

Summary

The data-centers used by tech companies have massive carbon footprints. To offset this, companies invest in carbon credits for power purchasing agreements which go towards renewable energy, which is done annually. Carbon Explorer proposes a framework that balances the trade-offs between operational and embodied carbon through a mix of complementary sources, energy storage and workload scheduling for a 24/7 carbon-free data-center operation

Strengths

- Customization according to the location and availability of renewable sources
- Includes smart scheduling over renewable sources and battery storage to ensure maximum coverage

Weaknesses

- Does not take into account the overheads related to battery storage, such as the emissions and the impact of battery manufacturing, different tech, aging etc.
- The analysis performed is for static computation offline.

Possible Improvements

- DSE could be extended to different battery technologies, according to the usage required, taking into account the environmental impact when it comes to manufacturing such as Li-ion batteries v/s other technologies