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High **P**erformance **B**uildings **R**esearch and **I**mplementation **C**enter

HiPerBRIC

A White Paper on Research and Development Programs in Support of HiPerBRIC Goals

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ABSTRACT

For the United States to substantially reduce its carbon emissions footprint while maintaining healthy economic growth, it is critical that energy consumption is reduced significantly on the demand side while low carbon or carbon-free sources are developed on the supply side. Since nearly 40 percent of U.S. energy consumption is in buildings, and 20 percent alone in commercial buildings, reducing building energy consumption is critical. This is also true for developing economies such as China and India, which are witnessing substantial growth in new commercial buildings. For the U.S. to take global leadership in this sector, a strong research, development and implementation program must be created that forms the bedrock of an innovation revolution in the design and operation of energy efficient commercial buildings. To address this national and global need, the High Performance Buildings Research & Implementation Center (HiPerBRIC) is proposed to be created, which will be a partnership between the National Laboratories, Industry and Academia that engages relevant stakeholders to provide the broad and deep R&D base needed to enable market transformation in the commercial building sector. The vision of HiPerBRIC is to enable the transformation of the U.S. commercial buildings sector in 15-20 years, starting now, by saving greater than 4 Quads of energy, and reducing by 400 million tons of CO2 annually. This will be accomplished by targeting a reduction in energy consumption of 90% in new buildings (over current baselines) and more than 50% in retrofits, at reasonable economic costs, while simultaneously improving health, comfort, safety/security, and water usage, in commercial buildings.

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