Passive House and the Grid: Why Energy Efficiency Still Matters

Nicole Schuster, *Architect, Owner, Positive Trace*

ABSTRACT

As renewables like PV become more and more affordable, the cost benefit for energy efficiency measures becomes less apparent. If it costs less to add more PV than to tighten up your envelope, and you reach Net Zero either way, then why not just add the PV? Because, the grid. As more buildings are integrating grid-tied renewables on-site, the load profile on the grid is changing - these buildings, called Distributed Energy Resources, are pushing energy back into the grid mostly at the same time...when the sun is shining. As this ramps up, the grid has a harder and harder time dealing with the surplus energy. Buildings that are using energy outside of these energy generation hours, whether they are DERs or not, put extra strain on the grid for supply. This is an even greater issue with the increase in all-electric buildings, which is a critical component of the overall energy system as the grid gets cleaner. This peak demand typically occurs in blocks of the same hours each day, depending on time of year. This can cost the building owner a lot of money. What about batteries? Yes, that's part of the solution. On the cost benefit scale, it's not widely feasible just yet. And storage on a large scale, grid scale, is likely to be the better bet. Batteries at the building scale are part of a solution to help shift the load of the building. The other part is Energy Efficiency. Building a Passive House building, be it a house or an office or a school, greatly reduces the heating and cooling load, which is typically the biggest contribution to peak energy use. For the building owner, this saves on the very costly demand charges for energy use, bringing that cost benefit back into focus. For the grid, this means cleaner operation with less reliance on "dirty" peaker plants. That's an Energy Efficiency win-win.

BIOGRAPHY

Nicole Schuster is a licensed Architect and Certified Passive House Consultant with 15 years of experience in commercial, institutional, and multifamily architecture, focused on high performance building. She created and led the development and integration of Building Science within a mid-sized architecture firm, as well as functioning as one of the key leaders in Sustainability. She is currently creating her own Architecture and Consulting firm to continue to advance the critical components of Building Science and Sustainability into the future.