

Nuclear Waste Disposal: A Taxing Real Estate Issue

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WHEN DEALING WITH ISSUES THAT HAVE THE POTENTIAL TO SIGNIFICANTLY AFFECT a community socially and economically, emotions can run high and civic leaders may not always receive the best or most accurate advice. At such times, objective analysis from real estate counselors can make all the difference. The impact that unbiased CRE expertise can have on negotiations between public and private entities is apparent in a recent ad valorem tax settlement between Maine Yankee Atomic Power Co. reached and the town of Wiscasset, Maine.

Because a national facility for storing high-level nuclear waste still has not received federal approval, spent fuel rods—sealed in stainless steel containers, then enclosed in concrete casks—may need to remain on the site of the decommissioned Maine Yankee nuclear power plant for 20 years or longer. The tax assessment, in a state that calls for market value, asserted that the nine-acre site used for storing this nuclear waste was worth more than \$135 million, which prompted an appeal from the facility owner.

Independent analysis indicated that there is no willing buyer of nuclear waste or of land required for its storage, nor can the facility accept nuclear waste from different facilities. The land, therefore, is unlikely be able to serve another purpose for at least 20 years.

Further, the issue of nuclear-waste storage could remain uncertain for many years to come. The June 27 issue of *The Wall Street Journal* (see “Plan for Nuclear-Waste Storage Is Cleared by Senate Subcommittee”) outlines legislation that would require temporary nuclear waste storage facilities in 31 states. These temporary facilities could

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operate for as long as 25 years before shipping waste to Nevada's Yucca Mountain for permanent storage. The plan addresses the U.S. Department of Energy's unfulfilled contractual obligation to remove radioactive waste from power plant sites—a contract the DOE has breached, courts have determined.

As the price of fossil fuels climb to ever-increasing record highs, officials once again are considering nuclear power as a cost-effective energy source. However, the problem of nuclear waste storage remains, and could have an impact on property valuation at current and potential storage sites.

INTRODUCTION

For more than two decades, the 820-acre Maine Yankee site in Wiscasset, had housed a nuclear reactor; spent fuel pool inside a concrete building; four-story, 69,000-square-foot staff office building; and various other facilities. By

When members of the board of tax appeals asked, "How can land used for waste be worth millions?" the town of Wiscasset, Maine, began to reconsider its position.

April 2005, however, the reactor and all major facilities had been dismantled, and low-level nuclear waste had been hauled off to an approved waste site. The nine-acre nuclear waste storage area, called an independent spent fuel storage installation, or ISFSI, and certain auxiliary facilities used for security were the only physical remnants of the decommissioned nuclear plant.

Maine Yankee was by far the largest taxpayer in Wiscasset for more than 25 years. Even after it stopped generating power in 1997, the company continued to pay millions of dollars of ad valorem tax annually, at a negotiated amount that stepped down annually. Since the early 1980s, the company also had paid the DOE a substantial annual fee so the agency could develop a national nuclear waste repository, but the DOE still has not received approvals for the facility.

This complication means that Maine Yankee will need to store high-level nuclear waste at the plant site for years to come. Before decommissioning, plant administrators planned to send waste to the DOE facility for permanent

storage, not keep the materials onsite. Nevertheless, when the plant closed completely, Maine Yankee had a limited budget to sustain safe storage of nuclear waste for at least 20 years.

A prominent attorney—assisted by experts who he selected—advised Wiscasset's board of selectmen, an elected panel of town officers, that land used to store nuclear waste is scarce and highly valuable. He also extended the term "highest and best use" beyond typical real estate appraisal or consulting vernacular.

Wiscasset could continue to reap huge tax revenues from Maine Yankee, the attorney said, by assessing the nine acres at a value of \$15 million per acre, for a total of \$135 million. In addition, he said the town could tax the 64 casks containing the nuclear waste at their cost, approximately \$70 million.

