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Concrete Solutions to Architecture 2030 Challenge

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In an effort to help concrete producers reduce carbon footprint of their product and the buildings their products are built with, the National Ready Mixed Concrete Association (NRMCA) has signed on to the Architecture 2030 Challenge. The 2030 Challenge for Products is a global challenge to specify and manufacture products that meet a carbon footprint of 50% below industry average by 2030. The 2030 Challenge for Products builds on the widely adopted original 2030 Challenge, which calls for the operation of all new buildings and major renovations to be carbon neutral by 2030.

The concrete industry is uniquely positioned to meet the challenge of reducing carbon footprint:

- High performance concrete wall and floor systems help improve energy performance of buildings
- Light colored pavements reduce urban heat islands and minimize lighting requirements
- Concrete is extremely durable and provides for long service life thus reducing maintenance and waste
- Concrete uses fly ash, slag cement and silica fume along with other industrial byproducts to lower carbon footprint.

And as the industry continues to develop new sustainable products through research and development, concrete's embodied footprint will continue to decrease and concrete products used in buildings will help achieve low carbon footprint buildings.

What is Architecture 2030?

Architecture 2030 is a non-profit organization developing Building Sector solutions to the global energy and climate crises. 2030's mission is to rapidly transform the built environment – to achieve dramatic reductions in fossil fuel consumption and greenhouse gas (GHG) emissions by changing the way cities, communities and buildings are planned, designed and built.

What is the Architecture 2030 Challenge?

The building sector is responsible for almost half the energy consumption (49%) and greenhouse gas (GHG) emissions (47%) in the U.S. Slowing the growth rate of GHG emissions in the building sector is the key to addressing climate change. To accomplish this, Architecture 2030 issued The 2030 Challenge in 2006, asking the global architecture and building community to adopt targets for reducing GHG emissions from building operations.

All new buildings, developments and major renovations shall be designed to meet a fossil fuel, GHG-emitting, energy consumption performance standard of 60% below the regional (or country) average for that building type. The fossil fuel reduction standard for all new buildings and major renovations shall be increased to 100% in the year 2030 with intermediate targets as shown in Figure 1. These targets may be accomplished by implementing innovative sustainable design strategies, generating on-site renewable power and/or purchasing (20% maximum) renewable energy.

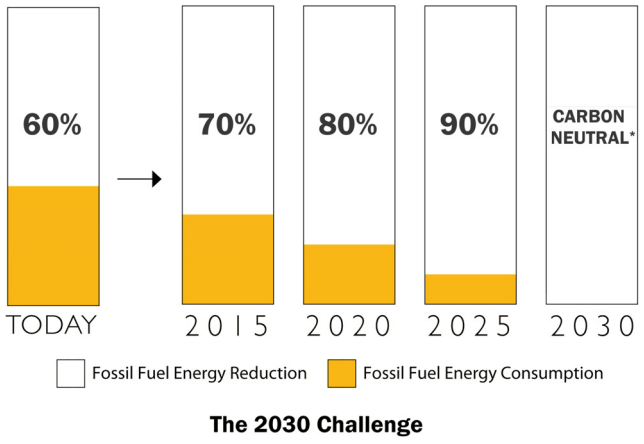

Figure 1. The 2030 Challenge is a global challenge to design new buildings and renovate existing buildings to be carbon-neutral in 2030 with intermediate targets shown here.

What is the 2030 Challenge for Products?

While the majority of the energy consumption, and their associated emissions, come from building operations, the embodied energy and emissions of building materials and products are also becoming increasingly significant. Approximately 5.5% to 8% of the total annual U.S. energy consumption comes from building products and construction. Resource extraction, manufacturing, transportation, construction, usage and end-of-life stages of building products generate significant GHG emissions.

The 2030 Challenge for Products issued in 2011, asks the global architecture, planning, design, and building community to adopt targets for reducing GHG emissions from building products. Products for new buildings, developments and renovations shall immediately be specified to meet a maximum carbon-equivalent footprint of 30% below the product category average. The embodied carbon-equivalent footprint reduction shall be increased to 50% or better in 2030 with intermediate targets shown in Figure 2.

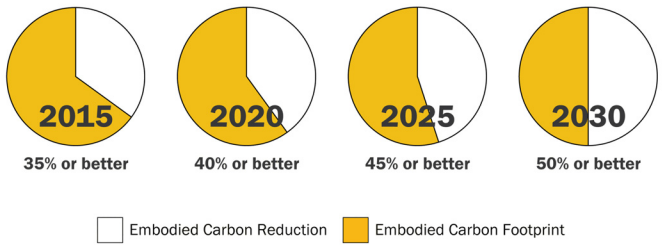

Figure 2. The 2030 Challenge for Products is a global challenge to specify and manufacture products that meet a carbon footprint of 50% below the product average in 2030 with intermediate targets shown here.

To demonstrate progress toward meeting the Challenge, a product manufacturer should conduct a Life Cycle Assessment (LCA), which calculates the carbon footprint of a product. Upon completion, the results of the LCA should be published in an Environmental Product Declaration (EPD) for their products once Product Category Rules (PCR) are established.

Who's Adopted the 2030 Challenge

The 2030 Challenge has been adopted by many key organizations, including: The U.S. Green Building Council, The American Society of Heating, Refrigerating and Air-Conditioning Engineers, World Business Council for Sustainable Development, Association of Collegiate Schools of Architecture, National Wildlife Federation, numerous universities, most of the world's top design firms and other organizations, including NRMCA.

Governments at all levels have also adopted the 2030 Challenge. The U.S. Federal Government, through the passage of The Energy Independence and Security Act of 2007, requires new federal buildings and major renovations meet the energy performance targets of the 2030 Challenge. Other governmental organizations include the National Governors Association, National Association of Counties, the states of California, Illinois, Minnesota, New Mexico, Ohio, Oregon, Washington and Vermont along with numerous cities and counties.

NRMCA Commitment to Low Carbon Future

As part of its strategy to meet the 2030 Challenge, NRMCA has become an EPD Program Operator to facilitate the development and verification of EPDs and establish industry baselines for concrete. EPDs are third-party verified (certified) reports published by product manufacturers that provide quality assured and comparable information regarding environmental performance of their products. NRMCA has also helped develop a PCR for concrete that provides instructions on how to conduct an LCA for concrete and report impacts in an EPD.

NRMCA's commitment to sustainability was outlined in the 2009 report titled NRMCA Sustainability Initiatives which provides a vision along with strategies and goals for lowering the environmental footprint of concrete and details research, education, measurement and advocacy programs to help its members meet these goals. For more information on Architecture 2030, visit www.Architecture2030.org. For more information on NRMCA Sustainability Initiatives and EPD Program, visit www.nrmca.org/sustainability.

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