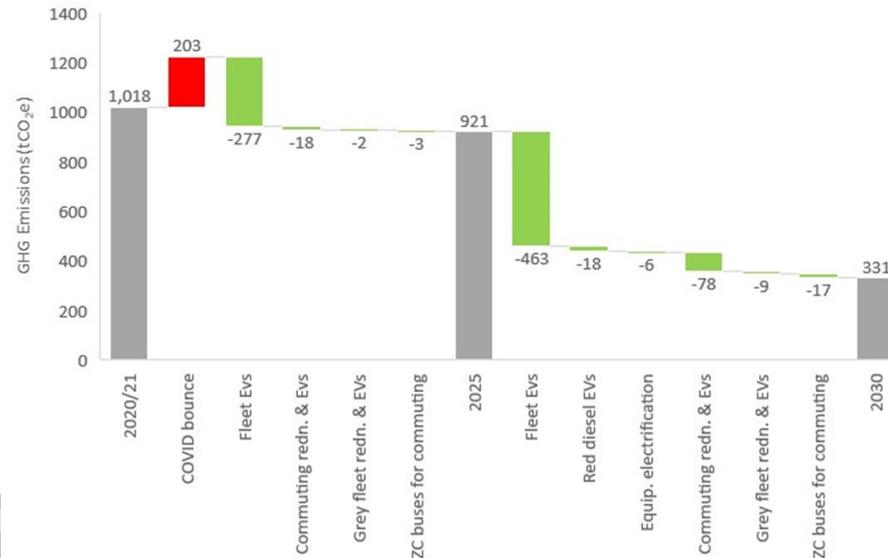
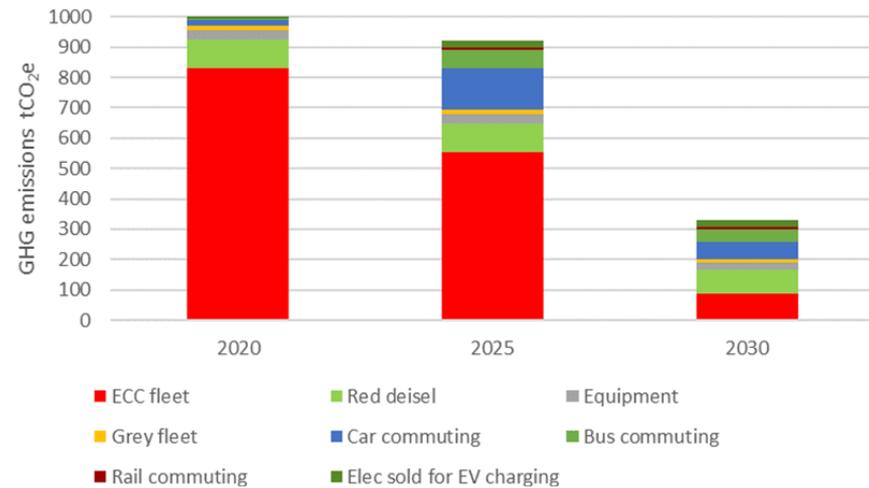


- ECC own but don't occupy so emissions estimated from detailed address level analysis of EPC records
- Approx. 75% emissions from gas
- Opportunities
  - Continue building to Passivhaus
  - Small potential for “easy” cavity and loft + other efficiency
  - Apply solid wall insulation (not many cases)
  - Replace gas boilers with heat pumps
  - Whole-house deep retrofit
  - Maximum PV to every dwelling
  - Benefits from grid decarbonisation