This recommendation set the stage for a confrontation between Maine Yankee and the town over current and future ad valorem taxation. The case was settled during a hearing of the board of tax appeals. As is often the case with settlements, agreement saves the cost of further trials. In this matter, each side had an opportunity to hear questions and comments by members of the board of tax appeals; and when board members asked, "How can land used for waste be worth millions?" the town began to reconsider its position.

Though some details of the settlement have not been disclosed, the land reportedly was to be taxed at the value of ordinary industrial land, and the casks taxed at their original cost, reduced each year by depreciation.

HISTORY

Maine Yankee, built between 1968 and 1972, was a single-unit 900-megawatt pressurized water reactor that generated about 119 billion kilowatt-hours of electricity from 1972 through 1996. While operational, the plant was Maine's largest generator of electricity.

The nuclear plant supplied power to a consortium of its owners and employed more than 475 people, plus outside contractors. Maine Yankee was permanently closed in August 1997, allegedly for economic reasons. Officials also cited safety violations. Regional political issues related to

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The nuclear reactor and spent fuel pool building, pictured above before decommissioning, were less than a quarter mile from Maine Yankee's independent spent fuel storage installation.

having a nuclear power plant near a population center may have played an important part in its closure.

The dangers of nuclear plants became apparent after radioactive leaks at central Pennsylvania's Three Mile Island in 1979 and the disastrous event at northern Ukraine's Chernobyl in 1986. Wiscasset is about 40 miles northeast of Portland, Maine, and less than 140 miles northeast of Boston, conceivably putting those populations at some risk, or perceived risk.

Discussions leading to Maine Yankee's closure occurred shortly after the Seabrook Nuclear Power Plant in New Hampshire and the Shoreham Nuclear Power Station on Long Island, New York, battled for the right to begin operating. Civic leaders in areas surrounding both plants had concerns about safety and limited evacuation routes. Eventually Seabrook opened, but Shoreham, though prepared for operation, was disassembled.

During the Maine Yankee decommissioning process, low-level nuclear waste, such as the floors and walls of the reactor, were dismantled and trucked to an acceptable facility. The two locations principally used for this purpose are in Clive, Utah, and Barnwell, S.C. Those facilities, however, cannot accommodate greater than Class C, or GTCC, waste.

A fund of approximately \$508 million, including \$128 million earmarked for interim spent fuel storage, had been arranged for the decommissioning of Maine Yankee. By January 2004, approximately \$100 million remained. ISFSI officials expected this fund, with earnings, would be adequate to finance operations until the DOE calls for transport of the spent fuel and to decommission the ISFSI site, possibly in 2027 or even later.

ISFSI operations would require a skeleton crew of guards, engineers, grounds maintenance staff and financial personnel to monitor the decommissioning fund. Other expenses would include insurance and property taxes. Annual costs were estimated at \$6.8 million. About 400 acres of the 820-acre site would be sold and 200 acres donated to a charitable organization. Maine Yankee would retain

only the ISFSI and minimal land needed for its security—179 acres in all.

