

Pat Mehigan – University College Cork and Optien

A public body user's perspective





SEAI CA EED Workshop – A users perspective

**A TRADITION OF
INDEPENDENT
THINKING**



UCC

University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

SEAI Support & UCC

Technical Support:

- Public Sector Partnership Manager
- Energy Link Community
- EXEED Supports
- Sector Support
- Masterclasses
- M&R
- Awards
- Conference

Financial Support:

Applying since 2002

- Better Energy Communities
- Energy Efficiency Retrofit Program
- EXEED
- SSRH

2023 Energy & CO2 Performance

11% reduction in energy use from 2016-18 Baseline.

2023 energy use increased by **1%** on 2022 levels.

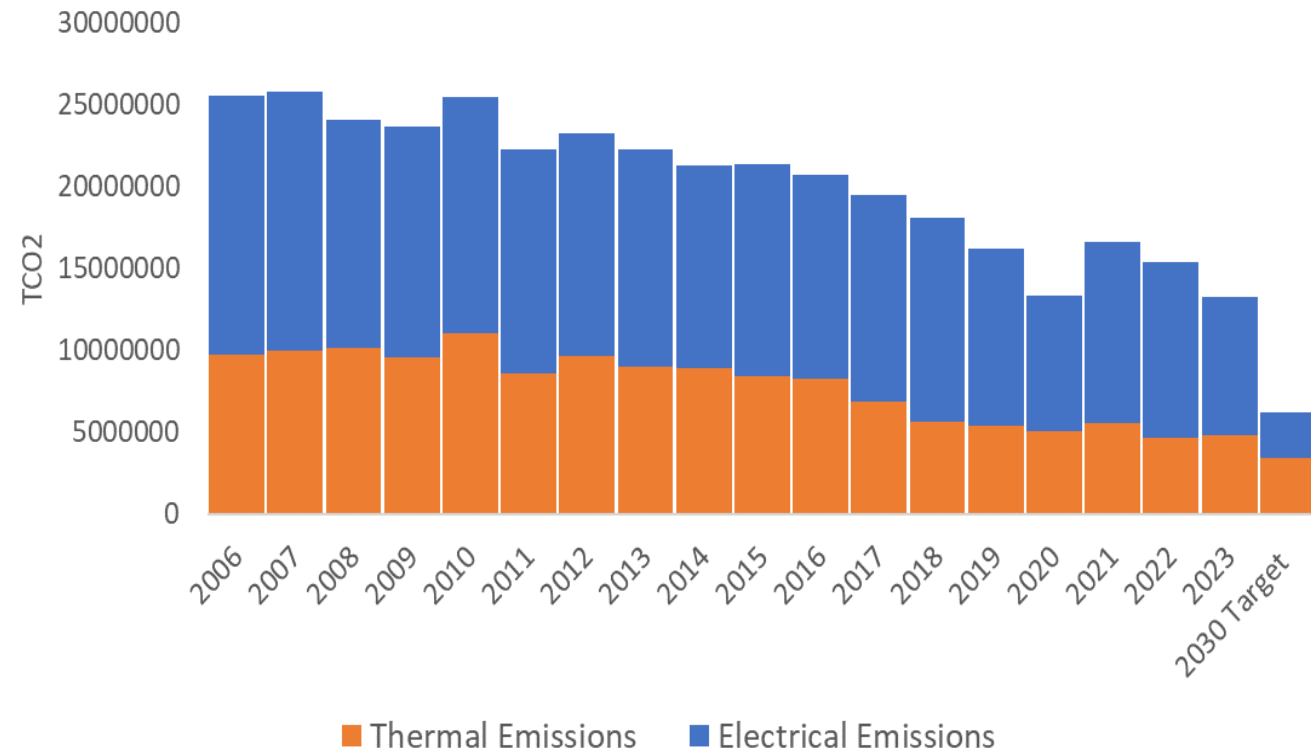
Carbon emissions down **32%** from our 2016-18 Baseline. (Target 51% by 2030)

Annual energy costs up **55%**.

