2008

Updating America's Nuclear Power

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**Abstract**

America’s first commercial nuclear reactors began powering the grid in the 1960s, with the most modern designs and equipment available. While these reactors have aged, science and technology have progressed. The US Nuclear Regulatory Commission (NRC) has declared that many of these geriatric reactors must be decommissioned, almost all within the next decade. The question remains: how can we respond to this challenge given that reactor energy provides one-fifth of the US electricity supply? New reactor designs, dubbed Generation IV reactors, are considerably more advanced than these aging relics, producing more energy, in a far more reliable and safe design, for less money. This project submits recommendations for four distinct sets of circumstances.

**Methodology**

Research into new types of nuclear reactors was compiled in order to make a determination as to what type of next generation reactor would be best suited for further research as a potential design of reactor. These recommendations were used later as options for existing plants to replace the current 104 reactors. By replacing current reactors with these new reactors, the current infrastructure can support the next generation at minimal cost and without the added expense of rebuilding plant infrastructure.

By comparing the needs of each plant we have determined what type of new design of reactor is optimal for each site, and made these recommendations as part of our table of information.