

Nukes Ride Again

The Energy Policy Act returns nuclear energy to center stage.

For a generation, the public perception of nuclear energy has been mired in the past, with nuclear largely absent from discussions about future U.S. energy policy. No new nuclear plants have been ordered in two decades, and the last commercial nuclear plant came on line in 1996. The legacies of Three Mile Island and Chernobyl created a perception that the industry was stagnant, with little potential for growth and an uncertain future.

Notwithstanding this public amnesia, the nuclear industry has been busy getting its house in order and now ranks as the nation's second leading source of electricity. The largest nuclear operators have increased the size of their nuclear fleets by acquisition and worked hard to raise the efficiency of their plants. The NRC has given a green light to license extensions, and most U.S. nuclear plants will now be able to operate for an additional twenty years.

Support from Bush

In 2001, when the first Bush Administration issued its blueprint for the nation's energy future, National Energy Policy, expanding the use of nuclear energy was a prominent recommendation. The next year, the Secretary of Energy initiated the Nuclear Power 2010 program with the goal of assisting the

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U.S. industry to start building advanced nuclear power plants. However, despite these positive developments, nuclear proponents remained stymied. Memories of past disappointments and the waste disposal deadlock prevented utilities from seriously entertaining plans to construct new nuclear power plants in the United States, while Wall Street remained skeptical about the economics of new build. The nuclear industry lacked a catalyst for action.

All that has changed. Late last year (on August 8, 2005), President Bush signed into law the Energy Policy Act of 2005 ("EPACT"). EPACT contains an array of provisions to support nuclear power and creates incentives to construct new plants, including tax credits, federal risk insurance, and loan guarantees.

Combined with the impressive financial performance of the U.S. nuclear fleet and the growing public recognition that nuclear plants generate electricity without contributing to global warming, the new energy law has created a favorable environment for new build. This article focuses on the key nuclear energy provisions of EPACT and explains how the law provides the impetus for a wave of new nuclear construction in the United States.

EPACT does several key things for the nuclear industry. First, it takes care of old business by reauthorizing Price-Anderson Act insurance, the domestic nuclear liability regime that has served the industry well for many years. Second, the new law addresses longstanding concerns about project delays, concerns

that have fueled the reluctance of the financial sector to support new nuclear construction. Third, EPACT provides positive incentives for nuclear construction in the form of loan guarantees and production tax credits. Fourth, it supports nuclear research and the development of advanced reactor technologies.

Price-Anderson Act Renewal

EPACT extends the Price-Anderson Act, which provides the basic liability protection for the U.S. nuclear industry, for 20 years, until December 31, 2025. This Price-Anderson extension preserves the existing regime of no-fault insurance coverage for the public in the event of a nuclear reactor incident and sets new thresholds for the private insurance coverage nuclear plant operators are required to purchase. Although the expansion of Price-Anderson was not particularly controversial, it was an essential step to preserve the environment for building new nuclear plants in the United States.

One of the key obstacles to new plant construction has been the legacy of delay in constructing the last generation of nuclear plants. Years of regulatory and public comment delay led to massive cost overruns and service delays. EPACT attacks this problem head on. The new law protects new plant investment by authorizing standby support to offset the financial impact of delays beyond the industry's control that may arise during construction and the start-up phase of bringing the first new nuclear power plants online. This support is

provided through the mechanism of a contract between the Department of Energy and the utility.

Standby Support

Standby support is only available for an “advanced nuclear facility,” defined as a reactor design approved after December 31, 1993, by the NRC. Congress has created an incentive for utilities to act quickly by authorizing more standby support for the first two new plants. Although support is available for the first six new nuclear facilities, it pays to build one of the first two. For the first two plants, EPACT covers 100 percent of the cost of delays, up to a ceiling of \$500 million per facility. Only 50 percent of the cost of delays, up to a ceiling of \$250 million per facility, is covered for plants three through six, and for those four plants standby support is only provided for delays exceeding an initial 180-day period of delay.

Standby support covers financial losses from two types of delays: First, support is provided for delays caused by the NRC’s failure to meet the established schedule for inspection, tests, analysis, and acceptance criteria or the completion of hearings. Second, EPACT protects against costs incurred as a result of litigation that delays full power operation of the covered facility.