48% improvement in energy efficiency.(Target 51% by 2030)

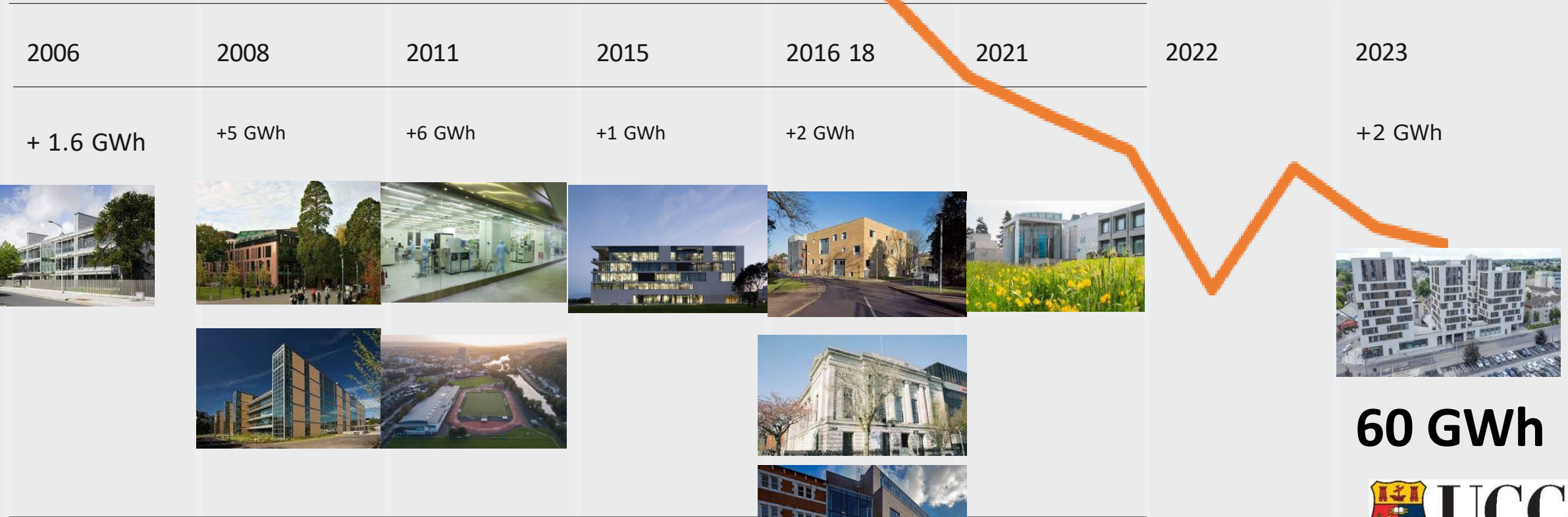
Natural Gas now accounts for **42%** of our annual energy use , down from **54%** during our baseline period.

Carbon Emissions TCO2



UCC Total Energy Use

75 GWh



60 GWh

2030 51% Decarbonisation Target

Scale of the Challenge and Context:

Scenario 1

Natural Gas (Thermal) 58% absolute Reduction (Assumes 0 increase in electrical use)

