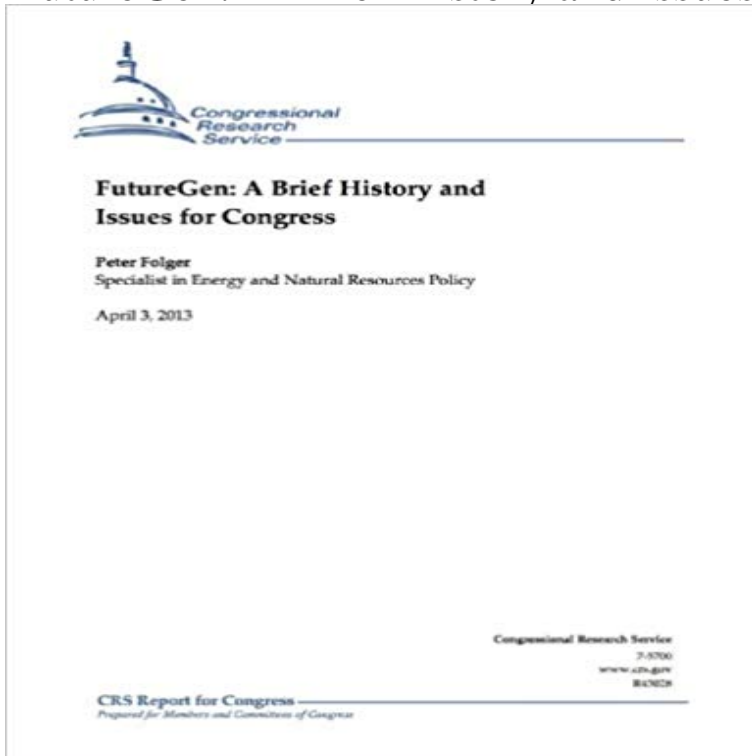


# FutureGen: A Brief History and Issues for Congress



A decade after the George W. Bush Administration announced FutureGen's signature clean coal power initiative, the program is still in early development. Since its inception in 2003, FutureGen has undergone changes in scope and design. As initially conceived, FutureGen would have been the world's first coal-fired power plant to integrate carbon capture and sequestration (CCS) with integrated gasification combined cycle (IGCC) technologies. FutureGen would have captured and stored carbon dioxide (CO<sub>2</sub>) in deep underground saline formations and produced hydrogen for electricity generation and fuel cell research. Increasing costs of development, among other considerations, caused the Bush Administration to discontinue the project in 2008. In 2010, under the Obama Administration, the project was restructured as FutureGen 2.0: a coal-fired power plant that would integrate oxy-combustion technology to capture CO<sub>2</sub>. FutureGen 2.0 is the U.S. Department of Energy's (DOE) most comprehensive CCS demonstration project, combining all three aspects of CCS technology: capturing and separating CO<sub>2</sub> from other gases, compressing and transporting CO<sub>2</sub> to the sequestration site, and injecting CO<sub>2</sub> in geologic formations for permanent storage. Congressional interest in CCS technology centers on balancing the competing national interests of fostering low-cost, domestic sources of energy like coal against mitigating the effects of CO<sub>2</sub> emissions in the atmosphere. FutureGen would address these interests by demonstrating CCS technology. Among the challenges to the development of FutureGen 2.0 are rising costs of production, ongoing issues with project development, lack of incentives for investment from the private sector, time constraints, and competition with foreign nations. Remaining challenges to

FutureGen's development includes securing private sector funding to meet increasing costs, purchasing the power plant for the project, obtaining permission from DOE to retrofit the plant, performing the retrofit, and then meeting the goal of 90% capture of CO<sub>2</sub>. The FutureGen project was conceived as a public-private partnership between industry and DOE with agreements for cost-share and cooperation on development, demonstration, and deployment of CCS technology. The public-private partnership has been criticized for leading to setbacks in FutureGen's development, since the private sector lacks incentives to invest in costly CCS technology. Regulations, tax credits, or policies such as carbon taxation or cap-and-trade that increase the price of electricity from conventional power plants may be necessary to make CCS technology competitive enough for private sector investment. Even then, industry may choose to forgo coal-fired plants for other sources of energy that emit less CO<sub>2</sub>, such as natural gas. A proposed rule by the Environmental Protection Agency (EPA) to limit CO<sub>2</sub> emissions from new fossil-fuel power plants may provide some incentive for industry to invest in CCS technology. Alternatively, critics of the proposed rule have expressed concern over the loss of American competitiveness in a global market not subject to similar regulations. These critics point to China's increasing CO<sub>2</sub> emissions and argue that Chinese industries will surpass American industries in productive competitiveness and that this will lead to American companies outsourcing jobs and production. Delays in FutureGen's project development may have made full-scale demonstration of CCS technology by 2015, the year that federal stimulus funding for FutureGen expires, difficult to accomplish.

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