The covered costs include any principal or interest on debt associated with the project, as well as losses incurred if a start-up delay forces the owner of a new plant to buy power on the open market in order to meet contractual electricity supply agreements. Through this mechanism, EPACT reduces the risk of playing a leadership role on new build by protecting against two of the key problems that plagued the last generation of nuclear projects and creates an incentive to construct the initial group of advanced plants.

Loan Guarantees for New Plants

EPACT authorizes the Secretary of Energy to provide loan guarantees of up to 80 percent of the estimated project cost for innovative energy technologies that reduce the emission of greenhouse gases and represent new or significantly

improved technologies. A long list of advanced technologies is eligible for the program, including advanced nuclear energy facilities (Other eligible projects include renewable energy systems, advanced fossil energy technology (including coal gasification), hydrogen fuel cell technology, carbon capture and sequestration, and energy-efficient technologies.). EPACT establishes a loan guarantee fund but requires an assurance of repayment. There are two alternatives to finance the cost of such guarantees: (1) the project developer can pay the cost of the loan guarantee into the fund, or (2) the Secretary of Energy can request an appropriation of an amount equal to the cost of the loan guarantee. In the second case, the project developer is obligated to pay back the cost of the guarantee over time.

Production Tax Credits

EPACT makes available production tax credits of 1.8 cents per kilowatt-hour of electricity generated from “qualifying” advanced nuclear power facilities during their first eight years of operation. Qualifying facilities are those that receive an allocation of megawatt capacity from the Secretary of Energy and are placed into service before 2021; a facility for which a substantially similar design was approved prior to 1994 is not considered a qualifying advanced nuclear power facility for these purposes.

Two limitations restrict the aggregate amount of tax credits that may be claimed in any year. The first limitation is based on “allocated capacity.” Production tax credits may only be claimed for the production of electricity equal to the ratio of the allocated capacity the facility is assigned by the Secretary of Energy to the rated nameplate capacity of that facility. For example, if a facility is allocated 750 megawatts (of the 6,000 megawatts available for allocation by the Secretary) and the facility has a rated nameplate capacity of 1,000 megawatts, then only three-quarters of the allowable credits, or 1.35 cents per kilowatt hour, may be claimed for electricity produced at the facility.

The available tax credits are also subject to a second, annual limitation. The annual tax credit limit for the operation

of a qualifying advanced nuclear power facility is \$125 million per 1,000 megawatts of allocated capacity in any one year of the eight-year period. Therefore, if a facility has a nameplate rated capacity of 1,000 megawatts and is assigned 750 megawatts of allocated capacity by the Secretary, both the annual and allocated capacity limitations apply such that the available production tax credits would equal 1.35 cents per kilowatt hour of electricity produced, subject to an annual credit limitation of \$93.75 million. These production tax credits are treated as part of the general business credit and may be reduced if other forms of government aid are received.

Decommissioning Fund Reform

The efficiency of the current U.S. nuclear fleet in serving as a reliable and cost-effective source of electricity cannot seriously be questioned. However, the back end of the nuclear fuel cycle—what happens after the power has been produced—has traditionally been one of the primary areas of contention between advocates of nuclear power and its opponents. The ongoing debate over the Yucca Mountain nuclear waste depository is the most prominent recent example of such a controversy. EPACT addresses another significant aspect of the back end of the cycle, namely the provision for decommissioning costs.

Because of the significant amount of expense involved, utilities must set aside funds during the operational life of a nuclear facility to pay for decommissioning costs to be incurred at the end of the facility’s operational life. The tax treatment with respect to the setting aside of such funds is of intense interest to nuclear fleet operators, and the new law revises the special tax rules dealing with nuclear decommissioning reserve funds which originally were enacted in 1984. Under that prior law, the party responsible for nuclear power plant decommissioning could elect to deduct contributions made to a qualified decommissioning fund established to cover the future decommissioning costs, but the accumulations in a qualified fund were limited.

EPACT now permits a taxpayer maintaining a qualified decommissioning fund to accumulate an amount sufficient to cover the present value of 100 percent of the power plant's estimated decommissioning costs (where, under prior law, the accumulation essentially was limited to post-1984 decommissioning costs). EPACT also repeals the "cost of service" requirement for deductible contributions to a qualified nuclear decommissioning fund contained in section 468A of the Internal Revenue Code. However, contributions to a qualified fund in any event are not deductible more rapidly than level funding (ratably over the estimated useful life of the power plant).