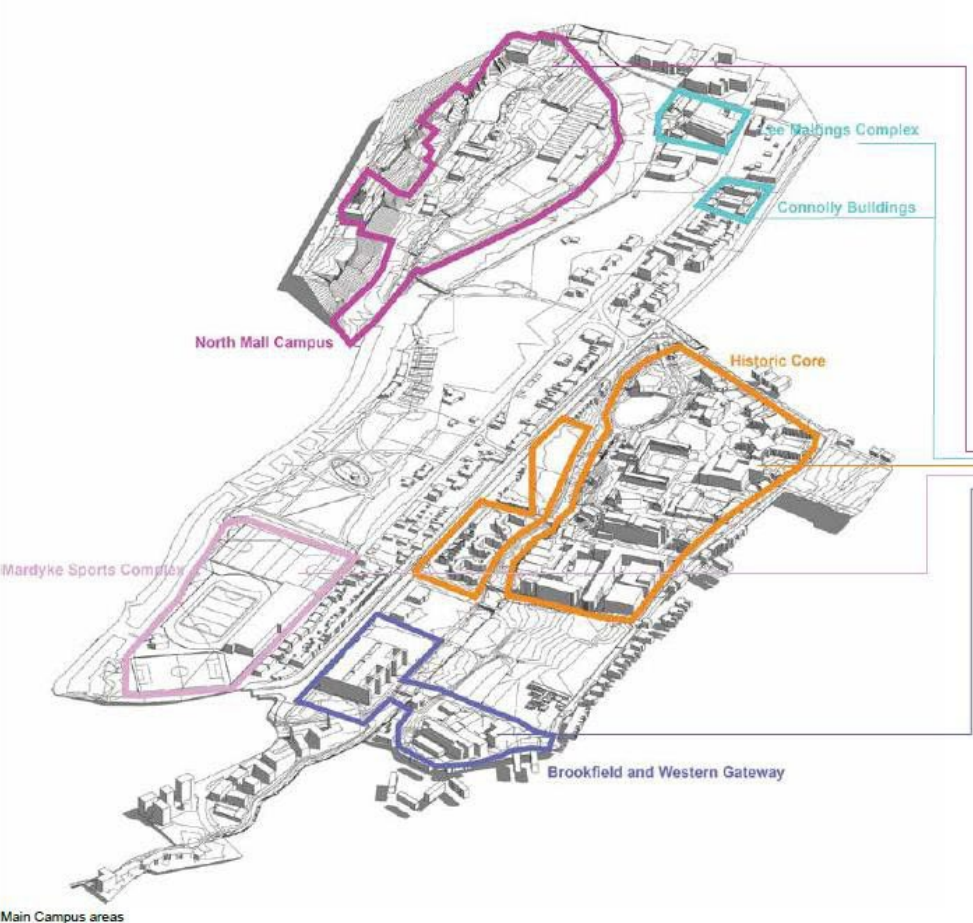
- Equates to 15 GWh / gas. (Main Campus consumes 12 GWh/ gas).

Scenario 2

Natural Gas (Thermal) 35% reduction and 28% electrical reduction (Absolute)

- Equates to 9 GWh / gas. (Main Campus consumes 12 GWh/ gas) and 8.5 GWh/e (Main Campus 11.5 GWh/e)

UCC Building Stock and Energy Use



Condition	No of Buildings	Floor Area M ² .
A – As new	24	71,000
B- Good	58	136,000
C- Major Repair Needed	58	72,000

