Submission by Mallard Pass Action Group (MPAG)
– unique ID ref. 20036230

Deadline 9:

MPAG's comments on Applicant's response (REP8a-010) on Carbon at Deadline 8a

Issue 1: Visibility of calculations.
The data and calculations were subsequently received between submissions.

Issue 2: Using 2 x 40 year cycles.
The Applicant has used two life times (a life time being defined as forty years for this analysis) of carbon costs MPAG accepts that, on the assumptions made by the Applicant, the carbon cost is as presented conservative. However, it does not necessarily follow that because of the conservative methodology used, the timing of the replacement of panels is not relevant to the calculation. It would depend on the timing of "drip feeding" replacement and also would need to factor in the downtime if piles and frames need to be replaced as well.

Why would the Applicant defer to a 60 year time limit if they truly believe the operational lifespan of the panels to be 40 years. From a carbon payback perspective it makes sense to either stick with 40 years or opt for 80 years maximising both life spans of the panels. The carbon payback on the 2nd set of panels for a lifespan of just 20 years would not make sense.

Issue 3: IPCC lifecycle emissions.
In September 2021 J H C Bosman et al published a Letter in the Environmental Research Letters - Institute of Physics. The Letter was titled "Greenhouse gas footprints of utility-scale photovoltaic facilities at the global scale." The study computed Greenhouse Gas (GHG) footprints for 9,992 utility scale PV facilities across the globe. The median was very close to that give by the IPCC and used by the Applicant. "We find utility-scale PV GHG footprints of 58.7 (28.2–94.6) g CO2-eq kWh−1 (median, 2.5–97.5th quantiles)."
However, the Authors went on to say "The latitudinal pattern also emerges by looking at GHG footprints per continent; Europe has the highest footprint, with a median Environmental Footprint GHG of 76.9 (46.1–112.2) g CO2-eq kWh−1 (based on current and planned facilities combined).
The Letter also contained the following "Locations (countries) with a low-GHG background electricity mix such as France or Germany are typically associated with low GHG emissions during production, while countries with electricity mixes strongly based on e.g. coal, such as China, typically have the highest GHG life-cycle emissions."

Issue 4: Higher end emissions scenario.
In relation to the carbon intensity of electricity used to produce solar panels, the Global Energy Monitor July 2023, Global Coal Plant Tracker, Coal Fired Power Capacity stated that China produced 53% of the global annual amount of power generated from coal. This equated to 5,021 million tonnes of CO2 annually or 50.8% of the World's emissions.

It is recognised that China leads the world in operating sources of renewable energy. However, The Global Energy Monitor - China 2023 states "Despite China's undisputed leadership in large utility-scale solar and wind deployment, in 2022, fossil fuel power plants nevertheless generated two thirds of China's electricity." The report goes on to say that although technologies such as battery storage have the potential to mitigate the intermittency of wind and solar power generation, the current pace and scale of those technologies are not yet sufficient to ensure that coal becomes a truly "supporting" power source. For example, As currently conceived, the new renewables mega-bases in the northwest of China are likely to bundle wind and solar generation with close to equal amounts of electricity from newly built coal-fired stations.

Taking all of the above into account MPAG still believes that median 48g CO2e/kWh figure used by the Applicant is low. This figure has the most impact on the calculations and this is why it is so important to be representative to give the clearest picture.