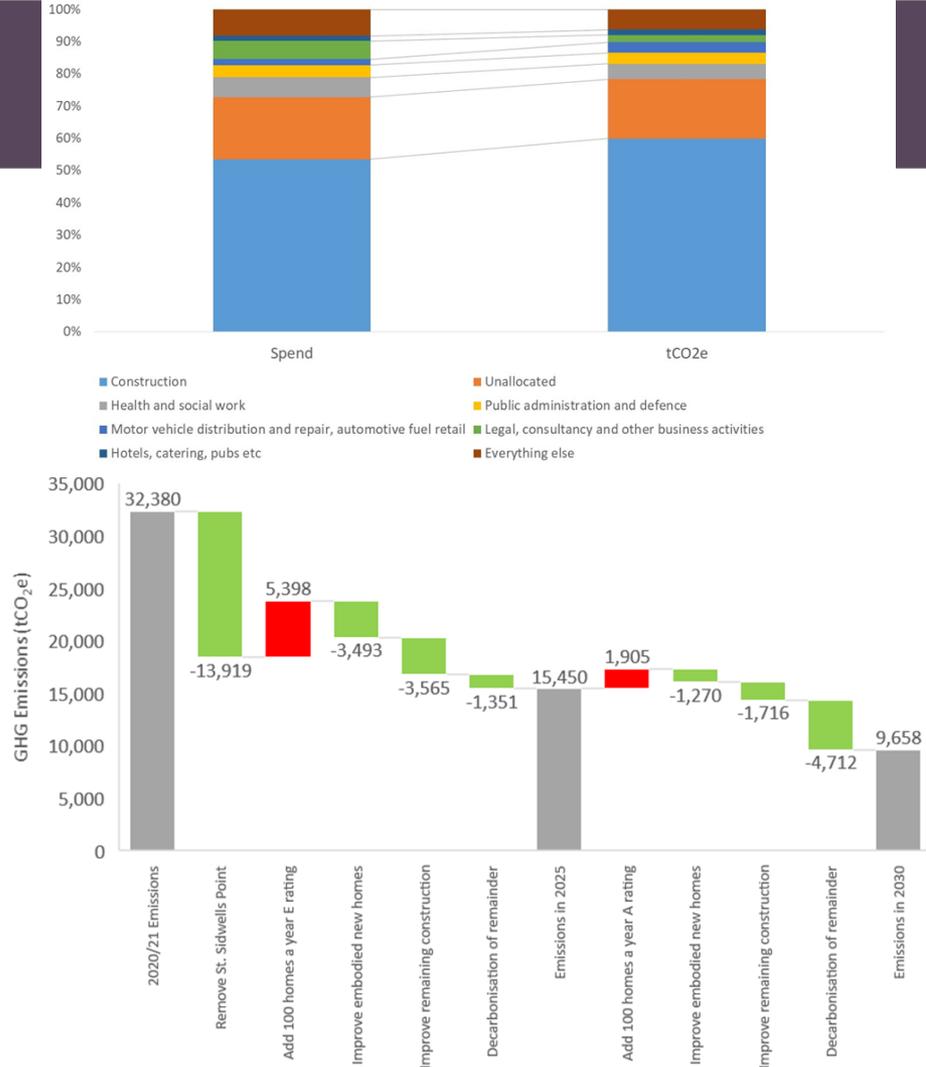
# Transport

- Direct (ECC owned):
  - Mainly refuse vehicles (58% of direct), also street cleansing (16%) and public and green spaces (25%)
  - Predominantly diesel in vehicles + small amount petrol equipment from green space team
- Indirect (Scope 3):
  - Business travel and grey fleet = small
  - Commuting small though post-Covid more significant (also data less good here)
- Opportunities:
  - Decarbonisation of ECC fleet at replacement inc. refuse vehicles (100% electric by 2030)
  - Reduction in mileage and electrification of business and commuting miles (cars and buses)
  - Some electrification of specialist equipment

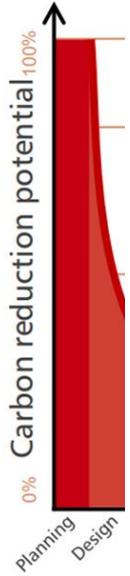


# Procurement

- Based on £72 million of spend
- Only 4% of this could be calculated using activity data; rest inaccurate “spend method”
- 60% emissions from construction
- Opportunities:
  - Improve data capture (e.g. ask for emissions for contracts > £50k...would capture 82% of spend)
  - Consider the need for new buildings as opposed to reorganising/extending life/refurbishing existing
  - For construction set embodied carbon targets
  - For everything else use emissions as part of selection process



