

AGC of America Climate Change Task Force Final Report & Recommendations July 7, 2021



I. OVERVIEW OF TASK FORCE

The Biden Administration and Democratic Congress have made climate change a national priority and are pursuing several policy initiatives that will impact the construction industry and its markets. The issue is complex. It affects AGC of America's diverse member markets and firms in various ways, positively and negatively. Although not the focus of this report, AGC recognizes that the climate issue is of global importance and any solution will need to be addressed on a global scale. Our nation's leaders will need to encourage buy-in from other countries not only to help realize emission reduction goals, but also to ensure that the United States is not economically disadvantaged in the process.

Given the impact climate policy can have on the construction industry, AGC of America's Board of Directors established a representative task force of members¹ to help identify the top, most relevant opportunities and challenges related to climate change policy that are expected in the near term and priority actions for the association to take. With this report, the task force is providing the Board recommendations for its consideration on ways to position the association, construction firms, and the entire construction industry to respond to the changing policy landscape (see Section III).

To this purpose, the report highlights the task force's discussions on the top impacts associated with climate change for construction markets and construction firms (see Sections IV and V). The report provides details on opportunities and challenges specific to many of the projects that AGC members build, spanning all major construction markets. Finally, the report explores the many ways contractors have demonstrated environmental leadership on projects (see Section VI). It also candidly discusses some of the challenges that members may face related to climate policies and trends.

To guide our work and recommendations, the task force recognized three key underlying precepts on AGC's role in this process:

1. AGC's Commitment to Facilitate Continuous Improvement - The construction industry is the project delivery system for building a safer, healthier, and environmentally sustainable future. Our nation cannot simply wish for a greener future; it must build it. And, the construction industry must be an integral part of the policymaking processes to help ensure that construction firms and the construction workforce can continue to grow and prosper.

¹ The task force comprises two members each from: the four market divisions (building, federal and heavy, highway and transportation, and utility infrastructure), Chapter Executive Leadership Council, Construction Leadership Council, Diversity and Inclusion Council, Environmental Forum, and Risk Management Forum. A list of participants is included at the end of this report. The task force met bi-weekly during the months of March through June 2021.

2. Contractor's Role in Reducing Environmental Impacts - The report identifies the contractor's role in the development process. The public often blames the contractor for environmental problems not of its making or expects more environmental improvement than contractors can deliver. Contractors have direct control over only the means and methods of the construction process. With rare exception, AGC members do not decide what to build or where to build it or determine how structures will appear or how they will perform.
3. AGC's Role in Improving Contractor Performance - The report recognizes the important boundaries of AGC's relationship with its members. AGC neither regulates its contractor members nor dictates how a member company should perform its business responsibilities. AGC supports its members in their business pursuits and endeavors by providing the tools necessary to succeed in all areas, including the environment.

II. KEY FINDINGS

The task force anticipates a resurgence of interest in improving our built environment and in infrastructure investments of all types and sees this as an opportunity and a challenge for the construction industry. Projects that can make a "climate case" will likely be given priority, incentives, or preference at the federal, state and local levels. The construction industry has an opportunity to engage with owners, manufacturers, insurance, and other professional partners to the construction and development industries on advancements in equipment, materials, and technology. The association also needs to hold frank discussions on what roadblocks may hinder investment in the infrastructure of the future.

During its meetings, the task force identified some of the main concepts that will drive what owners/investors want and how projects are built. For buildings, sustainable materials and practices that emit less carbon and offer more resilience to climate will play a greater role in the future. These drivers also apply for federal buildings. Members also expect more projects related to redevelopment and repurposing of existing buildings to take advantage of previous investments and the energy already used to build them. In the highway and transportation sector, members are preparing for the next generation of transportation with new advancements in vehicles and traffic flow efficiencies. Environmental management and resilience will continue to be factored into these projects as well. The task force pointed to civil works projects including effective and resilient drinking water and wastewater infrastructure as being critical to a community's response to weather-related stressors. These crumbling resources have a significant need for investment that has been delayed for decades. Finally, the nation has improved the diversity of its energy infrastructure over the last fifteen years. The outlook for future renewable energy projects is strong. The beneficial projects above can drastically improve the environmental performance of our nation's infrastructure; however, they could face permitting and funding challenges.

Many of the challenges discussed in this report are familiar to the construction industry and are not unique to climate matters. A main concern is that climate policies will bring aggressive transition timelines or additional layers of requirements that could have unintended consequences on materials and energy availability, further complicate and delay the already protracted permitting or regulatory processes, and increase the costs and risks associated with projects. The task force also is concerned with the impact that climate policies could have on their equipment performance and value.

The task force also recognized and shared best practices and case studies that demonstrate the construction industry's leadership on environmental performance. Equipment and onsite operational choices, such as anti-idling and recycling, are key areas where contractors can reduce greenhouse gas emissions independent of the owner or designer.