THE VALUATION ISSUE

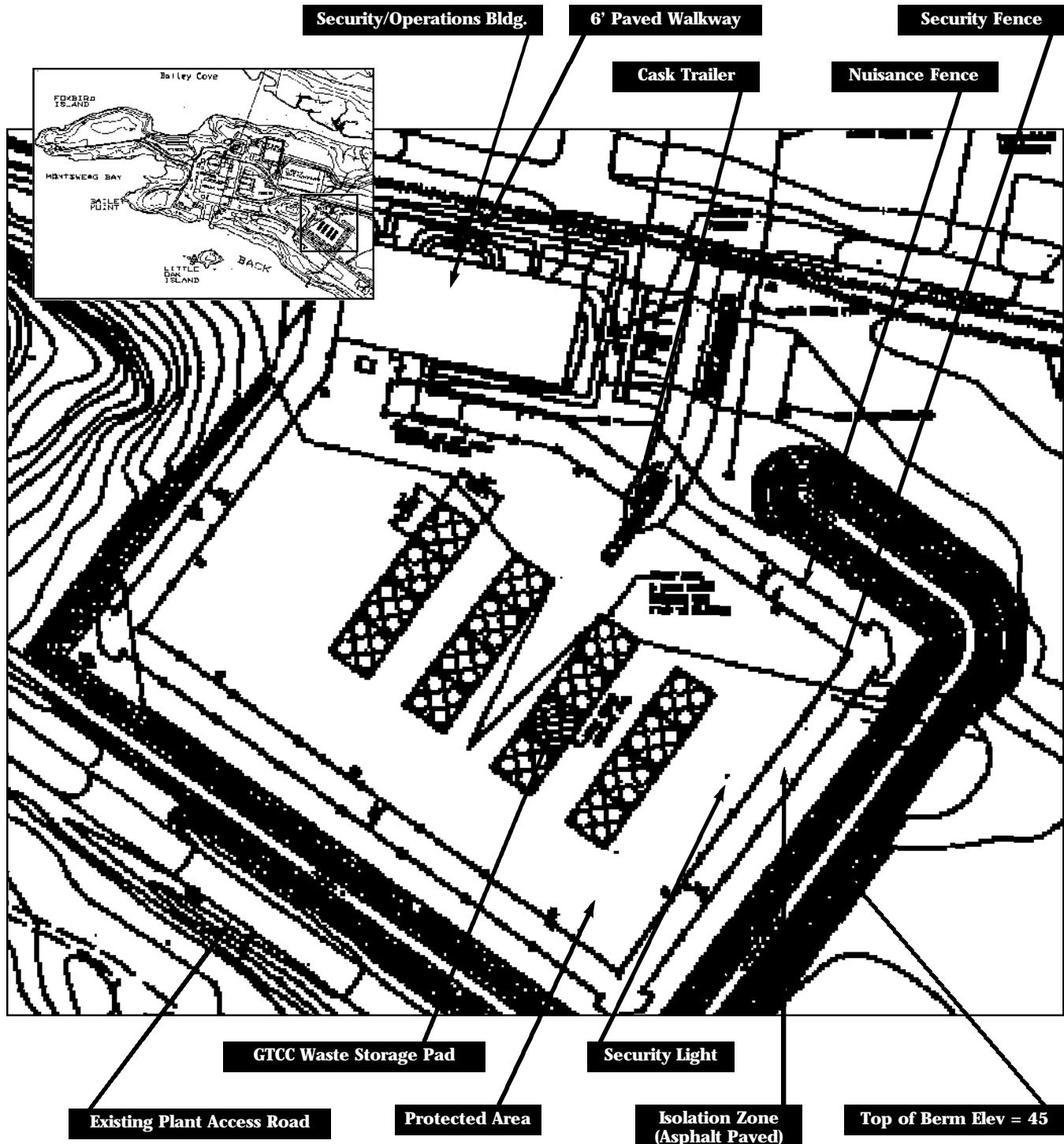
During the decommissioning process, which began in 1997, the Wiscasset board of selectmen recognized that the town was losing what had been by far its largest ad valorem taxpayer. Perhaps alarmed by this fact, the town engaged a lead attorney, who was highly respected in the region, to assist the town in determining a fair and acceptable ad valorem tax value for the remaining physical assets.

The Maine Yankee site included various real and personal properties that could be taxed, including the nuclear waste storage casks. Some of the 820 acres enjoyed terrific scenic views and water frontage. The most contentious taxation issue, however, was the value of the ISFSI site. The lead attorney explained to the town and local newspapers that land on which nuclear waste could be stored was extremely valuable. The town assessed the nine-acre ISFSI site at \$135 million, and Maine Yankee—then under decommissioning—appealed the assessments. The power company engaged independent counselors to assist the appeal, *Maine Yankee Atomic Power Company v. Town of Wiscasset and Board of Assessors for the Town of Wiscasset, Docket*

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ISFSI Site Plan

*Independent Spent Fuel Storage Installation
Maine Yankee Atomic Power Co.*



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No. 2004-003, State of Maine, Board of Property Tax Review. The case settled in the middle of the hearing.

