

Researching Green Construction Practices

Shaping the next generation of green building policies

Buildings are responsible for almost 40% of annual global greenhouse gas emissions. Currently, three-quarters of these emissions come from building operations, but with the global building stock estimated to double worldwide by 2060, the carbon embodied in materials is increasingly a factor.

	Embodied	Operational
New buildings	Low-carbon building materials	Zero Net Energy (ZNE)
Existing buildings	Deep energy retrofits (DERs)	

Table: Strategies for addressing building emissions

The next generation of green building policies seeks to tackle both operational and embodied carbon. Zero net energy (ZNE) policies that direct jurisdictions to buy or produce as much green energy as they use are being implemented through the country. The invention and popularization of low-carbon materials, especially concrete, is leading the way toward policies that will reduce embodied carbon in buildings.

Assessing the uptake of green asphalt technologies

Green asphalt technologies such as Warm-Mix Asphalt (WMA) and Reclaimed Asphalt Pavement (RAP) have existed for several decades, but are not yet the standard for paving. Mainstreaming their use requires first understanding when, where and by whom these technologies are already being implemented. Once the market landscape is understood, the County and other local governments may be able to specify green asphalt technologies in projects where feasible, reducing climate change and local air quality impacts while supporting the green asphalt market.



WMA is mixed and laid at lower temperatures, reducing emissions of GHG and air pollutants.

Solutions: Policies and Design Specifications

My research identified multiple options for using specifications and design guidelines to decarbonize County buildings and reduce building-associated air pollution burden in local communities. Particularly, the following policy options could present long-term direction, tangible and significant benefits, and practical solutions:

- Create a ZNE policy for all new County construction.
- Write requirements for low-carbon concrete in building design specifications.
- Create a policy requiring and providing funding for regular energy efficiency auditing and retro-commissioning for existing County buildings.
- Opt for the greenest-available energy mix from East Bay Community Energy, the local electricity supplier.
- Write requirements for specifying warm-mix asphalt in paving projects when feasible.

Challenges and Opportunities

- Demonstrating cost effectiveness: Increasing building energy efficiency may have upfront costs, but promises returns in the long run. Studies on cost effectiveness must be sought and elevated to executive decision-makers.
- Building adaptable policies: Policies must be developed to achieve long-term goals while remaining flexible to accommodate new technologies and shifting markets.
- Maintaining institutional knowledge: Adopting green practices ahead of County policy can be expedient and effective, but requires committed maintenance of institutional knowledge by experienced personnel.

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An ocean enthusiast at heart, Alex spent his time prior to Climate Corps studying human impacts on marine ecosystems. A growing concern for environmental justice and practical solutions to climate change drove him to learn about how environmental policies hit the road in local government at Alameda County. He will pursue a JD with a focus in environmental law at Berkeley Law School starting in August 2019.



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