Main Campus

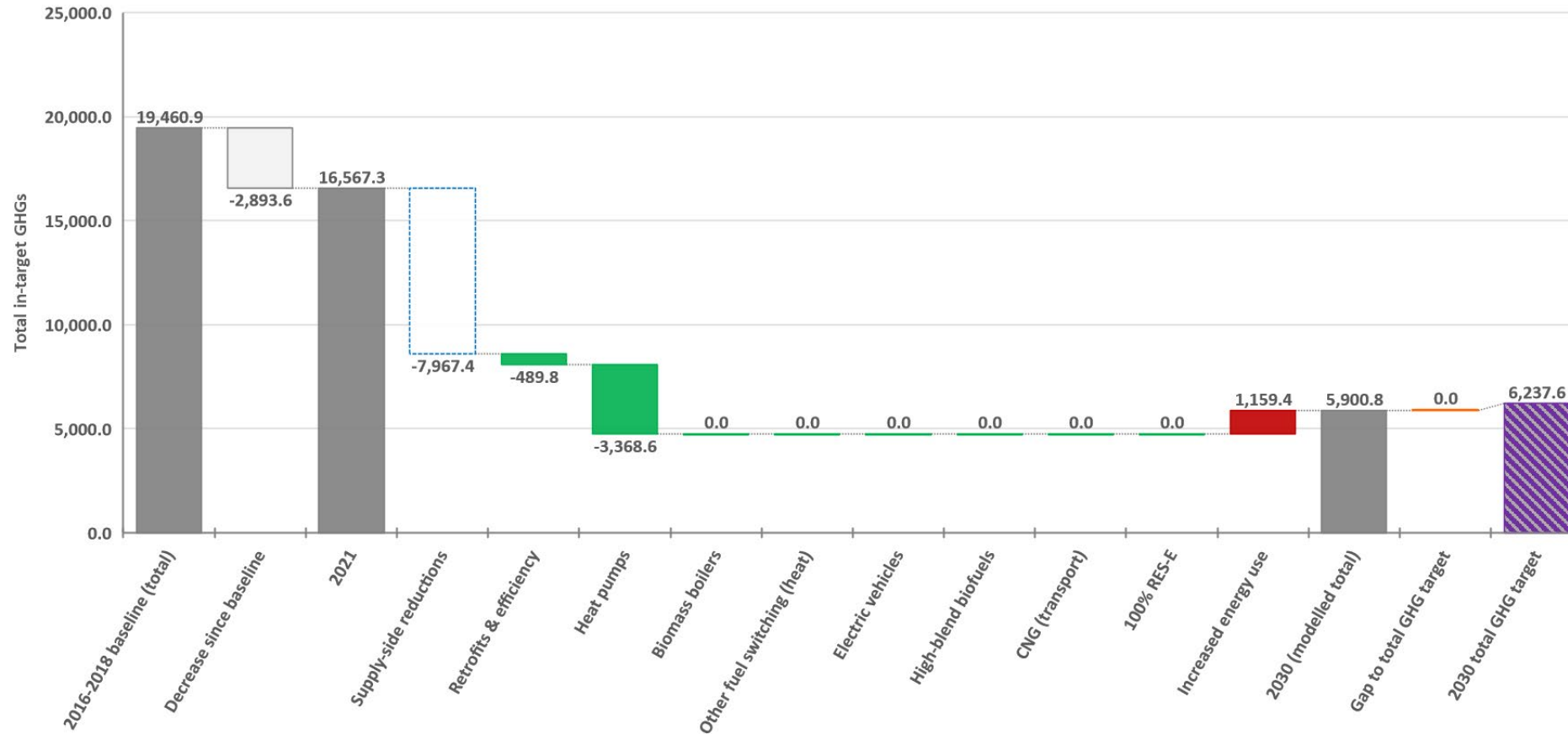
ENERGY END USE



■ Research (Process) ■ Ventilation ■ Heating ■ Lighting ■ Others ■ IT

UCC 2030 Pathway

2030 total emissions target | modelled decarbonisation scenario



Source – UCC Gap to Target Model January 2023

Project 2030

Key Points

- 2030 Projects:
 - 2 complete.
 - 5 active.
 - 2 in design.
 - 3 scoped.
 - 8 at concept stage.
 - 5 yet to start.
- €3,980,000 HEA/ SEAI funding secured since 2020 to support Project 2030
- Current Project Pipeline estimates €40 million investment required



Enterprise Deep Retrofit Phase 1 Complete – HEA Pathfinder 2 supported



Food Science Block B Retrofit – HEA Pathfinder 3 supported

ORB Heat Pump Pathfinder Project 1

- 1990's naturally ventilated building.
- 11,800 m² 5 floor building.
- Offices, classrooms, computer labs and cafe.
- Selected for pathfinder application.
- €470K cost.