In connection with the establishment of a qualified decommissioning fund, a ruling must be sought from the Internal Revenue Service, which will set the annual contribution that may be made to the fund (the "ruling amount"). EPACT now requires that a taxpayer apply for a new ruling amount in any tax year in which the facility is granted a license renewal that extends its useful life.

Research and Development

EPACT contains a host of provisions designed to support nuclear energy research. It requires the Secretary of Energy to pursue a Nuclear Energy Research Initiative and creates a Nuclear Energy Systems Support Program to support research and development activities addressing such issues as the reliability, productivity, safety, and security of existing nuclear power plants. In addition, the new law authorizes funding for the Energy Department's Nuclear Power 2010 program and provides for cost sharing programs to encourage the construction of new nuclear plants.

The Secretary is also directed to pursue a Generation IV Nuclear Energy System Initiative to develop a technology plan and support research and development on the most promising new reactor design candidates for commercial application. In particular, the Secretary is to examine advanced proliferation-resistant and passively safe reactor designs.

EPACT also directs the Secretary of Energy to pursue an advanced fuel recycling program to evaluate new technol-

ogy for nuclear fuel recycling that will minimize environmental and public health and safety impacts and be more resistant to nuclear proliferation. These new technologies are intended to be alternatives to current nuclear fuel reprocessing technologies and are intended to support the evaluation of alternative national strategies for spent fuel and advanced reactor concepts. During the 2007 to 2009 period, EPACT allocates \$1.18 billion for core programs to support the construction of advanced new nuclear reactors, including nuclear energy research, development, demonstration, and commercial application activities.

EPACT authorizes \$1.25 billion under the Next Generation Nuclear Plant Program for research and development and for the construction of an advanced nuclear cogeneration reactor to produce electricity and hydrogen at the Idaho National Laboratory. Additional money is authorized to demonstrate the feasibility of hydrogen production at two existing nuclear power plants.

The nuclear energy provisions of the new law are not limited to providing incentives for the construction of new plants and research alone. The Nuclear Regulatory Commission proposed additional security measures, which were adopted in EPACT.

These security measures are designed to bring even more rigor to the security requirements that the NRC imposes on nuclear operators. In addition, the law contains provisions that address a whole range of issues, ranging from hydrogen production at nuclear power plants, medical isotopes, and the prohibition of nuclear exports to countries that sponsor terrorism. The variety and breadth of these provisions make EPACT the most important piece of legislation for the nuclear industry in many years.

Conclusion

The Energy Policy Act of 2005 has created a favorable environment for a new wave of nuclear plant construction. The next challenge is the effective implementation of the new law to ensure that its pragmatic incentives are utilized effectively to spark a nuclear energy renaissance. The stage is now set. The

efforts of the three consortia participating in the Nuclear Power 2010 program have been accelerating, including the recent selection by NuStart Energy of two prospective sites for advanced nuclear reactors, a Westinghouse AP 1000 model at the Tennessee Valley Authority Bellefonte site and a General Electric ESBWR model at the Grand Gulf site owned by an Entergy subsidiary.

NuStart Energy is the largest consortium under the Nuclear Power 2010 program, with a membership consisting of Duke Energy, EDF International North America, Inc., Entergy Nuclear, Exelon Generation, Florida Power & Light Company, Progress Energy and Southern Company. The Tennessee Valley Authority, GE Energy, and Westinghouse Electric Company LLC are also members of NuStart.

Likewise, Constellation Energy and Areva announced in September 2005 the formation of UniStar Nuclear, a joint venture to construct advanced reactors in the United States utilizing Areva's EPR design. Other utilities are also engaged in preparations for moving forward with the construction of advanced nuclear reactors. And, in New Mexico, plans are proceeding on schedule for breaking ground on the construction of the National Enrichment Facility, which is currently undergoing Nuclear Regulatory Commission license review and would be the nation's first centrifuge uranium enrichment plant.

The domestic nuclear picture is characterized by activity and promise for the first time in decades, with government, industry, and the public working to take advantage of nuclear power to provide essential diversity and reliability to our national energy supply. As President Bush declared when he signed EPACT:

"Nuclear power is [one] of America's most important sources of electricity. Of all of our nation's energy sources, only nuclear power plants can generate massive amounts of electricity without emitting an ounce of air pollution or greenhouse gases. ...With the practical steps in this bill America is moving closer to a vital national goal. We will start building nuclear power plants again by the end of this decade."