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SPECIAL REPORT:
NEW HOPE FOR NUCLEAR POWER

The case for investing in nuclear power at a time when there is an urgent need to reduce carbon dioxide emissions to fend off disastrous climate changes has been clear for decades. Nuclear power is carbon-free. It is reliable, producing power 24/7 regardless of the weather, a standard that intermittent renewable sources like wind, solar and even hydro can never achieve. The wind doesn't always blow, the sun doesn't always shine, the water doesn't always flow forcefully enough.

And as a matter of fact, nuclear power is already a major component of our nation's energy system. The U.S. has the world's largest array of nuclear plants with 92 reactors that produce nearly 20 percent of the total power, and about half of the carbon-free power.

But doubts about nuclear energy persist, mostly driven by the infamous disasters at Three Mile Island, Chernobyl and Fukushima. The fact that follow-up studies have shown the initial estimates of deaths and radiation poisonings from those accidents were wildly overblown hasn't mitigated the harm to nuclear's reputation. Nor has the fact every other energy sector has had its own terrible accidents, some with vastly worse results — as many as 230,000 people may have died when a hydroelectric dam in China collapsed — made a difference. At least not until now.

Three factors contribute to the current reevaluation of nuclear power.

First is the growing recognition that the U.S. cannot hope to meet the targets it has set for reducing its CO_2 emissions without an increase in nuclear power as part of the mix.

Second is the emergence of new Small Modular Reactors (SMRs) that are far safer than traditional plants because they utilize natural circulation and they have improved economics due to lower capital costs and shorter construction times. In fact, the U.S. Nuclear Regulatory Commission just issued approval for the first SMR design to be deployed in the U.S., while GE Hitachi Nuclear Energy just signed a contract to build the first SMR in North America in Ontario, Canada.

Further innovation is happening through the industry. Lightbridge Corp. (NASDAQ:LTBR) in Reston, Virginia, is testing an advanced nuclear fuel with the U.S. government that can produce more electricity from existing plants and the new SMRs as well and significantly improve safety.

Public opinion may not have caught up yet, but technological breakthroughs are making nuclear power safer and more economical.

The third dynamic is an outgrowth of the first two. That is to say, the need for non-carbon-emitting power combined with technological advances in the industry has spurred what is going to be an enormous investment by the federal government in the nuclear industry — at least $40 billion over the next decade. That will be on top of the billions expected from private investors in the coming years. Last year alone, some $5 billion in private money went into the design of new reactors.

The federal funds will come from two sources. The Bipartisan Infrastructure Law of 2021 created a civil nuclear credit program of $6 billion to help keep aging plants running. It didn't take long to go operational. The first beneficiary was the Diablo Canyon plant in California, which got a $1.1 billion award to enable it to stay in operation.

On top of the money from the infrastructure fund, the Inflation Reduction Act that President Biden signed last year provides tax credits not only for existing plants, but more importantly for new ones — in particular, advanced reactors and SMRs.

None of this guarantees the future acceptance of nuclear power. The issue of how to dispose of radioactive waste is still a potent factor in shaping public opinion. But even that may be manageable. Pulitzer Prize-winning historian Richard Rhodes argued convincingly in a 2018 essay that there is a solution: "The U.S. Waste Isolation Pilot Plant near Carlsbad, N.M., currently stores low-level and transuranic military waste and could store commercial nuclear waste in a 2-kilometer-thick bed of crystalline salt, the remains of an ancient sea. The salt formation extends from southern New Mexico all the way northeast to southwestern Kansas. It could easily accommodate the entire world's nuclear waste for the next thousand years."

Getting game-changing information like that into the conversation will be vitally important in winning acceptance for nuclear energy. Along with all the other challenges they must meet, government and industry face a very big public education job.

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