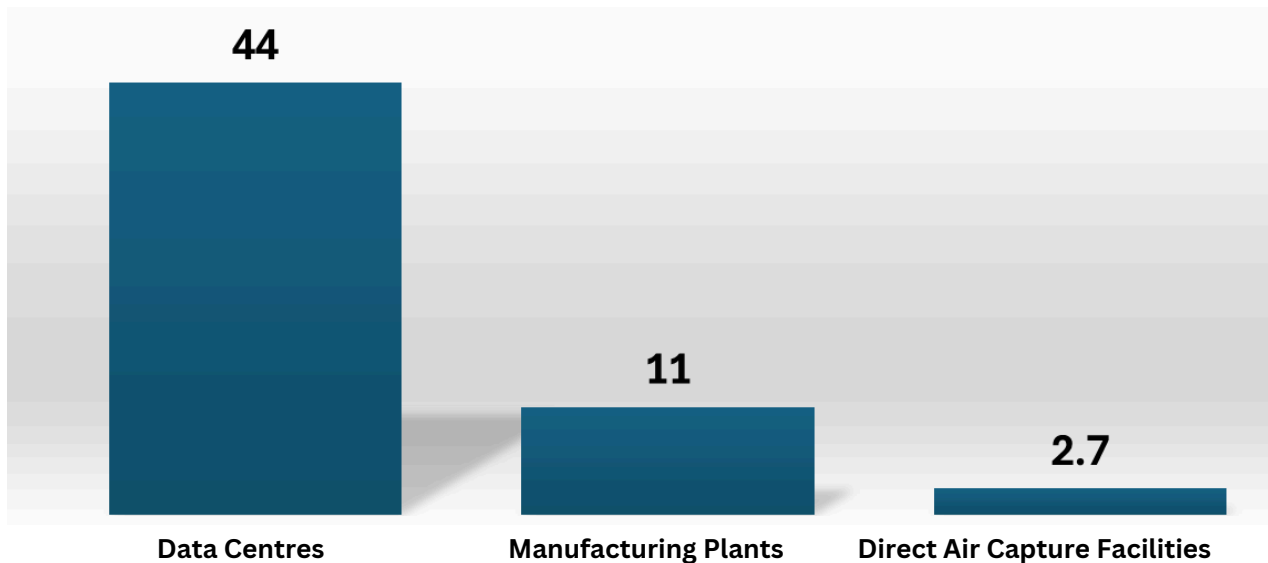


How AI and Renewable Energy Can Support Each Other's Growth

Renewable energies and Artificial Intelligence are two of the key investment themes which will continue to influence global development in the coming years. For renewables, as weather patterns continue to change and climate disasters become more prevalent, such as the recent Storm Éowyn in Ireland, the need to develop climate friendly energy systems continues to grow. Meanwhile, advancements in generative AI models promise to enhance existing industries and facilitate the emergence of new ones.

As the demand for both AI and Renewable energy increases, crossover between the two industries is also growing, largely due to the substantial energy required to train AI models. According to Forbes, it took the equivalent of 120 American households annual energy consumption to train OpenAI's Chat GPT 3. The BBC also project that by 2027, AI energy consumption could equate to that of a country the size of the Netherlands. Goldman Sachs predicts that AI will lead to a staggering 165% increase in global data centre power demand by 2030, with these centres anticipated to require 122 Gigawatts of power by that time. In early 2024, there were 11,000 reported data centers online, all of which require immense energy to function. On a more regional scale, data centres in the United States are projected to need 44 Gigawatts of energy by 2030, while cleantech manufacturing plants will add another 11 Gigawatts, and Direct Air Capture facilities will require an additional 2.7 Gigawatts of power.

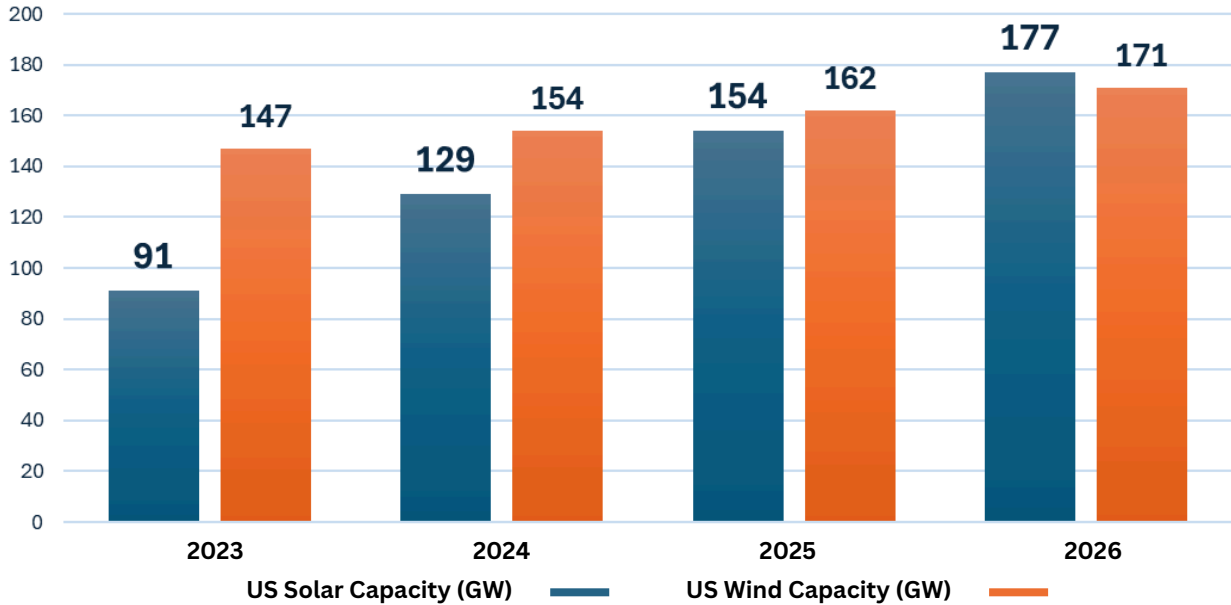
New Electricity Demand by 2030 (US, Gigawatts)