III. RECOMMENDATIONS

The task force recommends that future AGC policy, programs and initiatives on climate-related issues focus on the following areas:

Associated with Government Policies

- Support a national strategy to invest in physical infrastructure that will make our communities more resilient while providing flexibility for regional, local, and project-based concerns.
- Increase investment and maximize existing funding mechanisms for public and private infrastructure including dedicated funding, loans, etc.
- Support government initiatives that encourage innovative owners and promote voluntary efforts for sustainability, including but not limited to tax incentives (e.g., Section 179D deduction for energy efficiency or the historic tax credit) and expedited permitting consideration.
- Support modernizing federal buildings and increasing education and awareness on lifecycle and total ownership costs versus up-front, one-time costs.
- Support permit streamlining efforts to advance the infrastructure of the future in a timely and efficient manner.
- Support investment in a diverse and state of the art energy market that is safe, secure, reliable, and affordable. Caution against policy-related disruptions that would negatively affect availability, grid capacity or the supply chain.
- Ensure climate policies do not mandate construction labor and workforce policies that will impede the success of those projects and achievement of infrastructure goals.
- Support tax incentives for investments to modernize existing construction equipment, such as the funding of Diesel Emissions Reduction Act grants, and for purchasing new equipment, while allowing for the use of existing equipment during its expected term of service.
- Support employer-neutral job training programs on the technologies needed for contractors to participate in a decarbonized economy and in related fields such as environmental remediation or weatherization.
- Support local recycling markets for construction and demolition materials.
- Develop a report based on the final recommendations of this task force—and/or subsequent ones—that could be used in advocacy efforts (e.g., update the “[Building a Green Future](#)” report).

Advancing the Discussion within AGC and with Industry Partners

- Highlight the positive role the construction industry can and does play in improving the environment.

- Engage with industry partners and owner groups to better understand how government policies and supply chain realities will impact projects, costs, equipment, materials, etc. – recognizing that the availability of raw materials, supplies and labor can all be influenced by extreme weather. And that mandating the selection of certain materials may exacerbate the situation on cost and availability.
- Educate policy makers, owners, and construction users on the impacts to “total project development costs,” for example materials thought of as “green” may have supply chain and availability concerns resulting in longer shipping distances (and associated emissions).
- Evaluate current policy and permitting processes to facilitate better climate related decisions, such as how siting of batch plants on a job can minimize diesel consumption for trucks.
- Engage with equipment manufacturers to improve engine efficiency and emission performance without sacrificing safety or power output.
- Ensure construction has a voice at the table in discussions on government and industry climate/resilience efforts, including but not limited to the life cycle assessment of materials and projects. Flexibility is needed in all programs to address material scarcity when it has a significant impact on the price or delivery schedule of a project.
- Reach out to insurance industry partners on climate-related concerns, adoption of innovative technologies, risks/impacts on construction schedules, availability of materials, energy costs, performance standards, completed operations, latent defects, and contracting, etc.
- Explore construction data needs in response to future regulations/policies.
- Identify how corporate environmental transparency and disclosure about the effects of climate change could impact construction and educate members to manage heightened oversight---including how to establish a baseline and what to track (trailers, refrigerants, utilities, waste, water, commutes, equipment, etc.).
- Research and communicate how much the construction industry already recycles as well as what policies inhibit increased recycling and reuse or repurposing (and related carbon emission reductions) such as constraints on the recycling market, restrictions on the use of recycled materials in current mixes, stigma against beneficial use/reuse.
- Highlight the business case for green construction practices and recycling/reuse.
- Explore how to improve community discussions/relationships/education surrounding projects.
- Educate owners on the impact of climate change-related extreme weather events’ impacts on construction processes. Such events can lead to extended delays, increased costs or force majeure events. Consideration for these events can be more clearly articulated in contracts as well as eligible grounds for addressing time and cost impacts as a result, including change orders or other contract modifications.
- Discuss the relationship between environmental justice (EJ)² and the construction industry at the national level given new federal policy directives to address EJ; include divisions and appropriate councils/forums/committees in the discussion. Consider the relationship construction has with the community (being a good neighbor) as well as business concerns.

² See U.S. Environmental Protection Agency definition: “Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.” Available online at: <https://www.epa.gov/environmentaljustice> (accessed June 25, 2021).

For example: How will this issue impact projects? How will it impact the siting of aggregate facilities, permitting of asphalt or recycling plants, etc.? What impact will it have on emissions and material costs/shipping as urban growth and NIMBYism (Not In My Back Yard) pushes these facilities further away from jobsites?

- Consider establishing a member task force to identify and recommend carbon reduction programs/strategies of which AGC would be open to a candid discussion of benefits and challenges (such as impacts to the cement industry).

The task force requests that where further discussion is needed, the Board of Directors work with AGC staff to empower the divisions and other AGC member groups to establish the necessary task forces and/or convene meetings to discuss the issues below and make any subsequent policy recommendations for the Board's consideration. The Board may be called on at times to balance or resolve any conflicts in policy.