ORB Heat Pump Roadmap

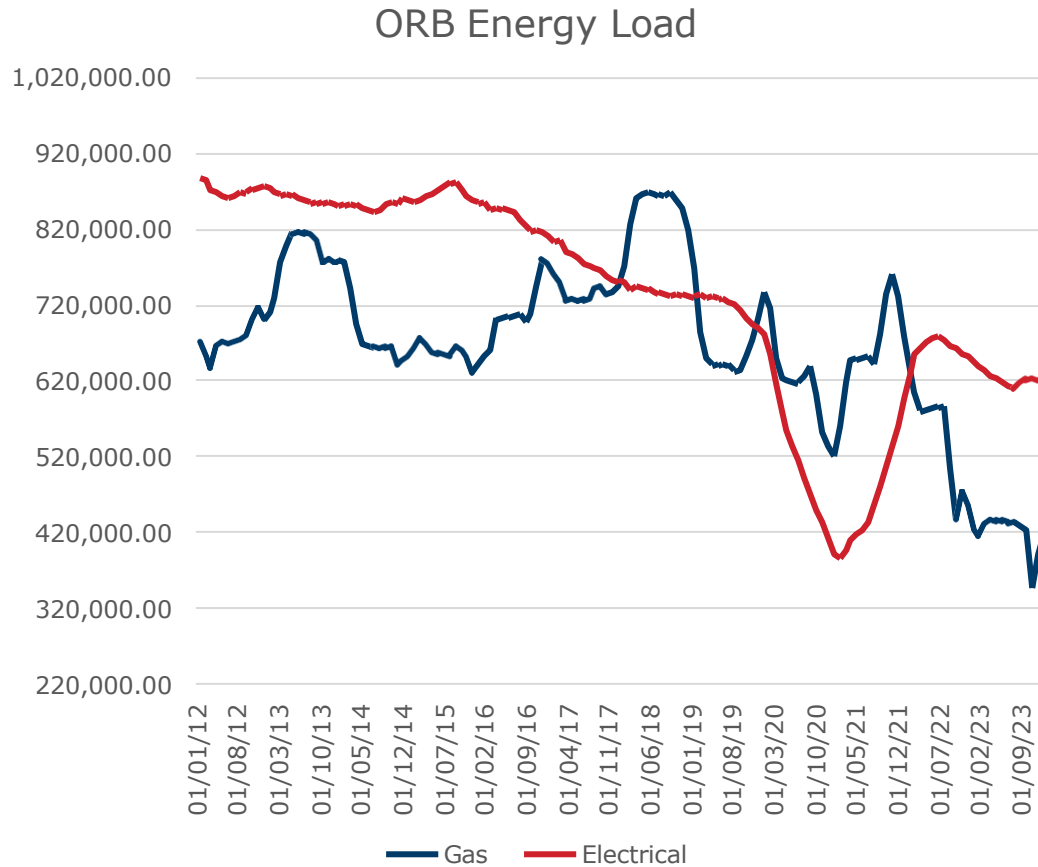


- BMS upgraded in 2017.
- 2 heating seasons at lower temperatures.
- Replace 3.5 MW of heating plant with 1.4 MW of heating plant.
- Limited by electrical capacity.
- Deeper understanding of building use.



ORB Heat Pump Outcome

- Longer heating times.
- M&V critical
- B2 rated DEC
- Reduced building emissions by 58%. - 34 tCO2
- 3 year project.



Enterprise Deep Retrofit Pathfinder 2

BER to move from D1 to A3.

Construction complete September 2024.

Building remains in use.

€4.4 million investment.

3 year project.

Learning Lessons.