# Procurement Examples



**Upfront Carbon, A1-5 (exc. sequestration)**

Band	Office	Residential	Education	Retail
A++	<100	<100	<100	<100
A+	<225	<200	<200	<200
A	<350	<300	<300	<300
B	<475	<400	<400	<425
C	<600	<500	<500	<550
D	<775	<675	<625	<700
E	<950	<850	<750	<850
F	<1100	<1000	<875	<1000
G	<1300	<1200	<1100	<1200

need; explore  
:come

optimise  
:xtent of new

aterials;  
consumption

**Embodied Carbon, A1-5, B1-5, C1-4 (inc. sequestration)**

Band	Office	Residential	Education	Retail
A++	<150	<150	<125	<125
A+	<345	<300	<260	<250
A	<530	<450	<400	<380
B	<750	<625	<540	<535
C	<970	<800	<675	<690
D	<1180	<1000	<835	<870
E	<1400	<1200	<1000	<1050
F	<1625	<1400	<1175	<1250
G	<1900	<1600	<1350	<1450

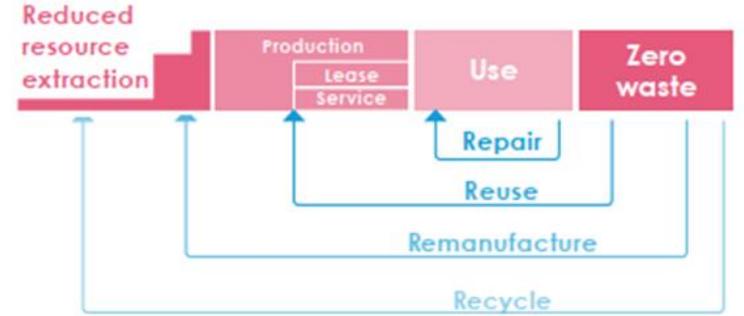
chnologies;

All values in kgCO<sub>2</sub>e/m<sup>2</sup> (GIA)