IV. CROSS-CUTTING IMPACTS

The task force explored the impact of climate change policies and trends on construction markets and construction operations. The members identified and discussed specific opportunities and challenges that a heightened focus on energy and infrastructure performance/resilience may bring. This section identifies impacts that span the markets.

When asked to rank cross-cutting opportunities that will incentivize owners to build in the current climate, members of the task force identified at the top these three factors that will drive investment and decision-making about projects across markets:

- Innovative owners that push boundaries and are at the forefront of trendsetting and adoption;
- Efficiency goals, whether that is expressed in more efficient processes or more efficient use of resources; and
- Cost and financial incentives, for example, tax incentives for green products, practices or projects.

The task force also identified other influences for new projects across the board as:

- Meeting community priorities (codes, planning, and stakeholder involvement);
- A growing interest in life cycle assessment of projects and materials transparency; and
- The demand for projects that are more durable and of higher quality.

The task force identified an array of cross-cutting challenges facing the markets:

- Anticipated increase in regulatory requirements overall and reintroduction of barriers to permitting and approvals that will negatively affect how quickly the needed infrastructure improvements can get underway. The permitting process needs to be streamlined, or vital infrastructure and resiliency improvements will be delayed.
- Policies that are overly burdensome or unworkable in practice can strain larger firms and push small businesses and minority-held businesses out of the market.
- Well-intended policies that have unintended market consequences on materials or energy costs and availability can increase project costs which then reduce market opportunities.

- Infrastructure funds will dwindle rapidly without consideration of the expenses brought on by additional requirements and a more protracted permitting/approval process. Again, these increased project costs will lead to a decline in market opportunities.
- Lagging codes and the uncertain insurance market will hinder adoption of forward-thinking practices or technologies.
- A lack of flexibility that will inhibit owners from making practical decisions on climate resilience relevant to their region, project needs and budgets.

V. MARKET IMPACTS

Our nation's built environment sustains our quality of life and our economic productivity; our infrastructure and our lifestyles also directly impact the natural environment. Our buildings provide us shelter, vital services and comfort. Our roads, airports, ports and transit systems provide mobility and contribute to our economic prosperity. Our factories, power plants and power grids produce needed goods and power our lifestyles. Inefficiencies and disrepair in these systems along with older structures and poorly performing public infrastructure put our communities at risk. We cannot, and should not, stop providing for our communities; however, there are reasonable steps everyone can take, including the construction industry, to lessen the environmental impact of our built environment.

The task force has identified top opportunities and concerns related to how climate policies could impact a project owner's decisions about what, when and how to build. These findings are discussed below by market sector. The task force ranked the opportunities by importance to help focus future AGC discussion on the primary positive drivers. They did not rank the concerns, because the Board and AGC divisions and groups may want to discuss and address each of those concerns further.

A. BUILDING MARKETS

The operation of our residential and commercial buildings consumes energy and materials, as does the construction of those structures; however, buildings also present an opportunity to realize reductions in pollution and increases in energy efficiency. In the U.S., we use nearly 40 percent of our nation's energy to power our buildings—this includes lighting, heating and cooling, appliances and electronics. Accordingly, our buildings accounted for 31 percent of the nation's total man-made greenhouse gas (GHG) emissions in 2019.³

One way to make changes in the buildings of today and the future is to incorporate green building practices. Green buildings often conserve raw materials, incorporate green products and reduce or recycle waste; they are designed to reduce stormwater runoff, use less energy and water, and use renewable energy sources. By one estimate, the global building stock will double in area within the

³ See, U.S. Environmental Protection Agency Greenhouse Gas Emissions Webpages, Total U.S. Greenhouse Gas Emissions by Sector with Electricity Distributed, <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>, accessed June 14, 2021. Estimates based on the *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2019* available online at: <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks>.

next thirty years. “This is the equivalent of adding an entire New York City every month for 40 years.”⁴ This represents an opportunity to introduce efficiencies in future buildings. Contractors who know how to build green will be better positioned to respond to these trends whether their client is public or private, international or U.S. based.

The investment in green and resilient buildings could come at a cost premium, even if some of those costs will be seen in savings through the operation of the building. More incentives are needed for owners and developers to accept those up-front costs and broadly adopt green practices. Local governments could also help by removing barriers to green building that may be found in codes and by maintaining flexibility in green and resiliency incentives/programs.

