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"CLIMATE CHANGE: THE COST OF INACTION"
Before the
U.S. SENATE COMMITTEE ON THE BUDGET
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Chairman Sanders, Ranking Member Graham and Members of the Committee, I am George Oliver, Chairman and Chief Executive Officer of Johnson Controls International. I also have the privilege of chairing the Energy and Environment Committee of Business Roundtable. I am appearing today on behalf of both Johnson Controls and Business Roundtable. Thank you for holding this important hearing to examine the costs associated with failure to address climate change and for the invitation to appear before you.

Founded in 1885, Johnson Controls is a global leader in smart, healthy and sustainable buildings technology solutions. The company has a global team of 100,000 employees, with deep industry knowledge and expertise and serves more than four million customers in 150 countries around the world. Our core building systems portfolio includes heating, ventilation and air conditioning (HVAC), Building Automation & Controls, Fire, Security, and Industrial Refrigeration and our connected technologies and digital capabilities help our customers optimize their facilities performance, enhance occupant experiences and meeting their own energy efficiency and sustainability goals.

Business Roundtable is an association of chief executive officers of America's leading companies working to promote a thriving U.S. economy and expand opportunity for all Americans through sound public policy.

Business Roundtable exclusively represents chief executive officers (CEOs) of America's leading companies. These CEO members lead companies with 20 million employees and more than $9 trillion in annual revenues. As major employers in every state, Business Roundtable CEOs take seriously the responsibility of creating quality jobs with good wages. These leaders join with communities, workers and policymakers to build a better future for the nation and its people.

Climate Change is Real and Must be Addressed

In 2007, Business Roundtable became the first broad-based business organization to recognize the threat posed by climate change and to acknowledge the need to address it. As its 2007 Climate Statement noted "[b]ecause the consequences of global warming for society and ecosystems are potentially serious and far-reaching, steps to address the risks of such warming are prudent even now, while the science continues to evolve." The science has evolved over the past 14 years and it has become even clearer the world must address the causes of climate change if we are to avoid its worst effects.

In September of last year, Business Roundtable adopted an updated climate statement which acknowledged there is a scientific consensus that the climate is changing and human activities are contributing to that change. The statement emphasized that "[u]nchecked, the changing climate poses significant environmental, economic, public health and security threats to countries around the world, including the United States. The risk of unanticipated changes and impacts -- some of which may be large and irreversible -- will only increase as the Earth's system warms more quickly."

The statement also stressed that "[t]he consequences of climate change for global prosperity and socioeconomic well-being are significant; the world simply cannot afford the costs of inaction."[1]

At Johnson Controls, sustainability is our business. We have been reporting our emissions and taking action to reduce our footprint for 20 years. We were among the first industrial companies to join the UN Global Compact and through an aggressive series of enterprise-wide initiatives, we have cut our energy intensity by more than 50% and our greenhouse gas intensity by more than 70%. Our efforts have been recognized by many third-party organizations, and we are proud to be AAA MSCI rated, included in more than 40 sustainability indices, and named to the World's Most Ethical Companies Honoree List and one of the 100 Best Corporate Citizens. In January 2021, we announced ambitious new sustainability commitments that outline our priority to make positive changes in reducing our company's environmental footprint. Building on our history of sustainability leadership, we committed to achieving net zero carbon emissions before 2040 and announced science-based targets for 2030. We set a goal to double our customers' emission reductions through implementation of our OpenBlue digitally enabled solutions.

