

April 13, 2020

The Honorable Eddie Bernice Johnson
Chairwoman
Committee on Science, Space, & Technology
2306 Rayburn House Office Building
Washington, D.C. 20515

The Honorable Frank Lucas
Ranking Member
Committee on Science, Space, & Technology
2405 Rayburn House Office Building
Washington, D.C. 20515

Dear Chairwoman Johnson and Ranking Member Lucas:

On behalf of the Portland Cement Association (PCA) and the larger cement manufacturing industry, we would like to thank you for your leadership in our nation's response to the global crisis arising from the COVID-19 pandemic. We appreciate the opportunity to engage with you to identify critical opportunities to advance research, development, and innovation funding policies that promote and protect jobs, public health and the environment, and economic growth.

The Portland Cement Association (PCA) is the premier policy, research, education, and market intelligence organization serving America's cement manufacturers. PCA members represent 92 percent of the United States' cement manufacturing production capacity and have distribution facilities in every state in the continental United States. Cement and concrete product manufacturing, directly and indirectly, employs approximately 610,000 people across the country, and our collective industries contribute over \$125 billion to our economy. PCA promotes safety, sustainability, and innovation in all aspects of construction, fosters continuous improvement in cement manufacturing and distribution, and promotes economic growth and sound infrastructure investment.

During this time of national crisis, PCA is also working with members and policymakers to implement policies that will ensure the continued operations of our domestic cement and concrete industries, recognized as essential for transportation, water treatment, flood control, facility security, and public health and safety. Annually, the United States uses approximately 260 million cubic yards of concrete to build and repair critical infrastructure and other uses. This number will be significantly impacted by the economic slowdown caused by the COVID-19 virus. During the 2008 economic recession, the cement industry suffered a 44.5% decline in shipments and saw the closure of 18 plants (to date there are 97 cement plants in the continental U.S.). As the economy recovered, cement shipments steadily increased but the industry has struggled to achieve 80% utilization. In this context, a new downturn in the construction market could have a devastating impact on the cement industry. Indeed, under the current economic conditions, PCA is predicting a **30.9 percent decrease** from 2019 level in cement consumption from March through June.

With these concerns in mind, PCA sees several opportunities to advance the nation's economic and environmental security through short-term and long-term research stimulus investments. These investments will help train and expand the skilled workforce needed for 21st century

cement manufacturing; build reliable, long-lasting, and resilient public infrastructure capable of withstanding a growing economy as well as disruptive man-made and natural events; and position U.S cement manufacturers as leaders in materials and manufacturing sustainability.

Near-Term Response to Impacts on the larger Research Enterprise

- 1. Grants for students and workers seeking education and training for industrial sector operations.** The cement industry offers high-paying jobs to candidates trained in industrial manufacturing and related fields, including environmental compliance, occupational health and safety, manufacturing operations, and maintenance. A significant challenge in the industrial sector is the limited availability of workers with training in these fields, leaving industrial manufacturers to fight for a limited pool of candidates while jobs go unfilled. The current economic crisis will only exacerbate this shortage of technical talent by reducing private funding available to both students and training providers. PCA supports education and training grants to allow both students and training providers to build the nation’s industrial workforce and the high paying jobs provided in the industrial sector.

“Shovel Ready” Research Infrastructure

- 1. Funding for the National Institute for Standards and Technology (NIST).** NIST conducts critical research on the benefits and performance of cement and other materials necessary to maintain and build essential infrastructure that is safe, resilient, and adaptable to changing climate conditions, disruptive events, and economic needs. PCA recommends reauthorizing NIST with additional funding to continue and expand this critical research. Recommended areas for continued and increased focus include:
 - a. Engineered Materials for Resilient Infrastructure Program (EMRIP):**¹ NIST is researching the role cement and concrete play in a resilient national infrastructure, including developing tools and methodologies for selecting materials to achieve desired performance given exposure to chronic and episodic hazards; and developing methods to assess the current performance of existing infrastructure.
 - b. Additive Manufacturing with Cement and Concrete Program:**² NIST has identified Additive Manufacturing (AM) with cement-based materials as an emerging technology that opens opportunities in the construction industry by reducing labor costs and increasing reliability of concrete infrastructure. This program is also performing cutting-edge research into issues like 3D printing using extruded concrete, which offers tremendous potential to reduce time and costs for construction while

¹ See <https://www.nist.gov/programs-projects/engineered-materials-resilient-infrastructure-program>.