GTCC WASTE STORAGE

Since 1983, the DOE has charged a fee to nuclear power providers to establish a permanent repository for GTCC nuclear waste, which the DOE is developing at Nevada's Yucca Mountain. However, opponents have been able to prevent this facility from becoming operational. Critics in Nevada became increasingly vocal after the Sept. 11, 2001, terrorist attacks when Las Vegas hotel and casino owners suffered a sharp drop in vacation traffic.

Civic and tourism officials were concerned about customer reaction to even a minor radioactive leak that could occur within 100 miles of hotels and casinos. Concern about transporting and storing nuclear waste may further delay the timetable for implementing the storage at Yucca, or prevent it altogether. Litigation against the DOE has mounted because of the agency's inability to provide a permanent repository as it had promised, and as power generators have paid for.

Another 10 years or more could elapse before the DOE can begin storage at Yucca. At that time, an orderly process of shipping from various plants to Yucca could result in a further delay of 10 or more years before the DOE will take the waste from Maine Yankee. Hence, expectations are that the ISFSI will remain at Maine Yankee for at least 20 years.

NUCLEAR WASTE AT MAINE YANKEE

From 1972 until 2002, spent fuel rods had been stored in a pool of heavy water called the spent fuel pool, housed in a building adjacent to the nuclear reactor. When a rod was spent, or exhausted, it was carefully moved from the reactor building to the spent fuel pool, where it was submerged in heavy water and placed on a rack in the pool.

By the early 1990s, when it became apparent that the DOE's plans for a permanent repository in Nevada could be stalled, Maine Yankee began studying alternate methods of spent fuel storage. Their efforts accelerated when the plant became slated for closure, and studies indicated that interim storage using an ISFSI at Maine Yankee would be the safest and cheapest storage method for high-level, or GTCC, nuclear waste.

Fewer than 25 ISFSIs exist in the United States, none in prominent locations. They provide interim dry storage of high-level nuclear waste at existing and decommissioned

nuclear plants. An ISFSI typically is in an open field and is smaller than a football field. Parallel rows of vertical concrete casks, or VCCs, stand on three-foot-thick concrete pads. Each concrete cask covers a sealed transportable storage cask, or TSC, filled with spent nuclear fuel, mostly in the form of rods.

At the center of Maine Yankee's nine-acre ISFSI site is a 124-foot-by-224-foot area enclosed on three sides by an earthen berm about 20 feet tall. The berm limits a ground-level view of the VCCs from outside and is joined to a metal building to form the fourth side. It encloses a chain-link fence about 12 feet tall, and a second eight-foot-tall chain-link fence is 20 feet inside the first fence. The fences form a protected area that keeps out stray animals but does not obscure the view of the VCCs from atop the berm or at ground level inside the berm. Within the inner fence are four rows of three-foot-thick concrete pads, each row with four 31-foot-by-31-foot sections, that support a total of 64 vertical concrete casks. Each concrete pad section holds four VCCs, allowing 16 VCCs in each row.

Maine Yankee's ISFSI is located less than 1,200 feet from the reactor site. The particular ISFSI site, which previously had been used as an overflow employee parking lot, was chosen for several reasons including:

- *Proximity to the reactor and spent fuel pool*—The site is less than a quarter mile from the spent fuel pool, with an existing road that connects the two to minimize transportation costs and the distance of hazardous materials shipments.
- *Existing building*—There already was a building at the site, furnished with telephone and electric connections. This building, which had been used as a staging area for materials and supplies, could easily be converted to serve as the security operations building for the ISFSI. Its dimensions are 68 feet by 154 feet by 48 feet tall—10,500 square feet.
- *Existing rail spur*—A railroad spur adjacent to the site could facilitate the eventual shipment of nuclear waste by rail or truck.
- *Absence of natural hazards*—The ISFSI site is not on a known hazard such as an earthquake fault, and the soil is stable.