- Top Opportunities
 - Green Buildings - Includes green and sustainable building strategies such as net-zero energy buildings, onsite renewable energy, passive, etc.
 - Urban Development and Redevelopment - Reflects the interest in revitalizing our downtowns and trends towards density and mixed use. Could stretch to encompass brownfields redevelopment and opportunity zones.
 - Building Repurposing - Rethinking our existing infrastructure to help it meet current needs. Interest in building repurposing may be due to how the COVID-19 pandemic has prompted a change in the way we use different spaces. For example, there may be a limited need for commercial spaces or parking.
 - Other Opportunities Discussed - Codes can incentivize green building and resilience as can cost premiums (higher leasing, etc.) for green buildings. Mixed use, sustainable communities, modular/prefabrication, and mass timber are trends to watch. There has been less of an emphasis on how a building interacts with community resilience.
- Concerns (Concerns have not been ranked)
 - Costs - New climate change-related construction and facility requirements could lead to cost increases especially related to building resilience. There may be an opportunity for tax credits/incentives to supplement these construction costs.
 - Insurance and Risk - Insurers may not be willing to extend coverages in locations at high risk of extreme weather, for example, and the insurance industry does not appear ready for newer market trends. This means the contractor will shoulder more of those risks. Due diligence is important. Policymakers and contractors need to fully understand the life-cycle performance of new materials.
 - Unintended Consequences of Policy Decisions - Recognition that the move to a low carbon economy may impact historical sources of philanthropy and investment in higher education, churches, museums, stadiums, etc.
 - Other Concerns Discussed - Bringing in slow adopters and owners/developers who are not well-capitalized. There is a fine line between advancing environmental priorities through codes and other incentives and getting too far ahead of the curve. There are

⁴ 2030 Challenge Webpages, Why the Building Sector, https://architecture2030.org/buildings_problem_why/, accessed June 14, 2021. Estimates based on the UN Environment Global Status Report from 2017.

progressive areas where following the code will qualify you to seek LEED certification, but that is not the case nationwide. Local legislation and code process are areas that need to be watched for potential negative impacts to local construction market.

B. HIGHWAY & TRANSPORTATION MARKETS

Disrepair in our transportation system introduces inefficiencies that add hours and dollars to commuting and freight shipping through wasted fuel—at a cost to human safety, the economy and the environment. Currently, transportation emissions are almost exclusively from the combustion of fossil fuels, and, in 2019, transportation contributed 29 percent of total manmade GHG gas emissions.⁵ Traffic congestion wasted 3.3 billion gallons of fuel in 2017—adding 8.8 billion hours to travel times in urban areas.⁶ Research shows that the right mix of traffic congestion mitigation, speed management and traffic smoothing measures would lower total carbon dioxide (CO₂) emissions from vehicles by as much as 30 percent.⁷ Further, autonomous vehicles, hybrids, and alternative fuel vehicles are already delivering emission reductions. The construction of new transportation projects helps relieve traffic congestion and air pollution as well as provide communities with multiple options for mobility.

Over the past decades, federal and state transportation agencies have invested in research and environmental stewardship efforts, which has led to the adoption of recycled materials and lower emitting strategies such as warm-mix asphalt. This investment in research needs to continue in order to accommodate new technologies in vehicles and further efficiencies in traffic flow.

In an age of increased fuel efficiency and alternative vehicles, federal policies must address the need for a long-term highway funding mechanism that is not reliant on fuel sales.

- Top Opportunities
 - Next Generation of Transportation Infrastructure - Preparing our transportation (and necessary energy infrastructure) for electric vehicles and autonomous vehicles and related charging stations.
 - Efficiency/Traffic Flow Retrofits
 - Other Opportunities Discussed - Members in urban areas see interest in a diverse range of projects that could drive future improvements from bridgework, transit and light rail, and to a lesser extent high-speed rail. Trends to watch are dedicated high occupancy vehicle and electric vehicle lanes, complete streets (traffic calming, pedestrian zones), and the employment of smart tech. The task force did not rank resilience retrofits (e.g., road elevation, flood controls, and culvert repairs) as a main driver or impetus for owners to

⁵ See, U.S. Environmental Protection Agency Greenhouse Gas Emissions Webpages, Transportation Sector Emissions, <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>, accessed June 14, 2021. Estimates based on the *Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2019* available online at: <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks>.

⁶ Texas Transportation Institute, Texas A&M University, 2019 Urban Mobility Report, August 2019, available online at: <https://static.tti.tamu.edu/tti.tamu.edu/documents/mobility-report-2019.pdf>.

⁷ Barth, M. and K. Boriboonsomsin, Traffic Congestion and Greenhouse Gas Emissions, University of California, 2009. <http://www.uctc.net/>

initiate work, although these factors could be addressed in projects under consideration. Advancements in materials are expected to play a key role in future projects as is water management.

