Re King's College Chapel Cambridge **[2023] ECC Ely 1**

Technical data

King's College Press release:

- The plans, which form one facet of the College's strategy to *decarbonize its operations by 2038, will meet 100% of the energy needs of the Chapel and will reduce the College's carbon emissions by more than 27 tonnes each year.*
- The PV panels will make a considerable, quantifiable positive environmental impact. The potential combined a*nnual output of the north and south slope* PV panels is 128,062 kWh/year, with an annual CO_2 reduction of 27,188 kgCO_2. Through the panels, *the entire energy needs of the Chapel will be more than fulfilled, with excess energy feeding into the College's internal electricity network, reducing the College's reliance on the National Grid*.

Consistory court judgment:

- The north roof will produce 60% of the electricity of that of the south roof [25]. This equates to 48,023 kWh/year (North roof) and 80,039 kWh/year (South roof); [by comparison, the York Minster South Quire Aisle will generate 75,000 kWh/year].
- The Chapel demand for electricity is approximately 15% of the college's overall demand. All excess electricity generated by the Chapel rooves would be used within the main college site, [48(c)].
- By setting down as its goal a date 20 years in advance of national government for net-zero carbon emissions, it has given itself an imperative to encourage change within church buildings at an even more rapid rate than that expected nationally or internationally [73]. *Note, however, that estimates indicate that the total GHG emissions from the Church of England are only a fraction of the national total, which itself is small on the global scale* §.
- The Chapel has already taken steps to de-carbonize through its low energy lighting scheme and, with the boilers reaching the end of their useful lives, it is intended to replace them probably with electric under floor heating [51]. *This is likely to have a significant impact on the electricity available for the remainder of the college.*
- "[The CBC] also question what effect it would have on the Chapels structure were the weight [mass] of the solar panels on the south roof not to be matched by a similar weight on the north roof. That, where monetary considerations are not an issue, may favour the installation of solar panels on the north roof to balance out the weight [79]".

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§ In 2021, It was estimated that the Church of England as a whole **emitted** 410,000 CO2e tonnes, churches contributing to 27% of the total. For this period, **ONS reports** that for all of the UK, greenhouse gas emissions were 505 million tonnes of tonnes of carbon dioxide equivalent (CO2e). The UK emits about 1% of the **global GHG**.