NUCLEAR IMPLOSIONS

*Nuclear Implosions: The Rise and Fall of the Washington Public Power Supply System* follows a small public agency in Washington State that undertook one of the most ambitious construction projects in the nation in the 1970s: the building of five large nuclear power plants. By 1983, delays and cost overruns, along with slowed growth of electricity demand, led to cancellation of two plants and a construction halt on two others. Moreover, the agency defaulted on $2.25 billion of municipal bonds, leading to a monumental court case that took nearly a decade to resolve fully. Daniel Pope sets this in the context of the postwar boom’s ending, the energy shocks of the 1970s, a new restraint in forecasting demand, and shifting patterns of municipal finance. *Nuclear Implosions* also traces the entangling alliance between civilian nuclear energy and nuclear weapons and recounts a telling example of how the law has become a primary method of resolving disputes in a litigious society.

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Nuclear Implosions

The Rise and Fall of the Washington Public Power Supply System

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To my daughter, Stephanie C. Pope,
and the memory of my mother, Edith G. Pope
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Writing history often seems to the scholar like a solitary venture, but in reality it is a collective enterprise. Over the many years that I have studied the Washington Public Power Supply System’s nuclear projects, I have accumulated many debts. The Supply System’s financial debts proved to be its undoing, but repaying intellectual debts by acknowledging the generosity of others is a pleasure.

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closeup conference on “The Atomic West” in 1992. I presented a paper there; a later version, “Antinuclear Activism in the Pacific Northwest: WPPSS and Its Enemies,” appeared in their edited volume, The Atomic West (Seattle and London: University of Washington Press, 1998). Professor Derek Hoff of Kansas State University, a former graduate student, more than repaid the value of advice I had offered him over the years by his close reading of several chapters. I benefited enormously from a detailed commentary by John Shurts, General Counsel of the Northwest Power and Conservation Council as well as an outstanding legal historian. John also provided an analysis of the debt repayment costs of the terminated nuclear projects that Pacific Northwest ratepayers still bear.

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On June 22, 2005, President George W. Bush journeyed to the Calvert Cliffs nuclear plant in southern Maryland, about fifty miles outside Washington, D.C. Speaking there, he proclaimed, “It is time for this country to start building nuclear power plants again.” The president’s endorsement came as no surprise. The press pointed out that he was the first president to come to a nuclear plant since Jimmy Carter had gone to Three Mile Island during the Pennsylvania reactor’s 1979 crisis. Few newspapers reported two days later that President Carter himself visited the Cook Nuclear Plant in western Michigan and offered his own support for a revival of nuclear generation. “I think the future holds great opportunities for nuclear power,” Carter stated. Although Carter had served as a nuclear submarine engineer prior to his political career, he had been viewed as generally unsympathetic to nuclear power’s growth during his term in office. Yet by 2005 a pro-nuclear political consensus seemed to be emerging.

Even before the two presidents spoke, there were many signs of revived interest in nuclear power. Utilities, reactor vendors, and construction firms had formed three consortia to explore potential projects in the United States. The Nuclear Regulatory Commission had, as far back as 1989, streamlined licensing procedures. The Energy Policy Act of 2005 contained several inducements to start a new round of nuclear construction. Rapidly rising oil and natural gas prices, along with projections of an

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imminent peak in world petroleum output followed by a long, painful period of decline, persuaded analysts and policy makers to look afresh at non-petroleum energy sources. Even some environmentalists had come to view nuclear power as a preferable alternative to fossil fuels’ carbon emissions and the climate change they cause.\(^2\) Public opinion was also shifting in a positive direction. According to one survey, 70 percent of those polled indicated support for nuclear power in 2005, up from 46 percent a decade earlier. Communities under consideration as sites appeared receptive.\(^3\)