- Concerns (Concerns have not been ranked)
 - Business Resilience – Firms need to prepare for disruptions to their business model that may emerge from climate policies and/or extreme weather. This could include many of the concerns mentioned in this report such as supply chain disruptions and heightened scrutiny on environmental performance, materials, recycling, and equipment obsolescence.
 - Viable Funding Mechanism - Need a source of funding that is not reliant on the gas tax. Is the P3 model workable in the long run; is it worth the risk; and does it concentrate too many projects in too few hands?
 - Project Costs – Efforts should be made to ensure that project costs are controlled to allow for limited funds to be allocated as broadly as possible to help meet climate change objectives. Costs need to be tied to a benefit, and those benefits need to be clear and concise.
 - Education on Costs – Federal and state governments should provide training of contracting personnel on lifecycle assessment and costs.
 - Environmental Permitting and Approvals – It is already difficult to navigate the approval process as well as community concerns. We will need to have “uncomfortable” discussions with owners right away about delays and challenges due to roadblocks in these processes.
 - Mandates – One-size-fits-all approach for transportation will not work and calls for transit and restrictions on highway capacity may not be what is needed in all areas.
 - Competing Priorities – Preparing for extreme weather that may have a low probability of happening could compete with more pressing needs. However, we do not want to be caught off guard. There need to be realistic assessments of the risks and prioritize.

C. FEDERAL MARKETS

As the nation’s landlord, the federal government can play a significant role in modernizing the nation’s building stock to introduce energy efficiencies, reduce the emissions associated with the life cycle of a building, and build greater resiliency to extreme weather. The U.S. General Services Administration (GSA) has \$3.9 billion worth of unmet maintenance and modernization needs.⁸ Federal agencies, including GSA, already have adopted green guidelines and standards for new construction and major renovation. Federal buildings also include military facilities, prisons, border stations and embassy compounds. Modernizing the federal building stock will immediately introduce energy and water savings, and it will set a role model for local governments to incorporate green building practices into their public buildings.

⁸ Congressional Research Service, Repairs and Alterations Backlog at the General Services Administration, June 12, 2020, available online at: <https://crsreports.congress.gov/product/pdf/R/R46410/2>.

Our nation's dams, levees and pumping stations are an important source of energy generation, water storage for drinking and irrigation, and flood control; yet they are increasingly unsafe and unreliable.⁹ Even without the current political focus on climate change and adapting communities to withstand extreme weather patterns—from droughts to monsoons, blizzards to heat waves—as well as severe storms, these infrastructure are vital to sustaining our communities. In addition to the human and property costs, the damage wrought by storms and breaches of flood controls exact a huge environmental toll.

Improving the resiliency of these structures will take significant investment, education, and a recognition that all participants will need time to comply, prepare, and budget for new requirements.

- Top Opportunities
 - Federal Agency Resilience Initiatives - Includes water and energy security for bases and other installations.
 - Water/Flood Control Projects
 - Total Cost of Ownership - For example, life cycle costs/assessment can allow for better decision-making.
 - Other Opportunities Discussed - Green buildings incl. net zero, high performing buildings (include security, safety, durability and sustainability), environmental restoration, shorelines, and hydroelectric.
- Concerns (Concerns have not been ranked)
 - Education on Costs - Need training of the federal and state workforce on lifecycle assessment and costs. Costs need to be tied to a benefit, and those benefits need to be clear and concise. The total cost will be different from the initial cost.
 - Funding and Financial Incentives
 - Transition Time and Cost for New Requirements – Need time to comply, prepare, and budget.

D. UTILITY INFRASTRUCTURE MARKETS

An investment in communities and their sustaining infrastructure is an investment in the future, and that includes protecting our water and energy resources to make our communities greener—and safer. Our nation's drinking water and wastewater infrastructure, particularly the aging network of systems that convey this precious resource, are in critical need of attention. In 2010, the U.S. EPA and the Congressional Budget Office warned of a massive investment gap over the next twenty years within the drinking water and wastewater sector.¹⁰ A recent study shows the annual investment gap is expected to reach \$434 billion by 2029.¹¹ Leaking pipes and crumbling infrastructure are

⁹ The American Society of Civil Engineers, 2021 Report Card for America's Infrastructure has given dams, levees, and stormwater infrastructure D grades, available online at <https://infrastructurereportcard.org/>.

¹⁰ Congressional Research Service Report for Congress, Water Infrastructure Needs and Investment: Review and Analysis of Key Issues, updated December 21, 2010. <http://fas.org/sgp/crs/homesec/RL31116.pdf>.

¹¹ American Society of Civil Engineers and the Value of Water Campaign, "The Economic Benefits of Investing in Water Infrastructure: How a Failure to Act Would Affect the U.S. Economic Recovery," 2020.

responsible for billions of gallons of lost water every day¹² and, in many parts of the country, wet weather events regularly lead to overflowing systems that release waste and chemicals into the environment—damaging aquatic ecosystems and causing human illness.

Emissions from electricity generation account for 25 percent of GHG emissions in 2019. In 2008, only 20 percent of our electricity generation came from sources other than fossil fuel combustion. By 2019, that number has grown to 38 percent (nuclear and renewables).¹³ There is vast need and interest in continuing to diversify and expand our energy portfolio to maximize other energy sources such as hydropower, biomass, nuclear, wind, solar and geothermal energy. Permits for new plants, upgrades to existing plants, and the necessary support infrastructure (e.g., tie-ins) need to be streamlined and given top priority to reduce delays that can set back the nation’s energy needs by decades.