² See <https://www.nist.gov/programs-projects/additive-manufacturing-cement-based-materials>.

providing greater flexibility in project design for commercial as well as emergency response needs.³

- **Disaster and Failure Studies Program:**⁴ NIST's Disaster and Failure Studies Program assesses building and infrastructure performance and emergency response and evacuation procedures in the wake of significant fire, earthquake, wind, and other disaster and failure events to identify lessons learned and establish and/or improve U.S. practices, codes, and standards.
- **Earthquake Engineering Group (EEG):**⁵ The EEG functions as lead federal agency for the National Earthquake Hazards Reduction Program (NEHRP), conducting research and analysis to improve codes, standards, and practices for buildings and lifelines; and conducting disaster and failure studies to reduce the risk of earthquake hazards to buildings, lifelines, fire protection systems, and building occupants.
- **The National Windstorm Impact Reduction Program Office (NWIRP):**⁶ The NWIRP leads federal efforts to promote the implementation of windstorm risk reduction measures; support the development of performance-based engineering tools, and issue recommendations for the development of model codes and practices.

2. Funding for Department of Energy National Energy Technology Laboratories (NETL). The NETL is conducting valuable research into increasing the efficiency and environmental sustainability of energy-intensive industries. PCA supports funding to allow NETL to increase its research and grant program with a focus on cement manufacturing, specifically with an emphasis on quantifying the capacity of concrete building materials to absorb and sequester carbon dioxide⁷ and identifying concrete solutions for storage of thermal energy.⁸

3. Funding for Sustainable Cement and Concrete Solutions: A long-term strategy for maintaining the competitiveness of domestic industrial manufacturing will require increasing federal investments into research like that at the Massachusetts Institute of Technology's Concrete Sustainability Hub (MIT CSHub).⁹ The CSHub is a dedicated interdisciplinary team of researchers from several departments across MIT, who, since 2009, have been working on concrete, buildings, and infrastructure science, engineering, and economics. The MIT CSHub brings together leaders from academia, industry, and

³ See, eg. https://tsapps.nist.gov/publication/get_pdf.cfm?pub_id=924709.

⁴ See <https://www.nist.gov/el/materials-and-structural-systems-division-73100/statutory-programs>.

⁵ <https://www.nist.gov/el/materials-and-structural-systems-division-73100/earthquake-engineering-group-73105>.

⁶ See <https://www.nist.gov/el/materials-and-structural-systems-division-73100/national-windstorm-impact-reduction-program-4>.

⁷ See, e.g., <https://www.netl.doe.gov/node/5968>.

⁸ See, e.g., <https://www.netl.doe.gov/node/9624>

⁹ See <https://cshub.mit.edu/>.

government to develop breakthroughs using a holistic approach that will achieve durable and sustainable homes, buildings, and infrastructure in ever more demanding environments.

- 4. Funding for Research, Development, and Deployment of Carbon Capture, Use, and Sequestration for Industrial Manufacturers.** The U.S. cement industry faces unique challenges in reducing carbon emissions due to the energy-intensive nature of their operations and the significant emissions resulting from the chemical processes involved in converting limestone and other materials into cement. While the industry has made significant strides in reducing energy-related emissions, process-related emissions account for 60 percent of the industry's carbon footprint, making carbon capture, use, and sequestration critical components of any long-term climate strategy. To date, most federal CCUS investment has focused on the energy sector, and while DOE has started to give more attention to overall industrial sector research needs, additional funding and coordination is needed to advance the state of CCUS technology for cement manufacturing, from development and assessment of tailored carbon capture technologies to bench and facility-scale testing and deployment.

Again, thank you for your continued leadership as our country responds to the COVID-19 pandemic. PCA members look forward to working with you to ensure that you have the support necessary to enact critical economic recovery legislation. If you have any questions or would like any additional information, please feel free to contact PCA's Senior Vice President of Government Affairs, Sean O'Neill at 703-321-6792 or soneill@cement.org.

Sincerely,



Sean O'Neill
Senior Vice President
Government Affairs