

May 18, 2022

Kevin Kampschroer
Chief Sustainability Officer and Director
Office of Federal High-Performance Buildings
U.S. General Services Administration

**RE: GBAC Federal Building Decarbonization Advice Letter April 2022
Leveraging Roof Alterations to Decarbonize Existing Buildings**

Dear Mr. Kampschroer,

As your Office considers the recommendations contained in the Green Building Advisory Committee's (GBAC) advice letter dated April 2022 related to existing building decarbonization, the undersigned roofing industry organizations would like to highlight the contributions that energy-efficient roof alterations can provide to the General Services Administration's (GSA) efforts to accelerate the rate of net-zero emissions retrofits and to improve the resiliency of federal buildings.

Improving the passive energy efficiency performance of the building enclosure is critical to lowering long-term energy use. Leveraging the replacement cycle of key enclosure components like roofs enables the use of other strategies such as renewable energy, electrification and smart building technologies to further reduce the environmental impact of building operations and achieve net-zero carbon buildings. The GBAC advice letter recognizes that building enclosure upgrades are the "sauce" that brings the "ingredients" together into a successful decarbonization "recipe" for existing buildings. An improved thermal enclosure can also improve building resiliency and passive survivability for occupants – other key principles in the GBAC recommendations.

Low-slope commercial building roofs commonly require replacement or recover beginning 17 to 20 years after initial installation. Adding insulation during replacement or recover is a cost-effective approach to lowering whole building energy use. In fact, a best practice for building decarbonization is to achieve net "zero-over-time" status in existing buildings with the proper timing of upgrades so they coincide with certain life-cycle triggers, which is acknowledged in the GBAC recommendations. Instead of completing all the necessary upgrades within a relatively short period, which can be prohibitively expensive, the "zero-over-time" approach takes advantage of a building's life-cycle events such as replacing major building components as they wear out.

ICF International recently estimated that upgrading a typical existing low-slope roof containing insulation compliant with 2004-era requirements to current code-compliant levels of roof insulation (i.e., compliant with either the requirements of the 2021 IECC or ASHRAE 90.1-2019 Standard) **reduces whole-building energy use by 2% to 12%** and **reduces on-site natural gas use by 5% to 33%**, depending upon building type and climate zone.¹ This reduction in energy use translates into significant carbon reductions related to building operations as well.

Roof alterations also provide the opportunity to optimize the roof system in terms of roof membranes, coverings or coatings that can enhance whole building performance. For example:

- Technologies are available that further reduce building energy use by helping architects and roof designers determine when to employ the appropriate level of roof surface reflectivity for the building type and climate zone.

¹ The full ICF International study on the benefits of energy-efficient roof replacements is available at: <https://www.polyiso.org/page/EnergyCarbonSavingsAnalysis>.

- Other roofing components can be improved to enhance the ability of the system to resist the impacts of severe weather, including hail and high winds.
- Building performance as well as the building's impact on the community can be enhanced by integrating water management strategies into a roof alteration project.
- Rooftop solar installations can be implemented at a lower cost when they are completed along with other roof alterations.
- Finally, the implementation of high-performance roof systems is made possible by dedicated professionals who specialize in roof system design and installation.

To capture the efficiency and resiliency benefits of roofs, we encourage your Office to provide specific recommendations for roof alterations within any "playbook" that is compiled for federal buildings. For example, the GBAC's checklist for envelope repairs should be expanded to include the following highlighted language:

1. Take advantage of **building envelope repair and roof alteration projects** (by installing assemblies that meet or exceed the minimum requirements of the latest versions of ASHRAE 90.1 and the International Building Code) to improve passive efficiency and incorporate complementary building decarbonization and resiliency measures. (Advice Letter Appendix, Federal Building Decarbonization Retrofit Playbook, page 35)

Additionally, GSA should consider mimicking the highly successful U.S. Army Corps of Engineers' National Roofing Program (NRP) that requires qualified roof designers for the design and construction of resilient roofs. In the last 25 years, the NRP has invested \$201.7 million in reroofing projects at 397 U.S. Army Reserve facilities across 48 states and territories (totaling more than 12 million sq. ft. of installed roofs) and has never had a failure. The energy efficiency upgrades through the NRP improved existing roofs (some with insulation R-values less than 10) to R-30, driving down energy costs by \$4.3 million.

The roofing industry applauds GSA's leadership in decarbonizing the federal building stock. Not only will GSA's actions serve as examples for other federal agencies, the actions will catalyze private sector investments in building decarbonization as well. The organizations signed below stand ready to provide GSA with the assistance necessary to make roof alterations a key component of its building decarbonization strategy. Please contact Jeff Mang (jeff@jcmangconsulting.com) should our assistance be helpful during the review and implementation of the GBAC recommendations.

Sincerely,

Asphalt Roofing Manufacturers Association
 Chemical Fabrics and Film Association
 EPDM Roofing Association
 International Institute of Building Enclosure Consultants
 National Roofing Contractors Association
 Polyisocyanurate Insulation Manufacturers Association
 Roof Coatings Manufacturers Association
 Single Ply Roofing Industry
 Spray Polyurethane Foam Alliance