The utility infrastructure market sector will likely see a surge in opportunity in the coming decades to improve the resilience of our water infrastructure and with energy decarbonization. However, the concerns about permitting delays, funding, workforce, and grid capacity are significant. It is essential that resilience efforts remain flexible so that communities can make the choices that make sense for their region, local concerns, and budgets.

- Top Opportunities
 - Water Capture and Use – Includes stormwater collection, control, and use.
 - Drinking Water and Conservation - Includes source protections, treatment, and distribution as well as repairing leaking pipes and covering canals as well as advancements in greywater processing and reuse.
 - Renewable Energy Projects – Includes associated support infrastructure (e.g., tie-ins)
 - Carbon (and Other Greenhouse Gases) Capture and Sequestration – Includes biological and artificial processes and other greenhouse gases (such as methane from wastewater treatment and landfills).
 - Other Opportunities Discussed - Although not one of the top three, wastewater collection and treatment will remain a focus for project owners and to a lesser extent green infrastructure (biological controls). Desalination has not been a notable trend. Further trends to watch on the energy side are smart grid technologies, micro grids, and carbon capture and sequestration. Natural gas projects may be deemphasized in the future.

¹² The 2021 Report Card for America’s Infrastructure estimates 6 billion gallons of water lost per day. The fact sheet is available online at: <https://infrastructurereportcard.org/wp-content/uploads/2020/12/Drinking-Water-2021.pdf>. The Report Card references a Center for Neighborhood Technology report, *The Case for Fixing the Leaks*, 2013, available online at: http://www.cnt.org/sites/default/files/publications/CNT_CaseforFixingtheLeaks.pdf.

¹³ See, U.S. Environmental Protection Agency Greenhouse Gas Emissions Webpages, Electricity Sector Emissions, <https://www.epa.gov/ghgemissions/sources-greenhouse-gas-emissions>, accessed June 14, 2021. Estimates based on the *Inventory of U.S. Greenhouse Gas Emissions and Sinks* 1990-2019 available online at: <https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks>.

- Concerns (Concerns have not been ranked)
 - Funding - There is a great need for funding across the board, urban and in rural areas.
 - Resilience - Water infrastructure, in particular, is old and not very resilient. Federal, state and local governments have to address capacity issues as well as flooding risks.
 - Addressing Short-Term and Long-Term Needs – Policy makers will need to factor regional considerations in the discussion (hurricanes, drought, flooding, wildfires, etc.) as well as identify what can be done short-term such as flood walls and long term to address the needs.
 - Educating the Public/ Policymakers on Water Issues – Greater awareness about water districts’ needs, their top issues, and requirements that impact them is required.
 - Grid Capacity - Concern that the grid cannot take the added strain of a “plug and play/drive” energy demands while deemphasizing fossil fuels.
 - Educating the Public/ Policymakers on Energy Issues - Essential components of our energy infrastructure may be held up because of a lack of understanding of how these projects tie together and what is needed to improve the grid and energy security.
 - Workforce – Renewables can be remote projects. It is a challenge to hire and train workers with the hope that they follow you to the next project in 6, 12, or 18 months.

VI. CONTRACTOR OPERATIONS

Contractors, and our partners in the building professions, have responded to the call to reduce the impact of our built environment on our natural environment. We have built green buildings. We have incorporated recycled materials into our roadways, bridges and buildings for more than half a century. We have created more efficient transportation systems that cut congestion and reduce wasted fuel. We have built and upgraded water treatment facilities, repaired waterways and restored wetlands. And we have cleaned polluted sites and revitalized blighted areas.

At the same time, AGC recognizes that the construction process affects the environment. Construction contractors are the most visible participants in real estate development, and construction (by its very nature) alters the environment. The task force explored ways in which contractors have demonstrated environmental leadership as well as areas where climate policies can cause concern with equipment or construction means and methods.

The U.S. Environmental Protection Agency (EPA) estimates that the construction industry emits around 1-2 percent of the total U.S. manmade GHG emissions.¹⁴ These emissions come from

¹⁴ There is not a definitive percentage of greenhouse gas emissions for the construction industry. AGC uses the estimate of 1-2% of U.S. total emissions based on two resources. The U.S. EPA inventory of GHG emissions and sinks indicates that the equipment from construction and mining combined emitted 1.1 percent of total U.S. manmade GHG emissions in 2019. This does not reflect electricity use onsite. See <https://www.epa.gov/sites/production/files/2021-04/documents/us-ghg-inventory-2021-main-text.pdf>. Another report from the U.S. EPA focuses solely on construction and estimates that construction industry accounts for 1.7 percent of total U.S. GHG emissions. See U.S. Environmental Protection Agency, Potential for Reducing Greenhouse Gas Emissions in the Construction Sector, February 2009, archived copy available online at <https://archive.epa.gov/sectors/web/pdf/construction-sector-report.pdf>. This report is dated; however, it is the

equipment use and energy consumption on jobsites. As seen below, contractors have provided multiple examples of strategies to reduce emissions through choices about equipment and vehicles, lighting, jobsite facilities, and even the power tools used on projects. For example, routine equipment maintenance and voluntary “no idling” policies could lead to reduced fuel consumption and related emissions.