## Linear Economy



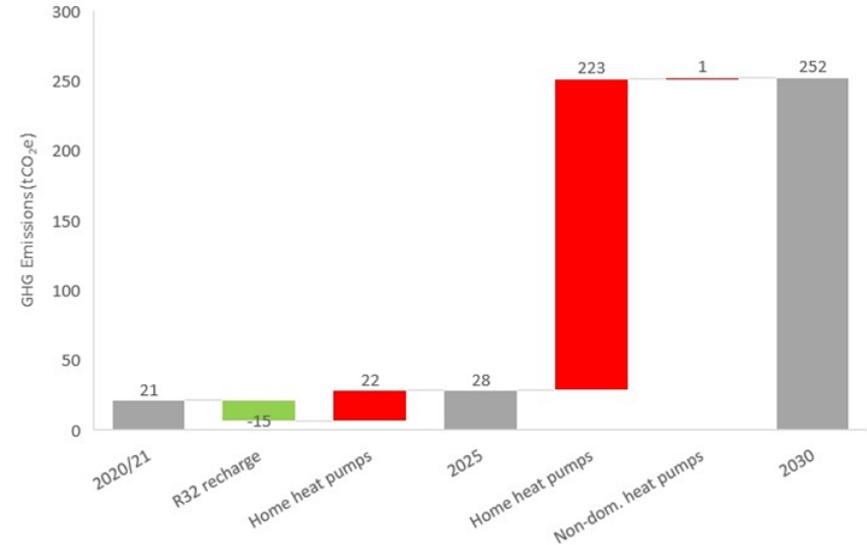
## Circular Economy



# F Gas and Waste

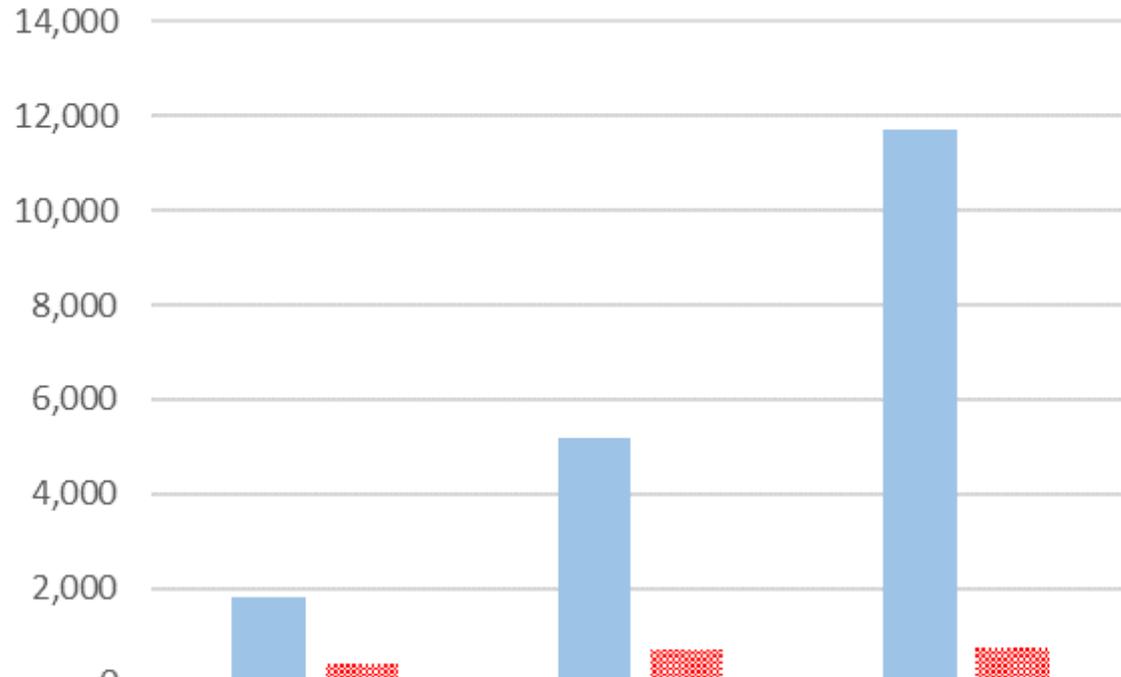


- Waste
  - Only considers own corporate waste
  - No data for corporate waste; estimates used
  - Waste GHG emissions depend of disposal method
  - Waste GHG emissions estimated at 103 tCO<sub>2</sub>e for landfill 3 tCO<sub>2</sub>e for non-landfill; Non-landfill disposal assumed
- F Gas
  - Some F gas data on leisure sites with estimates for corporate sites
  - 3% annual leakage rate assumed
  - F gas GHG emission estimated at 18 tCO<sub>2</sub>e
  - Future issue is leaks from new heat pumps