The Costs of Inaction

While costs associated with failure to address climate change may be difficult to quantify precisely, we know these costs exist and failure to address global climate change could mean trillions of dollars in lost U.S. GDP over the coming decades. The adverse economic impacts of a "business as usual" emissions trajectory would be felt across the entire economy, from the labor market, to healthcare, productivity, business investment, infrastructure, and real estate. Economic models only scratch the surface when it comes to forecasting the costs of climate change as they cannot fully capture the impact of uncertainty on economic activity, human health, productivity, quality of life, agriculture, and business investment, particularly decades into the future. Despite the limitations of existing models, economic and climate research shows that "business as usual" emissions pathways could severely impact U.S. economic growth over the coming decades. Under the UN's Intergovernmental Panel on Climate Change "unmitigated emissions growth" scenarios, the U.S. could face a significant GDP penalty over the next several decades, on the order of a 10.5% per capita decline by 2100.[2]

In a technical analysis done for the Fourth National Climate Assessment, a multi-U.S. agency report mandated by Congress, EPA, assuming business-as-usual emissions, estimated that by 2050, major natural disasters will increase in frequency and cause an estimated $112 billion per

[1] Business Roundtable, *Addressing Climate Change; Principles and Policies* (2020). (Link)
[2] Kahn, M. et al (2019). *Long-term Macroeconomic Effects of Climate Change: A Cross-Country Analysis*. NBER Working Paper. (Link)

year in damages; and extreme temperature mortality will lead to an additional 3.4 thousand deaths annually with $43 billion in lost wages per year.[3] Another study concluded coastal property will face increased risk as real estate valued between $66 billion and $106 billion falls below sea level.[4] Yet another study estimates *annual* direct U.S. losses for extreme weather events and wildfires could double by 2090 to $156 billion.[5]

It is clear the risks associated with unchecked climate change are real; the risks are increasing; they are likely to be costly; and some changes could be irreversible. Other risks, such as those associated with national security, are not easily captured by economic models but they are just as real and must be taken into consideration.

The U.S. Must Lead by Example

The world still has time, although very little time, to avoid the "business-as-usual" scenarios used in most of the economic models I have cited. In order to avoid the worst impacts of climate change, the world must work together to limit global temperature increases. The United States and the international community must aggressively reduce greenhouse gas (GHG) emissions and create incentives for developing new technologies to achieve these reductions. Johnson Controls and Business Roundtable support a comprehensive policy to reduce GHG emissions.

Core principles to guide this comprehensive public policy should include the following:

- Align policy goals and GHG emissions reduction targets with scientific evidence.
- Increase global engagement, cooperation and accountability.
- Leverage market-based solutions wherever possible.
- Provide for adequate transition time and long-term regulatory certainty.
- Preserve the competitiveness of U.S. businesses, including avoiding economic and emissions "leakage".
- Minimize social and economic costs for those least able to bear them.
- Support both public and private investment in low-carbon and GHG emissions reduction technologies along the full innovation pipeline.
- Minimize administrative burdens and duplicative policies while maximizing compliance flexibility.
- Ensure that U.S. policies account for international emissions reductions programs.
- Advance climate resilience and adaption.
- Eliminate barriers to the deployment of emissions reduction technologies and low-carbon energy sources.

[3] EPA (2017). *Technical Report for Quantitative Sectoral Impact Analysis: A Technical Report for the Fourth National Climate Assessment*. (Link)
[4] Houser, T. et al. (2015). *Economic Risks of Climate Change; An American Prospectus*. Columbia Univ. Press. (Link)
[5] RMI (2020). *Our Climate as an Infrastructure Asset*. (Link) (Damage estimates derived from Fourth National Climate Assessment (2017)

Both business and government must lead by example to address this challenge. A growing number of U.S. and global companies have adopted GHG emissions pledges, many of which commit to "net-zero" GHG emissions by 2050.

Let me address some of the key policies that will be necessary to meet the scope of the climate challenge.

Drive Energy Efficiency

First, the United States should continue to cost-effectively and reliably reduce emissions by improving the efficiency of energy production, distribution and use – even as we continue to invest in new innovations and technologies. Sustained advances in energy efficiency technologies, in combination with wider deployment of those technologies across the transportation, buildings, industrial and commercial sectors, have resulted in flattening energy demand in the United States since the mid-2000s, even as economic activity picked up after the 2008-09 recession.[6] While it is too soon to be certain what energy demand will be following full economic recovery from the COVID-19 pandemic, there is every reason to believe the efficiency trends in place before the pandemic will continue once a full recovery is in place. Sound public policy—including especially legislation encouraging public private partnerships, strong model building codes, and energy savings contracts can help accelerate these trends.