Contractors also can help reduce emissions associated with the use of virgin materials by recycling construction and demolition debris¹⁵ (where feasible), deconstructing and repurposing materials (when allowed by the project owner), and beneficially using industrial materials (e.g., fly ash, roofing shingles and recycled asphalt).¹⁶ For example, concrete is one of the most common construction and demolition debris (C&D) materials (concrete, wood, drywall, steel, bricks/clay, asphalt, etc.). A recent report from the U.S. Environmental Protection Agency shows that C&D debris is diverted from landfills in 76 percent of cases and for concrete alone, about 301 million tons were reused as aggregate in 2018.¹⁷

In addition to the examples below, members have signed commitments to improve their environmental performance,¹⁸ made sustainability reports available to the public,¹⁹ partnered with higher education and other companies on material advancements,²⁰ volunteered as speakers to help

only comprehensive look at the construction industry’s emissions as well as the intensity of those emissions. The construction industry’s carbon intensity is low, meaning a small amount of emissions come from many discrete sources (i.e., equipment, project sites).

¹⁵ A draft joint industry-government white paper summarized possible reductions in greenhouse gas emissions related to recycling: “Steel has an emissions factor of 1.79 metric ton carbon dioxide equivalent (CO₂e)/short ton material and is recycled at the amount of 40 million tons annually, which provides the total emissions avoided through recycling steel at 71,600,000 metric tons CO₂e annually. Likewise, asphalt has an emissions factor of 0.03 metric ton CO₂e/short ton material and is recycled at the amount of 139 million tons annually, which provides the total emissions avoided through recycling asphalt at 4,170,000 metric tons CO₂e annually. Concrete is estimated at 1,400,000 metric tons CO₂e of annual emissions avoided through recycling.” These calculations are drawn from the U.S. Environmental Protection Agency, Potential for Reducing Greenhouse Gas Emissions in the Construction Sector, February 2009, archived copy available online at <https://archive.epa.gov/sectors/web/pdf/construction-sector-report.pdf>.

¹⁶ Incorporate recycled materials programs into your operations, including: concrete (from roads, curbs, sidewalks, barriers) into base materials, metals collected for scrap, recycled oil for reusable fuel, water reuse for equipment washing and maintenance, and incorporating roofing shingles and recycled asphalt pavement (RAP) into new asphalt paving. Recycled materials also lend readily to quantifying amounts, which can be helpful for measuring savings. For example, one company reported that its facilities can use up to 110,000 tons of RAP each year.

¹⁷ U.S. Environmental Protection Agency, Advancing Sustainable Materials Management: 2018 Fact Sheet, December 2020, see online at https://www.epa.gov/sites/production/files/2021-01/documents/2018_ff_fact_sheet_dec_2020_fnl_508.pdf.

¹⁸ The Beck Group has signed onto BuildingGreen’s The Contractor Commitment, see online at <https://www.beckgroup.com/news/beck-signs-commitment-sustainable-building-practices/>.

¹⁹ Granite Construction makes their sustainability reports available online at <https://www.graniteconstruction.com/company/building-better-future-today>.

²⁰ Skanska worked with over 30 other organizations on an embodied carbon calculator tool, see online at <https://www.constructiondive.com/news/skanska-usa-unveils-embodied-carbon-tool/563951/> and <https://buildingtransparency.org/ec3>. Knife River teamed up with Blue Planet on low-carbon concrete, see online at <https://www.prnewswire.com/news-releases/knife-river-corporation-invests-in-blue-planet-to-explore-synthetic-aggregates-301197120.html>.

raise awareness within the industry, and partnered with AGC on books and educational programs on green building as well as on establishing an internal environmental program.²¹

Green Strategies Shared by AGC Members

- Energy conservation on project sites
 - Solar-powered trailers (renewables for temporary power generation)
 - Energy efficient jobsite lighting
 - Battery powered tools
- Fuel and equipment use (air emissions reductions)
 - Carpooling and/or transit incentives
 - Anti-idling policies²²
 - Right sized equipment and right sized vehicle policies
 - Hybrids –fleets (e.g., light duty vehicles)²³
 - Vehicle and equipment maintenance
 - Fuel –e.g., biodiesel
 - Engine retrofits (criteria pollutants)
- Jobsite recycling²⁴
- Jobsite water conservation/management
- Office initiatives
 - Paperless office²⁵
 - Energy efficient office equipment
 - eWaste management
 - Recycling –cans, paper, etc.
 - Purchasing –renewable energy credits (carbon offsetting)
 - Purchasing –environmentally friendly office supplies
 - Green cleaning/housekeeping
 - Green-certified office space (e.g., Leadership in Energy and Environmental Design, GreenGlobes, or WELL Building Standard, etc.)

