

**Testimony for the Record**  
**Submitted to the United States Senate Committee on Appropriations**  
**Hearing on “Driving Innovation through Federal Investment”**

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**By**

**The Babcock & Wilcox Company**

Chairwoman Mikulski and Vice Chairman Shelby, The Babcock & Wilcox Company (B&W) thanks the Committee for holding today’s hearing on how federal investments drive innovation and how recent discretionary spending cuts are affecting our nation’s innovation capacity. We also wish to thank the Executive Branch witnesses, whose research agencies own work, as well as their public-private partnerships, are largely responsible for significant U.S. technology innovations.

B&W has a rich legacy of manufacturing and innovating energy technology solutions for efficient and reliable electricity generation throughout the United States, North America and across the globe. The Babcock & Wilcox Company was formed in 1867 and today we employ directly and through joint venture companies approximately 13,000 professionals. We grew our business over the past 147 years by developing and commercializing practical solutions to the evolving challenges of the public and private power generation industries.

B&W provides a comprehensive portfolio of clean energy technologies, including such coal-based systems as oxy-coal combustion, post-combustion CO<sub>2</sub> scrubbing, and environmental control systems. We supply a wide range of renewable energy systems including biomass, concentrating solar power, and waste-to-energy. And, we consistently lead the development and deployment of new nuclear energy technology solutions for industry and government.

**Public-Private Partnerships**

Public-private partnerships, which share the costs and risks associated with developing new technologies, are critical to the market development and viability of U.S. energy innovations. Due to the regulatory and policy environment, there is significant risk associated with developing and deploying first-of-a-kind technology. Public-private partnerships are necessary to share these risks and make the long-term, significant investment justifiable to shareholders and investors, by showing the government's commitment to the future of the technology. This commitment will provide a level of certainty critical to market development, competition, and additional private investment.

Broad market adoption of innovative technology is dependent on a successful first-of-a-kind project. Without a mechanism for public-private partnership, such projects may confront significant non-recurring costs that represent a barrier to deployment. As an example, B&W recognizes the value of striving for carbon neutral energy sources and understands the tasks before us to mitigate carbon emissions. B&W willingly accepts the challenge to develop clean technologies; however, substantial R&D support will be needed to attain the interim goal of

getting at scale, first-of-a-kind plants on the ground. The power generation sector is one of the most capital intensive industries, and market penetration is extremely narrow for new coal and new nuclear build. The current regulatory environment and economies of scale for new technologies present difficulties for extensive and significant technology development.

It is our opinion that the pathway forward consists of establishing at-scale field demonstration projects, followed by early deployment, commercial scale units with special considerations, all leading to a large scale rollout of clean energy technologies. But, without obvious buyers for the nth-of-a-kind plant there are limits to the amount of risk a small or medium size company can realistically take on when federal investment is absent.

A company of B&W's size simply cannot afford to take on the full burden of risk on its own. For example, a \$1.5 billion nuclear development program cannot be taken on by a company like ours, with annual revenue of only \$3 billion, particularly when the technology development period could be 10+ years. Add the uncertainty of future regulations and potential of limited or no buyers for the technology once it has been proven, and it becomes clear that there is no way technologies of this magnitude can be brought to market in a timely fashion.

Small and medium size companies like B&W cannot "bet the farm" and spend significant capital on something that has neither assured success nor a guaranteed market waiting in the wings. With a lack of customer interest for future purchases and without a foreseeable commercial market for innovative technologies, tremendous pressures exist for technology developers. Public-private partnerships are critical to mitigating risk, and these partnerships assist tremendously in making a new technology project a much more reasonable investment.

B&W is an active member of the Coal Utilization Research Council (CURC). CURC's message on the FY 2015 budget recommendations echoes the call for continued innovation through federal funding of R&D activities beyond the laboratory, large pilot, and commercial demonstration scales. CURC emphasizes the need for federal programs to support breakthroughs in technology that encourage transformational approaches to converting coal to useful energy and products. Innovative work of this kind can certainly be accomplished through the perpetuation of existing and the creation of new public-private partnerships.

### **Leveling the Playing Field**

Foreign nations understand the vulnerability that they open themselves to by becoming overly dependent on foreign energy sources. The result is that many countries own and/or support their industrial base, make significant investments into their energy infrastructure, and artificially protect their domestic energy markets. The only exception to this rule is the United States. Foreign firms, for the most part, compete openly and freely in the U.S., even if they are state-owned. On the other hand, unless a nation makes specific provisions, most foreign markets are very difficult for U.S. firms to access.

One of the problems with growing America's domestic energy infrastructure is that the playing field is not level. Much of the global energy industry – nuclear, in particular – is either heavily subsidized, state owned, or enjoys other state sponsored cost saving or risk mitigating

measures. This environment makes competing very difficult for American companies. While European and Asian countries aggressively work to meet the demands of a growing commercial energy market, the U.S. is at risk of losing its industrial capacity, intellectual expertise, and competitive edge. For reasons of economy, environment and national security, it is vital that innovations in energy technologies continue to receive support through federal investment.

Supporting innovation through federal funding is a critical tool that will help the U.S. maintain its competitive edge in the international power market. Our foreign competitors are largely state-owned or subsidized companies making large investments in technology. For example, while U.S. companies currently lead in the development of small modular nuclear reactors (SMRs), SMRs are also being developed in China, Russia, India, Argentina, and South Korea.

Failing to move forward with federally funded programs will stymie the U.S. industry's current early mover advantage in energy technology and manufacturing leadership. Failure to fund such programs will ensure that foreign competitors receive the manufacturing jobs and exporting benefits by selling to U.S. customers. At a time when we need to ensure that public policy promotes U.S. competitiveness in technology innovation and leadership, innovation through federal investment is the conduit to maintain U.S. leadership and create a manufacturing base domestically instead of overseas. Conversely, the sharing of risks and costs through public-private partnership will ultimately result in a return on investment to government by supporting energy technology which can compete in the market without government support or subsidy, while creating U.S. design, supply chain, construction, and operations jobs.

### **Conclusion**

B&W strongly urges the Committee to support innovation through federal investment programs, like public-private partnerships, in order to:

- Foster innovation and help maintain our nation's leadership role in clean energy technologies;
- Encourage technological advances that the power generation industry cannot wholly support on its own; and
- Level the international playing field, allowing the U.S. to compete strongly in the global marketplace.