

The Surest, Quickest Way to Zero Carbon

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ABSTRACT

Through its 2030 Challenge campaign, the American Institute of Architects is calling for a drastic and immediate reduction in the energy used to construct buildings, the so-called embodied energy. Consumption of this energy emits about 11% of all global CO₂, and these emissions happen quickly, in the time it takes to produce and install steel, concrete, glass, copper, etc. The focus on embodied energy is a shift for the AIA, which has for many years pushed to cut the energy used to heat, cool and light buildings, the so-called operational energy. Even though this energy accounts for a greater share of global emissions than embodied energy, about 28%, the operational emissions occur gradually over the life of a building. The AIA recognizes that climate change is such an immediate threat that designers need to cut embodied energy quickly.

That's not happening. Flip through any architectural journal today and you'll see that nearly every building highlighted is an embodied energy hog, loaded with high-energy materials. This is a huge, worldwide problem, as the AIA estimates that global building stock will double in square footage over the next 40 years, equivalent to constructing a new New York City every month for four decades.

A clear way to quickly cut emissions from embodied energy is to stop embodying it, to make better use of the buildings we've already got.

Concurrent with the AIA goals, the American Planning Association recognizes that its response to climate change must include mammoth reductions in vehicle miles traveled, as transportation accounts for about 23% of all CO₂ emissions. Since most new buildings are built at the urban periphery beyond the reach of public transportation and distant from the compact neighborhoods of urban cores, new buildings yield more miles driven. Without vast expansions and usage of public transportation systems, a clear way to reduce driving miles is to repurpose existing communities.

Historic preservation is at the nexus of these two movements, truly the first time that this has happened. Together, the AIA and APA have over 135,000 dues-paying members to help revive existing communities, if they can be shown how.

We propose a 60-minute session that could include some of the following:

1. Embodied energy of materials, including work by Preservation Green Lab and including new work involving public infrastructure like streets and sewers;
2. Life cycle analytics of existing versus new buildings;
3. How older buildings can be brought up to modern energy standards without zeroing out EROEI;
4. Building code changes allowing adaptive reuse, such as of upper floors, and potential impacts of the proposed IECC Zero Code;
5. Scale of market potential;
6. Proposed changes to rating systems like LEED and Living Building Challenge that now shortchange projects that reuse buildings and infrastructure.

BIOGRAPHY

Peter Siegrist, AIA has practiced architecture and planning for 35 years, and is a former preservation planner for the City of Rochester and preservation director for the Landmark Society of Western New York. As an energy and environment nerd, he calls for architects and planners change their practices to lower the carbon emissions of construction.