UCC ENTERPRISE: SEAI & HEA Pathfinder Deep Retrofit



Pharmacy Decarbonisation Project

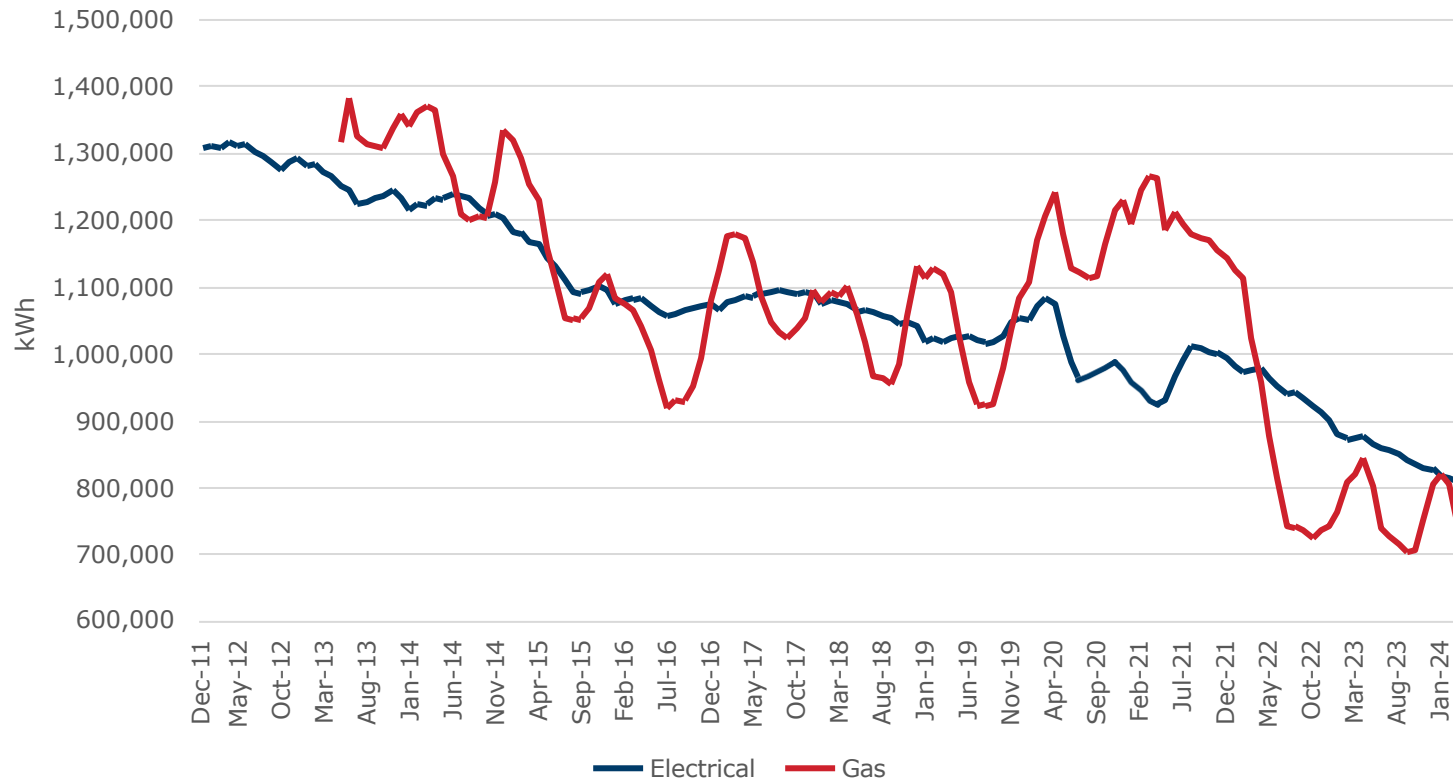


- 6000 m² building built in 2005.
- Labs, fumehoods, lecture and office spaces.
- Extensive ventilation with minimal heat recovery.
- Building controls upgrade 2018 - Well understood building.
- Boilers end of life.