Since 40% of global CO_2 emissions are from the building sector and three quarters of those emissions are attributable to building operations, Johnson Controls is always looking at better ways we can help our customers optimize building performance and achieve deep sustainability outcomes. This extends to the way we support our customers in the Federal Government.

For example, we are embarking on a partnership with the U.S. General Services Administration (GSA), to significantly upgrade several historic buildings in the National Capital Region including the Ronald Reagan Building and International Trade Center, the New Executive Office Building, the Eisenhower Executive Office Building, the Jackson Place complex, the Winder Building, and the Civil Service Building.

These facility improvements will be implemented under an Energy Savings Performance Contract (ESPC) that will result in guaranteed savings of about $6.2 million per year in energy and water and reduce greenhouse gases by 20,000 tons per year - the equivalent of removing 4,500 cars from the road. Leveraging Johnson Controls' comprehensive suite of building solutions, upgrades will include HVAC, lighting, water conservation, and energy management systems. Moreover, we will deploy Johnson Controls' "OpenBlue" digital capabilities to enable such significant efficiency improvement to be achieved and to future-proof these historic buildings—positioning them to be smart, connected, and sustainable.

Our company's sustainability commitments also advance national security and diplomatic objectives. For example, U.S. Army Garrison Kwajalein Atoll (USAG-KA) is home to the

[6] U.S. Energy Information Administration (2021, March) Monthly energy review, Consumption by sector; Table 2.1 https://www.eia.gov/totalenergy/data/monthly/.

Ronald Reagan Ballistic Missile Defense Test Site (RTS). The RTS, which supports ballistic missile defense systems and space operations, is crucial to the national defense strategy. The installation is very remote, located 2,100 miles from Hawaii in the Republic of the Marshall Islands. At present, all power is generated onsite by diesel-fueled power plants; no offsite utility providers exist—posing a threat to facility operations. That is about to change: as part of a three-phased ESPC partnership with the Army, Johnson Controls will design and build resilient energy solutions, including island-wide photovoltaic distributed generation and battery storage controlled by a cyber-secure microgrid. The project reduces dependence on diesel fuel by 55% and delivers 8 tons of greenhouse gas emission reductions.

Currently, the Army is reviewing a proposed Phase II ESPC project from Johnson Controls that would utilize sea water to help provide cooling for the main island of Kwajalein. The ability to utilize sea water would also provide the installation with a resource to produce their own potable water through a reverse osmosis plant. The project would reduce energy requirements of the Island by 29% and achieve another 25 tons of greenhouse gas emission reductions, while saving the Army $13M in the first year of operation [can we add an expected lifetime savings number?]. We look forward to approval of the next phase of this project to further assist the Army in achieving their strategic goals.

Johnson Controls is also leading similar sustainability efforts for our customers in the education, housing, state and local government, corrections, healthcare and commercial sectors.

For example, Mr. Chairman, in your home state of Vermont, Johnson Controls partnered with Rutland City Public Schools over the past decade to implement three enormously successful energy saving performance contracts. These projects have allowed for the repair and modernization of school facilities and cut the carbon footprint of the buildings, while substantially reducing the need for capital funding because the upgrades are being paid for with energy savings. In fact, the District realized a 31 percent energy reduction during fiscal year 2020 from the combination of the Phase 1 and Phase 2 projects as compared to 2008 energy usage. Phase 3 is lowering the District's electrical usage by an additional 44 percent.

Senator Graham, in your home state, Johnson Controls completed a similar project for the City of Charleston in which we reduced energy and water use throughout their 3.67 million square feet of building space and 1,806 acres of parks. Through lighting and building control system upgrades, building envelope improvements, and HVAC replacement, we saved the city over $15 million, provided over $17 million in infrastructure renewal and reduced CO2e emissions by over 45,250 metric tons.

