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## Christina Back: The Future Is (Still) Nuclear

**T**he largest source of clean, sustainable and reliable energy available remains nuclear power. But to play a bigger role in reducing carbon emissions and air pollution, future advanced reactors must address four core challenges: They must be safer. They have to produce less radioactive waste. They need to pose lower risk of weapons proliferation. And they need to be less expensive.

**G**eneral Atomics has a new reactor designed to meet each of these concerns, called the [Energy Multiplier Module](#). To enhance safety, it uses ceramic materials that are irradiation resistant and able to survive temperatures more than twice what current metallic fuel rod materials can withstand. More importantly, these new materials are cooled with inert gas, which means an explosion like the one at Fukushima, caused by the buildup of hydrogen gas, can't happen.

**T**his reactor also uses fuel more efficiently, producing 80 percent less waste. And it only has to be opened and refueled every 30 years, compared with every 18 months for current plants. That means reduced access to the fuel, less spent fuel in circulation and lower risk of diversion toward illicit uses.

**F**inally, to address economic competitiveness, this new type of reactor produces 60 percent more electricity from the same amount of fission. In addition, its modular design uses factory-made reactors that can be transported by truck, cutting construction time in half. And it can run on uranium, thorium or even used nuclear fuel. That means lower construction costs and cheaper power.

*Christina Back directs fission and inertial fusion programs for General Atomics.*

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