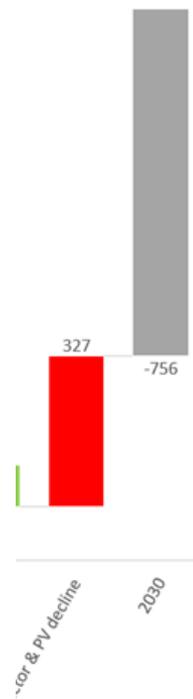


# Renewable Energy

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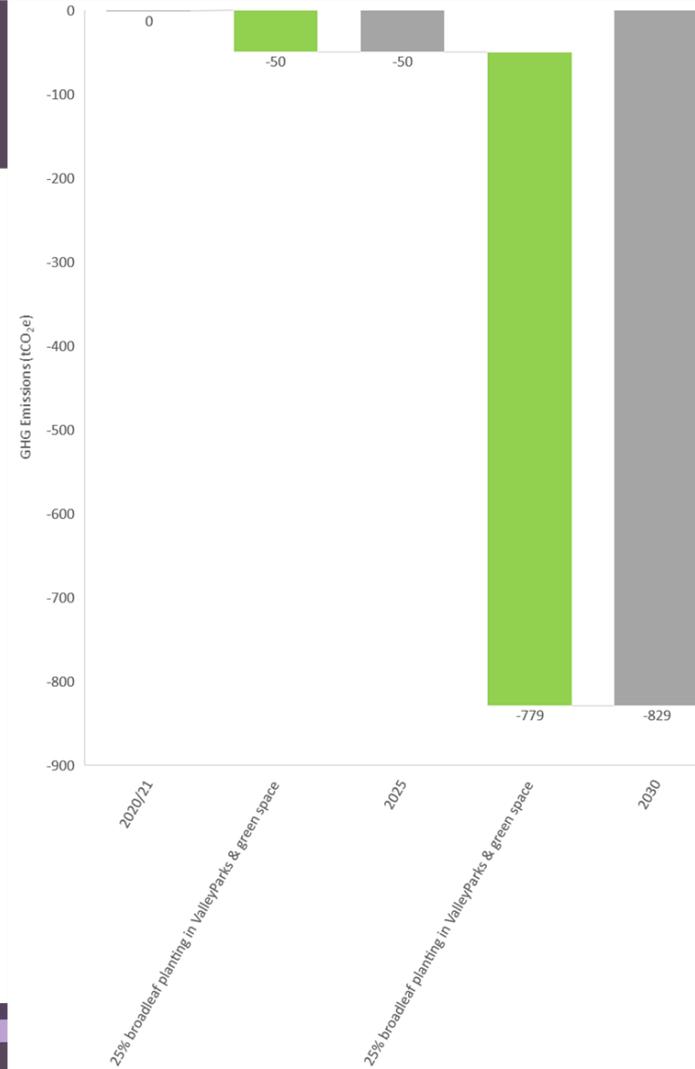
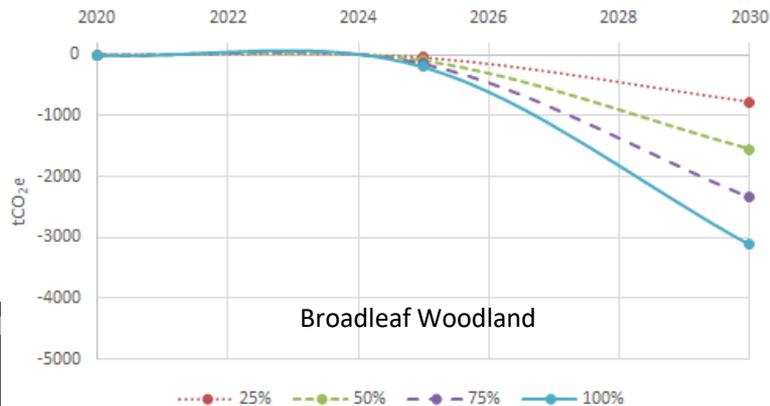