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An engineering report, prepared later as part of the property tax appeal, indicated at least eight other locations within the 820 acres of Maine Yankee's property could have been used as an ISFSI site.

TSCs, VCCs AND TRANSPORTATION

Each of Maine Yankee's 64 VCCs encloses other parts, such as a nesting doll. Most VCCs are 17.5 feet tall, with a diameter of 11 feet 4 inches and 28-inch-thick walls. Each VCC encloses a TSC: a stainless steel tube approximately 15 feet long, 5 feet six inches in diameter, and five-eighths of an inch thick. Inside each TSC, which weighs approximately 15 tons, lies 24 spent nuclear fuel rods.

Between 2002 and 2004, specialists carefully removed spent fuel rods from wet storage in the spent fuel pool and inserted each into one of the 24 slots in a TSC. Then, they drained the TSCs of heavy water, welded the containers shut, checked for radioactive leaks and moved them about 1,200 feet to the ISFSI, where they were placed upright to be covered by the VCCs. The VCCs' 28-inch-thick concrete wall protects the TSCs against wind, rain, fire, an accidental plane crash or a potential terrorist attack.

Until the DOE provides permanent storage for GTCC waste and is ready to receive it, virtually all GTCC waste from nuclear plants will remain stored at the site where it was used. Ultimately, the VCCs will be lifted off, and the TSCs will be loaded onto vehicles headed to Yucca or another site for permanent storage. In the interim, nuclear storage remains at the ISFSI in Wiscasset.

WISCASSET'S CASE

The town hired four parties as experts to work with the lead attorney:

- A local appraiser was engaged to appraise the 820 acres, but not the ISFSI site.
- An expert in nuclear power regulation would explain the history and present status of nuclear power generation and waste storage in the United States.
- An economist who held no specialized appraisal qualifications would offer a fair market value of the ISFSI site, principally using his interpretation of avoided cost and comparable sales.
- An expert on public utility ad valorem taxation, who became affiliated with a state-certified real estate appraiser, would later provide a value opinion.

The lead attorney focused on defining the highest and best use of the ISFSI site. The brief he prepared stated:

"The ISFSI parcel is similarly zoned industrial. This property is now committed by Maine Yankee to long-term storage of spent fuel in a dry cask storage system. This commitment follows exhaustive studies on the most economical means to store spent fuel waste pending receipt and permanent disposal by the U.S. Department of Energy. Maine Yankee has committed millions of dollars of land, improvements and personal property in the form of storage and transport casks, concrete silos, and associated facilities. Our analysis below indicates that the Maine Yankee property has certain characteristics that make it useable as a site for the storage of the Maine Yankee spent fuel waste, an activity with a very high rental value. Based on that analysis, it appears that storage of spent fuel waste is the highest and best use of the ISFSI site parcel as of April 1, 2003."

The town's economist stated that the nine-acre ISFSI site was being used for nuclear waste storage and was licensed by the Nuclear Regulatory Commission for that purpose. He stressed that few sites in the world are accorded the privilege of nuclear waste storage, and those that are legally eligible for such use have an extremely high value. Its value should be measured, he said, by certain comparables and avoided costs.