²¹ One contractor's sustainability plan relies on five steps: committing, educating, preventing pollution, reducing waste, and conserving resources. Their program addresses issues such as greening their offices, sites, equipment, fuel use, etc. It uses simple techniques like environmental purchasing at the office, using recycled materials for formwork, preventative maintenance, renewable technologies for temporary onsite power, etc. They track and report on progress for each jobsite. *Environmental Stewardship and Construction Site Sustainability, Walbridge, Contractors Environmental Conference (CEC), 2013.*

²² Establish an anti-idling program to reduce fuel consumption, emissions, noise pollution and needless engine wear and tear. One company's estimated fuel savings were more than \$800,000 on just one project. *Benefits of Idling Policy, Kiewit Corp., CEC 2012.*

²³ Save fuel by switching to hybrids for fleet vehicles. One contractor explored alternative fuel vehicles and estimated potential fuel savings using entire fleet of hybrid vehicles at \$38,194.

²⁴ Build a construction site recycling program to reduce disposal costs, generate revenue from the sale of materials, and create opportunities for tax breaks through material donations. Recycling savings on one project were \$44,900, a 15 percent savings in disposal costs. Another job saw \$133,080 in savings in disposal costs. "Success depends on job team collaboration and communication." *Construction Site Recycling Program, Kitchell Environmental Services, CEC 2012.*

²⁵ Paperless distribution of paystubs, accounting, and project documents saved more than \$1M over two years at one firm.

The task force also identified several challenges related to construction operations:

- The Contractor's Role – AGC needs to educate leadership/policymakers about construction practices and roles: when and how contractors can influence design and material choices.
- Benefits of Infrastructure – AGC needs to improve understanding about the communal benefits of infrastructure and how construction can bring about tangible benefits to the local community, improve health and safety, as well as spur economic development and opportunities.
- Supply Chains – AGC needs to highlight how climate policy can impact material selection and supply chains leading to shortages of common materials or creating demand for products that are not widely available. This may increase costs for capital expenditure or materials and introduce a learning curve for adoption. For example, energy policy could impact costs of energy intensive materials such as concrete and asphalt.
- Equipment Performance – The industry is very concerned that the next generation equipment does not meet performance standards—resulting in the need for more pieces of equipment in operation and more trucks on the road to complete the same tasks. Electric or hybrid equipment is prohibitively expensive to purchase and comes with high maintenance costs and challenges.
- Declining Asset Values – There was widespread concern about the rise in new equipment prices compared to the rate of decline in value of older equipment. Equipment is a significant investment and there is growing lack of confidence that the regulations and standards will safeguard the use of purchased equipment in the long run.

Additional Considerations

- Sustainability Awareness and Communication – AGC should provide education on sustainable practices and should promote the generation of new ideas and efficiencies within the team: How can we perform a task more sustainably?
- Impact on Small and Emerging Businesses – Recognize that these firms have similar concerns with assets, equipment, and ability to participate in a changing market. Increased requirements related to climate will impact these firms greatly from cost of implementation to training and acquiring needed technology. All programs should ensure that women, minority owned and/or small businesses have the ability to compete for work on infrastructure projects.
- Workforce – The need to attract and retain workers is a pressing concern in the industry. Opportunities to develop, train and upskill construction workers should be considered without regard to employer—union or open-shop. Government neutrality in construction contracting is essential to maintaining fair and robust competition. There was a broad recognition that the industry will also need to train workers on technology and compliance.
- Insurance and Risk – Much of the risk associated with weather costs and delays as well as for materials and technologies will shift to the contractor. Yet the contractor cannot fully account for weather issues in construction schedules and contract language, which necessitates delay coverage. The insurance industry is evaluating risks but needs more education about impacts to construction projects.
- Prescriptive Policies - Concern over policies that impact construction materials and processes, for example, a local ordinance that restricts fossil fuel use during building

construction that will increase costs, may not be feasible, and could lead to safety hazards. Other policies restrict equipment use, require anti-idling (not always feasible or safe). This includes concerns about demands to retire equipment early.

- Materials Transparency – There is an obligation on everyone in the building and development industries to be part of the discussion on materials. This includes issues such as embodied carbon, environmental product declarations, and clean materials.
- Jobsite Resilience – There is a significant need to make sure we plan to keep the jobsite up and running. This includes consideration of jobsite technology, battery storage, temporary and renewable energy onsite, future proofing, and accounting for regional needs.

Respectfully Submitted to the AGC Board of Directors on July 7, 2021.

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