Source - Seaspray Private

With the rise in global and regional power demands, it is evident that renewable energies will be essential in supporting the AI and data centre revolution, as fossil fuel projects alone will struggle to meet this growing energy need. Focusing on the US, a country where renewables are a divisive issue in political circles, we can see that regardless of politics there will be growth in both solar and wind energy capacity over the next two years. In 2025, it is anticipated that US Solar capacity will increase to 154 GW, while wind energy capacity will increase to 162GW. In 2026, both sources will see further increases, with solar capacity surpassing wind capacity for the first time. Although these growth figures are modest compared to those in China, the US still ranks second globally in renewable energy capacity. The US Energy Information Administration predicts that solar energy will experience the most significant growth amongst all energy sources in 2025 and 2026, outpacing coal and gas. This surge in renewable energy will also contribute to fulfilling the energy requirements necessary to power new data centres, thereby facilitating further AI advancements.

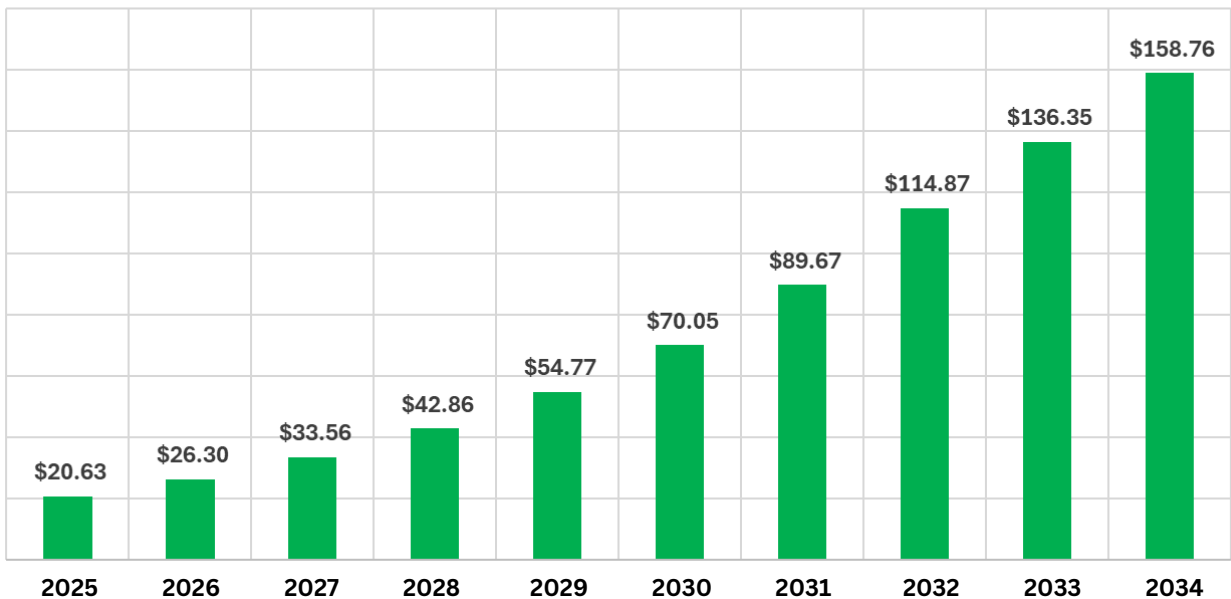
US Renewable Capacity Growth (GW) 2023 - 2026



Source - Seaspray Private

Conversely, AI is poised to significantly influence the growth of the renewable energy sector. For example, AI systems can help with the management of smart grids, by analysing and predicting both consumption patterns and regulating how much energy is distributed and how much is stored. Additionally, AI models can forecast the availability of renewable energy, such as predicting sunlight levels over time, and adjust generation systems accordingly. In this way, renewable energy generation can become more proficient in real time without the need for human intervention. There is in fact a growing industry, particularly in Asia Pacific, of companies focused on incorporating AI into renewable energy. According to data from Precedence Research, the global market for AI in Renewable Energies is projected to reach \$20bn by 2025, with expectations for it to expand to \$158bn by 2034, reflecting a Compound Annual Growth Rate of over 25%.

Artificial Intelligence (AI) in Renewable Energy Market Size and Forecast 2025 to 2034 (\$USbn)



Source - Seaspray Private