He provided a set of comparables to derive a land value, applying his concepts of avoided cost and comparable sales. None of these avoided costs or sales comparables had become a reality and was unlikely to ever become reality. The economist's comparable sales or avoided costs included:

- *Mescalero Apache Tribe in New Mexico*—Private Fuel Storage, a consortium of up to 33 nuclear power generating companies, reportedly had offered \$250 million to the Mescalero Apache Tribe in New Mexico to use of part of their reservation as an interim spent nuclear fuel storage. The Mescaleros turned down the offer. The town's economist contended that the Mescaleros' refusal to sell clearly indicated that the Native Americans' land—and by extension the ISFSI site at Maine Yankee as well—was worth more than \$250 million. He did not

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Maine Yankee's nuclear reactor—which at one time was Maine's largest electricity producer—was dismantled as part of the plant's decommissioning.

scale the amount for size; that is, he did not allow for the huge difference between the amount of space required for the waste produced by Maine Yankee and required for the total waste of 33 atomic power companies. Nor did he consider other regulatory barriers to approval.

- *Skull Valley Band of Goshutes, Utah*—After the Mescalero Apache Tribe refused the \$250 million offer, the consortium approached the Goshutes in Utah. That transaction would have provided \$90 million to \$300 million worth of combined payments to the tribe and to Tooele County, Utah, but did not materialize.
- *Mdewakanton Dakota Tribe at Prairie Island, Minn.*—A nuclear plant operating in Prairie Island, Minn., was reportedly willing to pay as rental for nuclear storage an

annual amount having a present value of \$135 million. The payments were for the Mdewakanton Dakota Tribe and the Minnesota Renewable Energy Development Fund. Research conducted by independent counselors discovered that the Prairie Island plant had been threatened with closure if it did not arrange for this fuel storage and consequently was under compulsion in the transaction. The Native Americans would receive a small part of the total payment.

■ *LIPA-PECO fuel core sale*—Upon disassembly of the Shoreham plant, owner Long Island Power Authority, or LIPA, had a partially used irradiated fuel core that had to be disposed of. LIPA paid \$46 million to Philadelphia Electric Co., or PECO, for its removal. PECO estimated the remaining fuel to be worth \$70 million. The economist concluded that LIPA essentially paid \$116 million—\$46 cash plus \$70 million worth of unused fuel—to remove its waste. The economist compared the amount of remaining fuel to Maine Yankee's storage needs. By extrapolation, he concluded that the \$116 million was the equivalent of a \$335 million value for Maine Yankee's needs. He did not explain the duress that Shoreham endured for the required disposal.

■ *British National Fuels and COGEMA*—The economist also discussed shipping spent fuel to British National Fuels in the United Kingdom or COGEMA in France. He concluded that such a transaction would have a present value of \$220 million to Maine Yankee. He did not, however, acknowledge that the United States would not allow shipments of nuclear fuel to be reprocessed in foreign countries. Nor would Britain or France accept nuclear fuel as waste.

The economist concluded that “a reasonable estimate of the fair market value of the Maine Yankee site is approximately \$135,000,000.”

INDEPENDENT TAX ANALYSIS

The standard of value to be taxed was central to the analysis provided by Maine Yankee's independent counselors, who also needed to distinguish market value from value in use and fully explain the concept of highest and best use. To rebut the town economist's report, counselors had to provide clear and understandable explanations supported by theory and practice, and convey them using common sense. So the counselors needed to not only

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support their theories and valuations, but also show where and how the economist deviated from accepted real estate methodology.

According to the Maine Constitution (Article IX, Section 8), just value is the appropriate standard of value to be taxed, and in the state of Maine just value is synonymous with market value. (See *Yusem v. Town of Raymond*, 769A. 2d 865, Me. 2001.) Thus, the market value of Maine Yankee's ISFSI site and ISFSI structure was the key issue to address.

