

Feasibility and Design of a Rooftop Photovoltaic System: A Case Study of Newcastle College Energy Academy, North East England, UK

Dylan Bingham^{1,2}, Elizabeth Morgan¹, Mardin Abdalqadir¹

Energy Academy¹, Newcastle College University Centre, Newcastle upon Tyne, United Kingdom.

²CrowdHouse Energy, Newcastle upon Tyne, United Kingdom

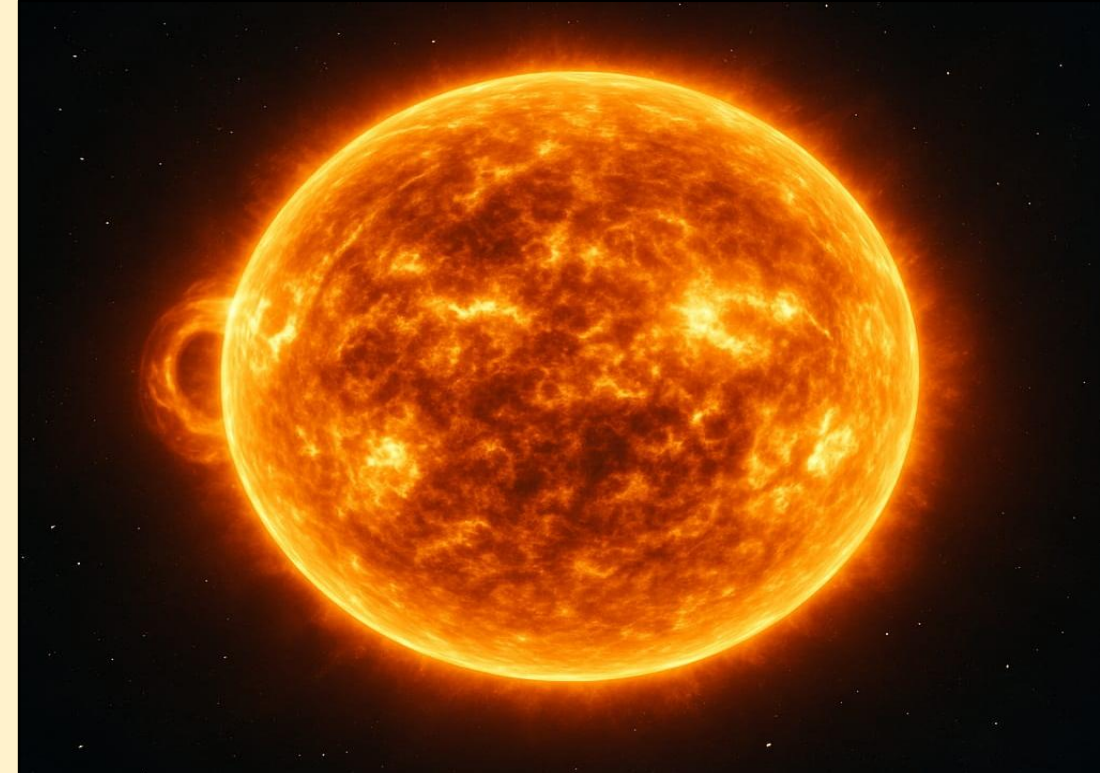
MOTIVATION



Improved Air Quality
Improving air quality with 'equivalent trees planted' in results.



Clean Power 2030 Action Plan
UK's plan to rapidly scale renewable electricity and phase out fossil fuels.



The Sun: Unlimited Potential
A reliable source of clean power that contributes to global energy demands.