Yet prospects for a full-fledged nuclear revival in the United States are cloudy. Construction of the long-delayed permanent waste repository planned for Yucca Mountain, Nevada, seems to recede endlessly into the future. The attacks of September 11, 2001, raised concerns about terrorist attacks on reactors and raised questions about the vulnerability of spent-fuel storage ponds at nuclear plant sites.\(^4\) However, the greatest impediment to resuming nuclear construction in the United States is financial. Not only the foes of nuclear energy but also many of its corporate backers agree that investing in nuclear power at this point would be a risky venture. “Moody’s would go bananas if we announced we were going to build a nuclear plant,” said Thomas E. Capps. Capps is CEO of Dominion Resources Inc., a major electricity and natural gas supplier and the lead firm in one of the consortiums investigating nuclear construction. Marilyn Kray, the president of NuStart Energy Development, the largest of the consortia, was more guarded: “There is much more confidence in the new process [of regulation and licensing], but not enough yet to make a new investment. Financiers are saying they are not yet comfortable.”\(^5\)


The story of the Washington Public Power Supply System’s attempts a generation ago to build five large nuclear power plants should give utilities and financiers further reason to proceed with great caution. The results of the Supply System’s efforts are simple to recount: one plant completed, two terminated in 1982, and another two canceled in 1994, after more than a decade-long construction moratorium. Shortly before the 1982 terminations, the agency estimated costs for building the five plants at $23.9 billion, more than five times the total of the projects’ initial estimates. In 1983, legal difficulties forced the Supply System to default on $2.24 billion in municipal bonds that it had sold; this, in turn, led to a securities fraud suit of enormous magnitude and Dickensian complexity.

The lessons of the Washington Public Power Supply System debacle are ambiguous. Nuclear proponents can rightly point out that the Supply System’s organizational failings were unusual if not unique, even in the troubled history of American nuclear projects. The court case that brought on the 1983 default was surely a legal anomaly for the nuclear power industry. The political climate for nuclear energy, especially in the aftermath of Three Mile Island, was substantially less welcoming than it is today. The stagflation of the 1970s and the sharp recession of 1981–1982 posed daunting problems for finance. In 2005, only a Pollyanna would state that such conditions could never be repeated; only a Cassandra would claim they were inevitable.

Nevertheless, although circumstances and protagonists have changed since the Supply System’s undertakings, an understanding of what happened in the Pacific Northwest a quarter-century and more ago should prove illuminating. Will policymakers turn unquestioningly, as they did in that era, to supply-side solutions for electrical energy? In a competitive utility environment, will utilities and other players strive to build organizational empires without the resources to succeed or the judgment to know whether organizational growth will solve problems or create new ones? A generation ago, WPPSS, the Bonneville Power Administration, and others in the utility community professed a democratic ethos but often reacted to popular pressures with hostility. Can institutions be open and responsive to citizen, consumer, and environmentalist concerns? When conflicts arise over complex technical, legal, and economic issues, can the judicial system resolve them acceptably? In the past, civilian nuclear energy was intertwined with the Cold War and nuclear weaponry. Will our energy policies in decades to come be calibrated with military ambitions?

The Washington Public Power Supply System’s story is not simply about nuclear power. It touches on some of the most important developments in
contemporary America’s political economy: the shift from buoyant expectations of growth to an awareness (though not always an acceptance) of limits; the intermingling of military and civil institutions; the complexities of prediction and planning in an era of large-scale institutions and undertakings; the problems that arise when technological possibilities outrun organizational capacities for large-scale projects; new forms of environmental and consumer activism; and the costs of making decisions and resolving disputes in a litigious society.

Within the framework of a chronological narration, Nuclear Implosions seeks to bring historical insights to bear on these vital questions. Chapter 1 traces the Pacific Northwest’s distinctive commitment to electrical energy as the key to economic growth. The great federal dams on the Columbia River and the central position of the Bonneville Power Administration meant that public power was stronger and the battles between public and private utilities fiercer in this region than in most of the rest of the country. Households and businesses thrived at mid-century on low-cost hydropower and turned to nuclear energy as the next choice when hydro capacity approached its limits. Officials of the Washington Public Power Supply System, a consortium of local public utilities in the state of Washington, thought of the agency as the rightful heir to the progressive public power movement in the Northwest. They also considered it their task to facilitate growth, which they assumed would come in tandem with an expanding electrical supply.