The question was how much a willing buyer would pay, and how much a willing seller would accept, for this land and facility as of April 1, 2003. In this valuation analysis, a number of facts were particularly relevant:

- *Inability to store others' facilities' wastes*—Maine Yankee's license to store spent nuclear fuel rods is limited to storing waste from its own nonoperational facility. The site cannot store nuclear waste from other sources.
- *Size*—The Maine Yankee ISFSI land and structure is built to meet Maine Yankee's nuclear waste storage needs only; its size is limited to the 64 casks and has no space available to accept any other waste.
- *Maine Yankee is permanently decommissioned*—Maine Yankee has no continued operations and will not generate any further nuclear waste.
- *ISFSI is a cost center, not a revenue producer*—Maine Yankee's ISFSI produces no goods or services that can be sold to generate income, and it generates no income.
- *There are no known potential buyers of the ISFSI or ISFSI site*—Market analysis also provides a basis for determining the highest and best use of a property. An existing or proposed improvement under a specified use may be put to the test of maximum productivity only after it has been demonstrated that an appropriate level of market support exists for that use.¹ Though a use might be permissible, that does not mean it is the highest and best use. Further, a willing buyer and seller are necessary to have a market value. Without an economic benefit to motivate potential buyers to pay Maine Yankee for the ISFSI site, there are no potential buyers.²



These 64 vertical concrete casks at Maine Yankee's ISFSI enclose sealed transportable storage casks filled with spent nuclear fuel.

In summary, the ISFSI site is similar to a landfill adjacent to a closed and demolished factory. Its capacity to store waste is fully dedicated to existing waste. It cannot generate income by accepting or storing waste produced by others, and it does not facilitate the generation of any future income.

COMPETITIVE CHALLENGE

The town's attorney and economist presented what the counselors believed was a competitive challenge. Despite the counselors' professional distinction, the town's attorney and economist seemed to have certain advantages such as:

- A level of trust and local familiarity in the New England area, which could give the impression that the town's witness were more knowledgeable than hired, out-of-state expert witnesses.
- A feeling that government has greater credibility than private industry.
- An absence of state licensing constraints over economists.

Counselors were fortunate that members of the board of tax appeals who heard the case could ask questions and hold open discussions to arrive at a reasonably informed decision. By contrast, if a local panel without expertise in real estate had heard the case, the outcome could have been subject to greater uncertainty.

Entities involved with complex litigation often cling to their positions without acknowledging any validity in their opponent's position. By listening to the opinions

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of objective and independent counselors, reconciliation can occur.

When CREs serve as expert witnesses, they are not client advocates. Instead, they are experts in the litigation matters at hand and can apply their expertise by performing thorough research—including examining and applying the definitions of value provided in the law—and explaining their findings. CREs also can offer critiques of other experts' reports and opinions. This service can improve understanding of the opponent's position, which could help the parties reach a settlement; or explain complicated matters to courts, so they can make better-informed decisions.

OUTCOME

Maine Yankee and the town of Wiscasset reached a reasonable settlement during a hearing of the board of tax appeals. The land was not credited with extraordinary valuation and, instead, was taxed as ordinary industrial land; the improvements were taxed on original cost less depreciation over time. Though this compromise may seem acceptable to some, one could argue that the improvements have no value in exchange and, therefore, should not be taxed at all.

CREs with cases involving a so-called battle of experts should strive to have tribunals with expertise in the matter hear the cases. This process would potentially reduce dependence on clever presentations and emotions, and increase the importance of appropriate methodology and research. This situation places a burden on CREs to provide the highest level of research, expertise and ethics. ■

1 *The Appraisal of Real Estate, 12th Edition* (Chicago: Appraisal Institute, 2001).

2 The only theoretical, and speculative, buyer would be one who thought it could operate and maintain the ISFSI for less than Maine Yankee's cost. The ISFSI comes with an operating and maintenance liability of approximately \$6.8 million per year in 2003 dollars, estimated through 2023. This liability has been prefunded in Maine Yankee's decommissioning fund or will be by 2008. The only possible bidders would be ones who would purchase the ISFSI and the fund and expect to operate the site with the ISFSI for less than the fund amount and to retain the savings. That, however, would be the purchase of an intangible—the fund, which is not subject to property tax. And there is no indication that someone could operate and maintain the ISFSI for less than Maine Yankee, so even under this scenario there is no purchaser or market value for the ISFSI site or improvements.

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