These energy savings performance contracts are one of many creative ways in which the private sector can partner with government to maximize climate-friendly infrastructure improvements, while decreasing the burden on the taxpayer. We encourage Congress to support these efforts wherever possible.

Invest in Technology

Even fully maximizing energy efficiency opportunities and deploying existing emissions reduction technologies will not be sufficient to achieve the ambitious goal of net-zero emissions by 2050 that many companies have adopted. In many cases, achieving these targets will require new technologies to move through the innovation pipeline to reach commercial viability. In some cases, such as the building sector in which Johnson Controls operates, there is a clear pathway to achieving significant carbon reductions in a cost-effective way in the near future. Other sectors, however, such as the steel, chemical and cement industries, will find it extremely difficult to achieve meaningful carbon reductions without new breakthrough technologies becoming technically and economically viable.

Achieving the emissions reductions needed in these and other sectors means investing now in solutions needed over the long-term. Energy innovation is characterized by high capital-intensity, high risk and potentially lengthy payback periods. These conditions create a clear need for public investment and support, which Congress has the opportunity to provide. We were encouraged to see that the President's American Jobs Plan called for a significant increase in research and development funding devoted to clean energy and other associated enabling technologies, and we look forward to working with Congress and the Administration on this important issue. We support at least doubling federal funding from current levels for advanced energy innovation and further support doubling total climate-related research funding, including funding for adaptation, resiliency and mitigation research.[7] In addition to stepping up funding, RD&D programs must be better coordinated across economic sectors and focused on technologies that are most likely to reduce GHG emissions on a life-cycle basis and to achieve global cost-parity with high-emissions competitors.

Place a Price on Carbon

A market-based emissions reduction strategy that includes a price on carbon where it is environmentally and economically effective and administratively feasible provides an effective incentive to reduce GHG emissions and mitigate climate change, including through the development and deployment of breakthrough technologies. Paired with robust, targeted public support for research and development, and smart, non-duplicative regulations, establishing a clear price signal is an impactful approach for encouraging innovation in the new technologies needed to reach ambitious mid-century climate goals, driving efficiency, and ensuring sustained environmental and economic effectiveness. Properly constructed, a price on carbon can also

[7] Business Roundtable was informed by work done by the American Energy Innovation Council. (2015, February). Restoring American Energy Innovation Leadership: Report Card, Challenges, and Opportunities, available at: AEIC-Restoring-American-Energy-Innovation-Leadership-2015.pdf. *See also:* Energy-Innovation-Fueling-Americas-Economic-Engine.pdf (americanenergyinnovation.org). A doubling would result in a budget slightly over $16 billion per year for clean energy research. A December 2020 report by the Energy Innovation Council called for tripling clean energy R&D to $25 billion per year for deep decarbonization: http://americanenergyinnovation.org/2020/12/energy-innovation-developing-the-technologies-for-decarbonization/. For recommendations regarding better coordination see GAO, *Analysis of Reported Federal Funding: A Report to the Chairman, Committee on Science, Space and Technology, House of Representatives* (2018) available at: https://www.gao.gov/assets/gao-18-223.pdf

preserve the competitiveness of U.S. businesses and support policies that spur economic growth and provide assistance for those individuals and communities most negatively affected.

Conclusion

It is clear the risks and potential costs associated with unchecked climate change are real and some of these risks pose changes that may be irreversible. While existing economic models are inadequate to capture the range of potential costs, it is reasonable to assume these costs will be in the trillions of dollars to the U.S. economy over the decades to come. In order to avoid the worst impacts of climate change, the world must work together to limit global temperature increases. The United States and the international community must aggressively reduce GHG emissions and create incentives for developing new technologies to achieve these reductions. At Johnson Controls we know that when we take this challenge on, we will cut emissions, cut costs, create good jobs and more resilient, healthy infrastructure.

Thank you again for the opportunity to appear here today. I would be happy to answer any questions you might have.