UK Solar Roadmap 2025
UK Aims to rapidly expand solar capacity and reach **45-47 GW by 2030.**

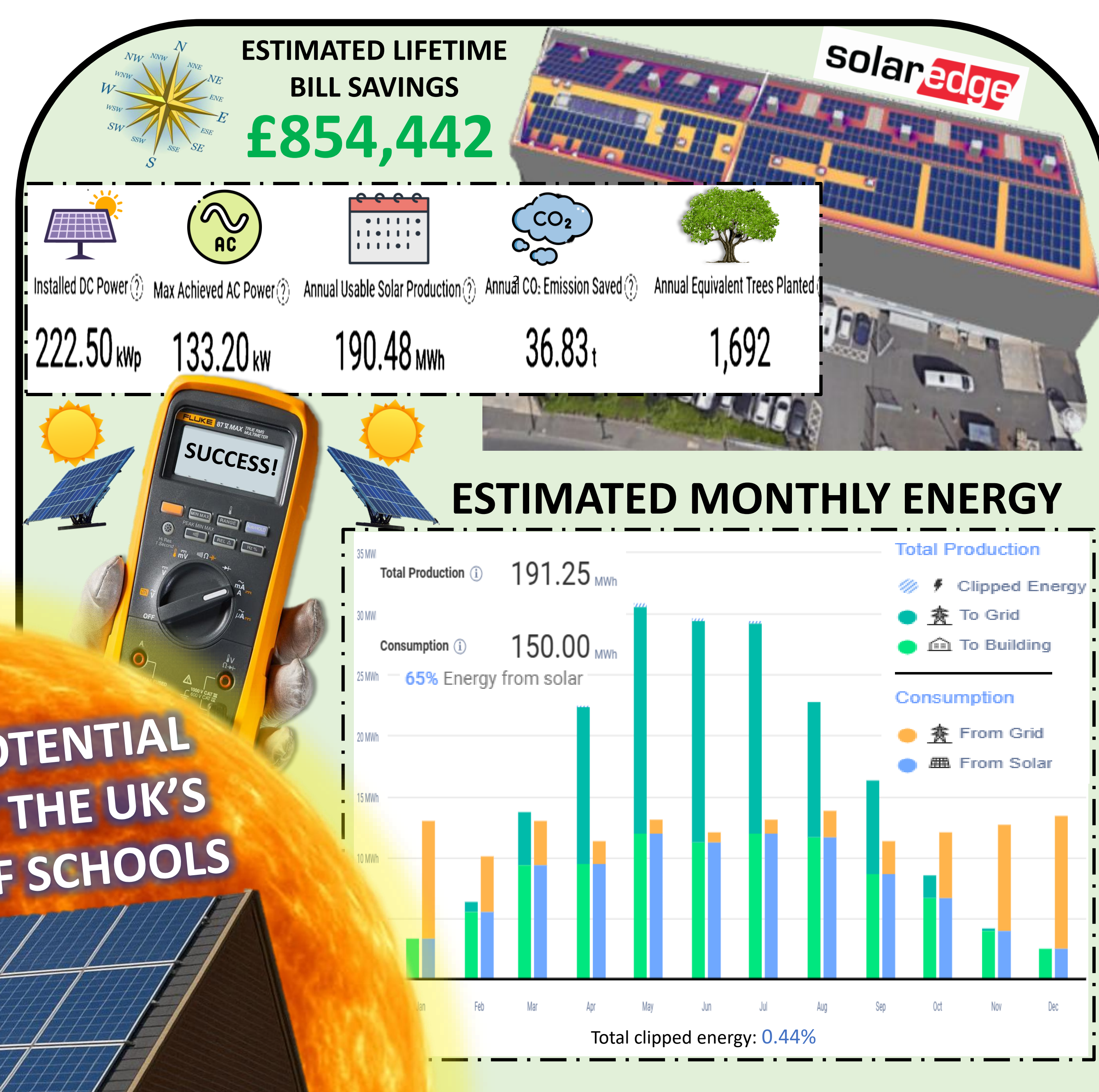


UK NET ZERO 2050
The UK are committed to reducing greenhouse gas emissions to 'zero' by 2050.

METHODOLOGY



RESULTS



CONCLUSIONS

- The results show the potential of using solar energy as a scalable, clean energy solution capable of greatly reducing CO2 emissions.
- Emerging technologies such as perovskite tandem cells provide pathways for future efficiency gains (η =up to 40% in theory)
- The use of optimisers in a system maximises energy yield and load matching, reducing shading losses and improving safety.
- Deployment of rooftop PV for on site generation is essential for reducing grid dependency and to meet UK goals and policies.
- The sun's energy is potentially one of the cleanest, most abundant energy sources for reducing reliance on fossil fuels.