Pharmacy Decarbonisation Project



Pharmacy Energy Profile

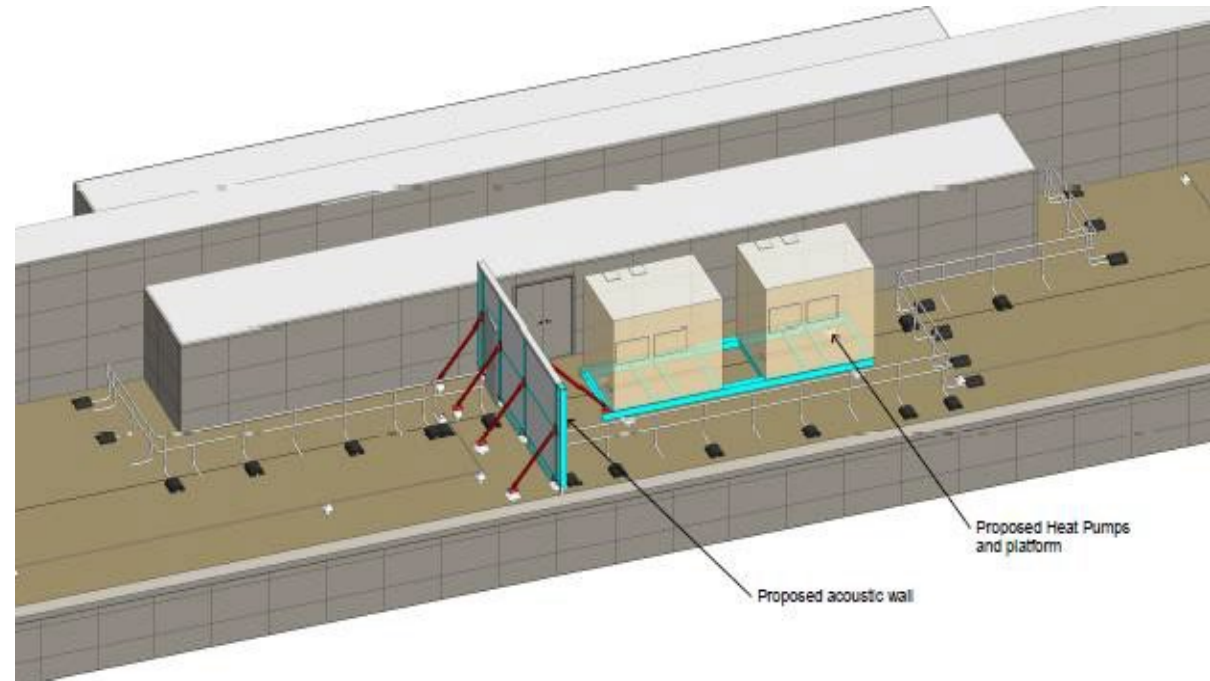


- Lots of work undertaken since 2016 to understand the building use.
- Heating loops dropped to 50 deg.
- Building occupant feedback.

Pharmacy Decarbonisation Project

Scope:

- Installation of 2 number 200 kW rated ASHP.
- PP submission required.
- Summer 2024 schedule
- SSRH €130K award
- 112T reduction (2030)
- €400K investment – 107 tCO₂



EasyPro Project – Energy Performance Contracting.