■ PV export MWh	1,814	5,169	11,709
■ Offset emissions tCO2e	423	699	756

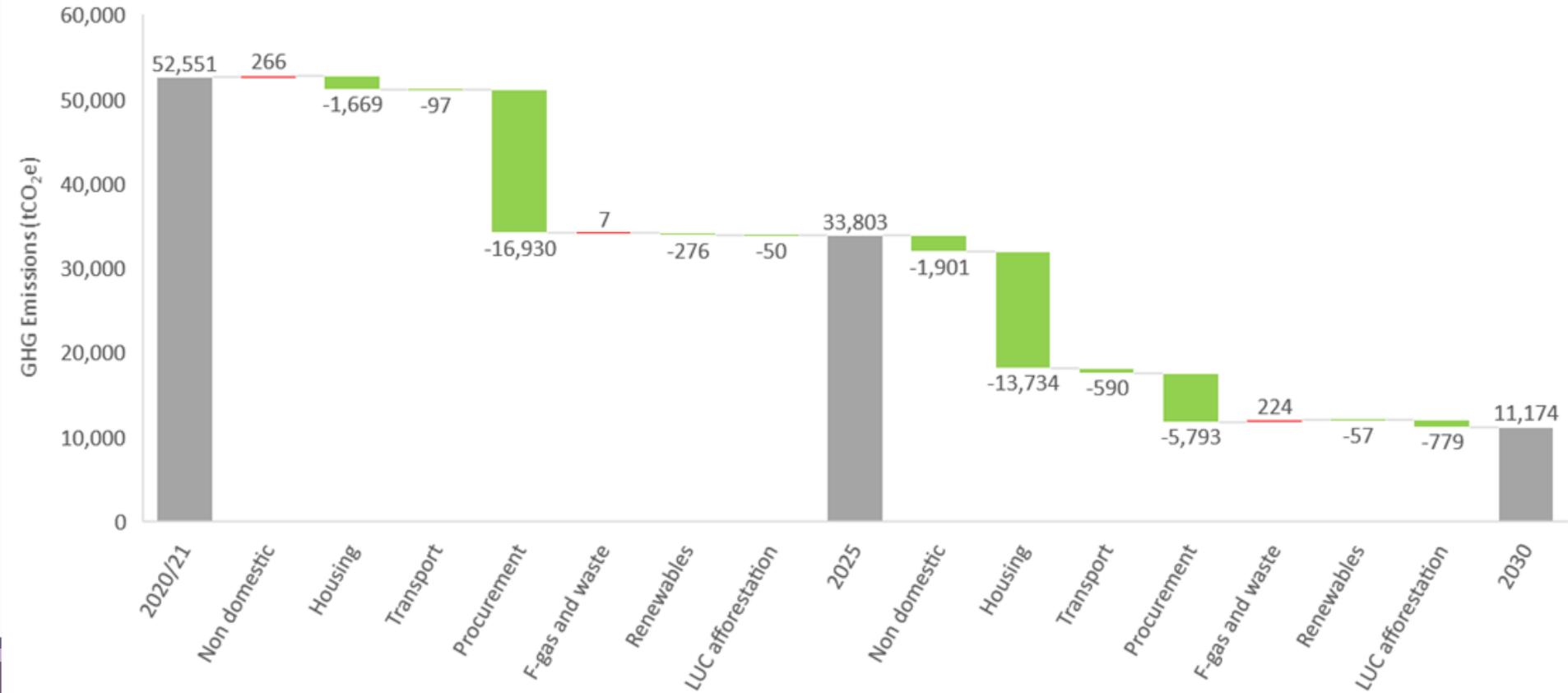


# Land use change and afforestation

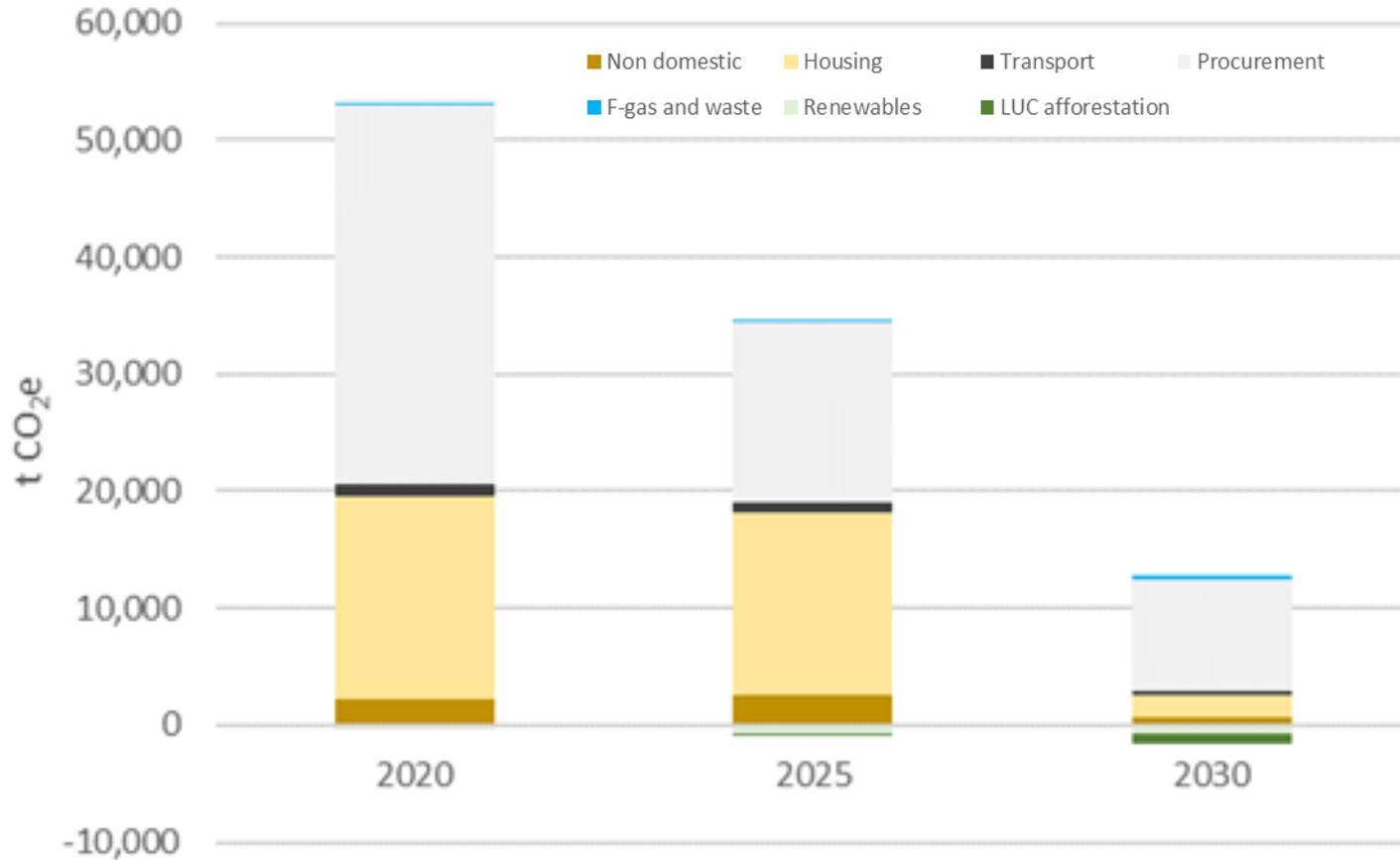
- ECC land use area assume not to significantly change
- ECC owns 409 Ha of land at 6 valley parks and other spaces
- Opportunity:
  - Planting 25% of this area with broadleaf woodland could offset 829 tCO<sub>2</sub>e in 2030 (approx. 7% of residual emissions)
  - Implies approx. 200,000 trees planted by 2030.



# Sectors Combined



# Summary



# Summary



- This analysis was a point in time and not intended to be deterministic.
- As information improves, ECC's plan should be adaptive
- Critical factors include:
  - Delivering energy efficiency and low carbon heat to all homes
  - Non-domestic sector energy requires efficiency, low carbon heat and considering space needs
  - Transport relies heavily on electrification of fleets and travel modes
  - Procurement needs better information and choosing suppliers on basis of carbon as well as reviewing needs. A special focus on Construction is needed.
  - F gas and waste are minor, but watch for rising F gas emissions
  - Extensive PV can offset 5.9% of residual 2030 emissions as modelled (though benefit eroded by a decarbonising grid)
  - Afforestation would need a lot of tree planting to offset 6.5% of residual 2030 emissions
  - Offsetting remaining 11 ktCO<sub>2</sub>e would cost approx. £150,000/annum at current offset prices (likely more in 2030)

# Questions/Discussion