In chapter 2, we encounter Washington Public Power Supply System’s commitment to build three large nuclear power plants. Like other utilities embarking on nuclear projects in the 1960s and 1970s, the Supply System employed reactor designs based on the devices that propelled nuclear submarines. Here, and throughout the narrative, we see the Supply System’s nuclear efforts closely meshed with the military nuclear projects of Cold War America. Notably, the organization’s nuclear baptism came with its designation to build and operate turbine-generators attached to a facility producing weapons plutonium on the Hanford Military Reservation. Its headquarters came to be sited only a few hundred yards from the entrance to the Reservation, and three of its nuclear plants were to be built on the Reservation.

Chapter 3 describes the process in the mid-1970s that drew the Supply System and eighty-eight public utility participants into undertaking two additional plants. Projects 4 and 5 lacked the implicit financial guarantee that the Bonneville Power Administration had provided for the first
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three plants. Local utilities, torn between financial caution and alarming predictions of impending power shortages, took shares in the new projects’ “capabilities.” Their experience bears out Niels Bohr’s aphorism, “Prediction is very difficult, especially about the future.” Cost estimates soared, estimated completion dates receded into the future, and electricity demand fell far short of predictions. Indeed, “Long-term forecasts of energy affairs . . . have . . . a manifest history of failure,” as Vaclav Smil, a leading scholar in the field, has put it. The Supply System’s experience demonstrates that failure vividly. Meanwhile, the pressures that induced the Supply System to take on these projects suggest that organizations that claim to represent the people’s interests and desires find themselves pushed and pulled by political and economic forces remote from, if not opposed to, the popular will.

Chapter 4 shows the chasm between the enormous tasks that the Supply System had assumed and the resources and capabilities of the organization. The chapter draws on insights from sociological theories of organization and management studies, especially in the field of construction management. They help us not only to understand why the Supply System’s projects went so badly off course but also to see ways that these failures paralleled those in other large nuclear construction efforts and, in fact, a wide variety of other types of construction, transportation, and infrastructure projects.

Chapter 5 focuses on termination of Projects 4 and 5 in 1982 and the legal and financial imbroglio that caused the Supply System’s gargantuan bond default the next year. The proximate cause of the default was a controversial 1983 court ruling that the participating utilities had lacked authority to contract for capability shares seven years earlier and therefore were not obligated to pay back the projects’ bondholders. The broader context of termination and default included a severe and ominous recession, sharply slower growth of electrical demand, ratepayer fury at the prospect of paying billions for power that would never be delivered, and a lightly regulated municipal bond market offering unprecedented high interest rates for investments that turned out to be very risky.

In the aftermath of default, the locus of the Washington Public Power Supply System’s history shifted, in large measure, from construction sites to courtrooms. Chapter 6 describes this. One of the largest class-action

lawsuits in recent history pitted about 75,000 aggrieved bondholders against hundreds of individual and organizational defendants. Beyond the recondite particulars of securities law, fundamental issues about financial risk and legal responsibility were at stake. The case also raised serious questions about the legal system's ability to resolve controversies of this magnitude and complexity. For the future, the case stimulated reforms in the municipal bond market, but whether these were sufficient to ward off major problems is very much open to doubt.

An epilogue (chapter 7) examines major developments on the electrical energy scene since the 1980s and reflects on the implications of the Supply System story for broader issues. Much has been changed – including the Supply System itself, now renamed Energy Northwest and engaged in an expanded mission. However, basic questions remain unresolved. Have we learned anything about forecasting the future from the mistakes of the 1960s and 1970s? In providing electricity, will deregulation and competition replace the pattern of regulated private utilities with a substantial minority of public systems that dominated the twentieth century? More generally, how do we balance environmental, security, and economic concerns in energy policy? What role will nuclear energy play? This book tells a story of misguided planning that exacted a high financial cost. Now mistakes and shortsighted energy policies will cause far greater harm, to the ecosystem and to humanity. The stakes are higher than ever.