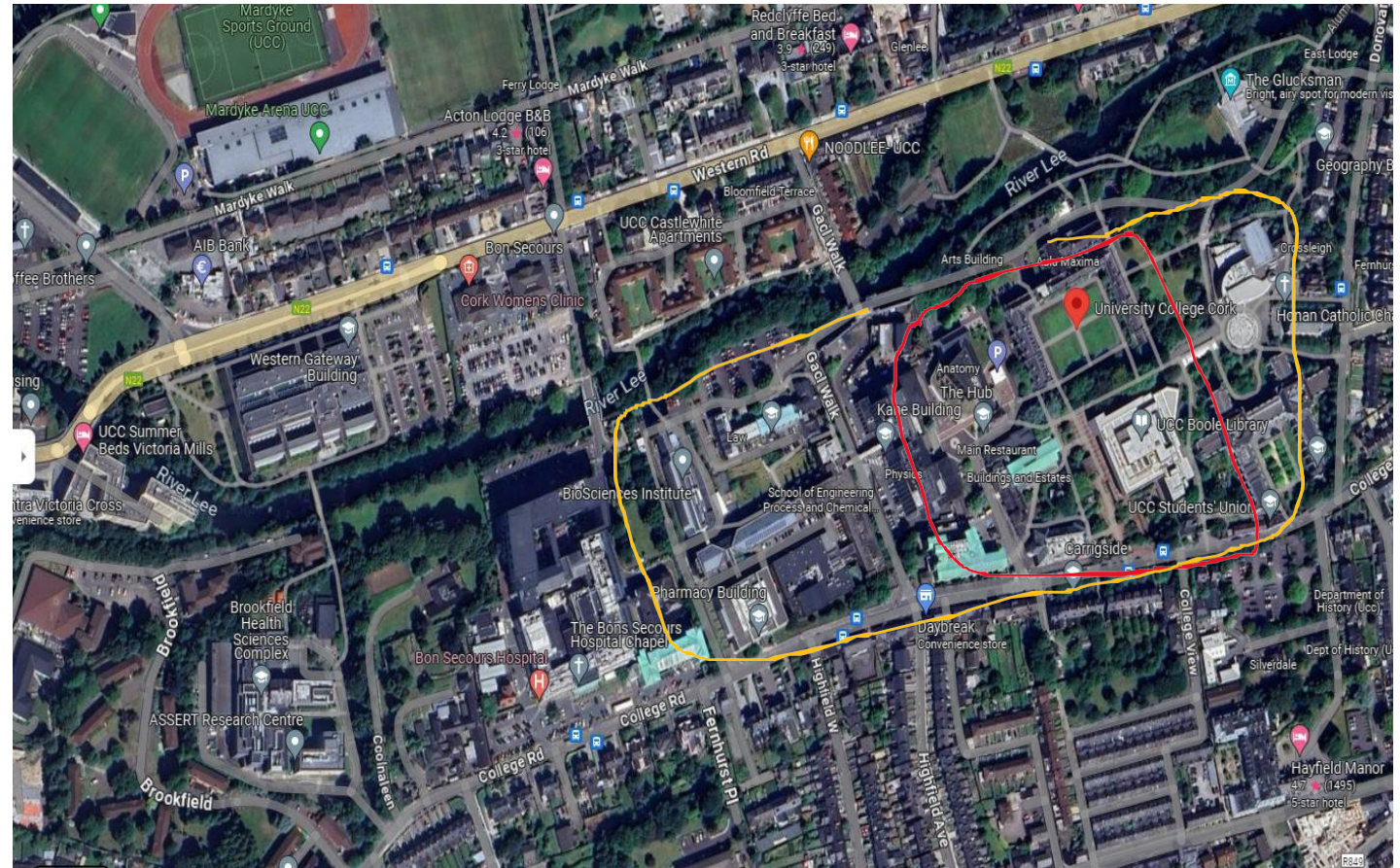
EU funded project headed up by the IERC
@ Tyndall.

UCC, NUIM and TUD

Start Date Sept 2025 – 3 year project.

Potential Route to Finance to support
Project 2030, specifically

- Steam district heating replacement and expansion. €10M
- Boole Medium Retrofit. €8M
- Mardyke Decarbonisation €3M



Key takeaways

SEAI funding primed our programs on:

- Building Designs
- Retrofit Programs

SEAI Technical Support enabled:

- ISO 50001 Certification
- Develop strong pipeline of energy efficiency projects
- Cultural Change

FRI, 30 JUN, 2023 - 16:09

UCC president says time is running out in climate battle as university launches action plan

UCC is aiming to become a zero-waste campus by 2030 and a carbon-neutral campus by 2040.



Dr Maria Kirrane, David Donoghue, Minister Michael McGrath, Professor John O'Halloran, President of UCC, Lord Mayor of Cork Cllr Kieran McCarthy, Ann Doherty Chief Executive Cork City Council, UCC PhD student Niamh Guiry, at the launch of the university's climate action plan.

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