BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Union Electric Company d/b/a AmerenUE's Tariffs to Increase its Annual Revenues for Electric Service	)) Case No. ER-2010-0036)

NOTICE REGARDING MATERIAL PRESENTED AT JANUARY 6, 2010 AGENDA

Issue Date: January 13, 2010

On January 6, 2010, the hereto attached documents relating to possible legislation regarding credit metrics was presented to the Commission during Agenda. Because this information was provided by organizations which are a party in the above referenced cases, I thought it necessary to make this disclosure to all other parties of record.

Respectfully Submitted,

Robert M. Clayton III
Chairman

Dated at Jefferson City, Missouri,
On this 13th day of January, 2010.

Presentation to the
Missouri Public Service Commission

Regulatory Plans For Construction

Missouri Industrial Energy Consumers (MIEC)

January 6, 2010

Regulatory Compact

- Utility receives franchise right to be exclusive provider of utility service
- Customers pay rates that reflect prudent and reasonable costs

Traditional Cost of Service

- **Customer Rates**
  - ➤ Included:
    - Plant In-Service (PIS)
    - O&M
    - Depreciation and Amortization
    - Taxes
    - Operating Income (PIS)
  - ➤ Excluded:
    - Plant not yet used or useful in providing services
      - CWIP
      - Plant Held for Future Use
    - Imprudent or unreasonable costs

Traditional Cost of Service

Test Year

- ➤ Billing units (kW, kWh, # customers), Utility Plant, Operation Expense
- ➤ Revenue Requirement, per unit rates
- ➤ Match recovery and expenses in same year

Asset Cost Recovery Over Its Useful Life

- ➤ Assets with 30 year life provide service for 30 years
- ➤ Customers pay for the asset's cost over the period it provides service
- ➤ Match cost recovery with service life

Regulation Simulates Competition

Regulatory Compact

- ***Utility Benefits***
  - ➢ Rates adjusted to recover prudent and reasonable costs
  - ➢ Provides opportunity to earn a fair return
  - ➢ Prices support investment grade credit and access to capital in most markets
- **Customer Benefits**
  - ➢ Rate based on only the cost of providing service
  - ➢ Not used and useful, imprudent or unreasonable cost excluded for setting prices

Limitations of Traditional COS

Major Construction Programs

- CWIP not used or useful
- Accrues an AFUDC return
- Earnings opportunity protected
- Cash flow constrained – (AFUDC earnings are non-cash)

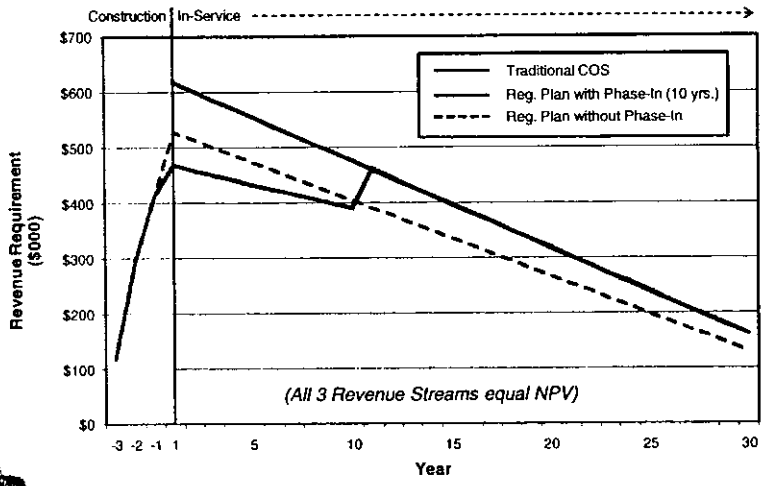
Construction Regulatory Plan

- Supplements traditional regulatory treatment to enhance cash flow during construction
- When is a regulatory plan needed?
  - ➢ Financial need is identified
  - ➢ Large construction program constrains a utility's cash flow
  - ➢ Support needed to protect utility credit rating and access to capital to fund construction

Construction Regulatory Plan Objectives

- Preserve the compact – balance the interest of all stakeholders
- Utility: Less external capital needed, stronger internal cash flow
- Customers: Pay more today, but less later

Revenue Requirement Illustration



Regulatory Plan

Credit Metrics / CWIP Cash Return

- Only if Financial Need is established
- Only for large construction projects – fossil units and nuclear generation units
- Preserve the stakeholders balance
  - Only for financial need
  - Pay more during construction – less after construction
- Good start
  - KCPL and Empire
  - Follow the plan

Missouri Industrial Energy Consumers
Missouri Public Service Commission Agenda Meeting
January 6, 2010

Points Regarding
Allowing Utilities to Collect Financing Costs Associated with
Construction Prior to In Service Dates of Related Asset

1. It is a traditional ratemaking principle that the customers who receive service from an asset pay for the cost of the asset, including the cost incurred during the construction period to finance it. This "matching" concept is why the cost of assets, along with their financing costs, are capitalized and recovered from customers over their useful life. That way, customers who actually receive service and benefit from the asset pay those costs.

2. Extraordinary rate treatment may be considered when an asset that is being constructed is so large in relation to the utility's existing rate base that the traditional approach cannot be followed.

3. The purpose of such extraordinary rate treatment is to maintain a utility's investment grade bond rating and financial integrity. The options include (1) allowing the utility to have an abnormally high return on equity, (2) allowing for the inclusion of construction work in progress in rate base or (3) including in the utility's expenses an amortization expense which provides for the necessary financial integrity ("regulatory amortization").

4. Allowing an extraordinary high return on equity is not beneficial to the customer. Allowing construction work in progress in rate base violates Missouri law. This leaves the "regulatory amortization" approach, which has been followed successfully in the case of Kansas City Power and Light Company and Empire District Electric Company in association with the construction of Iatan Unit 2.

5. Under the regulatory amortization approach, the amount of the amortization expense to be included in rates is the amount that must be added to revenue requirement in order to achieve the specified financial metrics. The specified metrics are usually the cash flow and interest coverage ratios required to support an investment grade bond rating and to maintain financial integrity.

6. These amortizations represent contributions by customers. In order that customers receive the appropriate recognition for their contribution, the amortization balance should be tracked and then be amortized back as a reduction to rates over a reasonable period of time.

7. Because the regulatory amortization approach is extraordinary rate treatment, it should be available only in the case of truly exceptionally large assets in relation to the utility's rate base. Eligibility for regulatory amortization should be limited to large fossil-fueled generating units and to nuclear generating units. Renewable energy is generally in small increments and does not require this extraordinary treatment. The same is true of transmission and distribution expenditures and demand-side management program costs.

8. MIEC is not opposed to a regulatory amortization approach so long as the essential conditions and protections outlined above are made clear in any legislative or regulatory proposals. MIEC is glad to work with the Commission and all stakeholders on this issue.

NOVEMBER/DECEMBER 2008

ELECTRIC PERSPECTIVES

THE FUTURE FOR NEW NUCLEAR

Smart Grid Framework

Getting the Right Price

Seeing Daylight

What is the future of new nuclear?

PARTICIPANTS

Jack Davis *is senior vice president and chief nuclear officer at Detroit Edison.*

Michael Kansler *was president, CEO, and chief nuclear officer at Entergy Nuclear until his retirement at the end of November.*

Bill McCollum *is chief operating officer at Tennessee Valley Authority.*

Jim Miller *is chairman, president, and CEO at Southern Nuclear.*

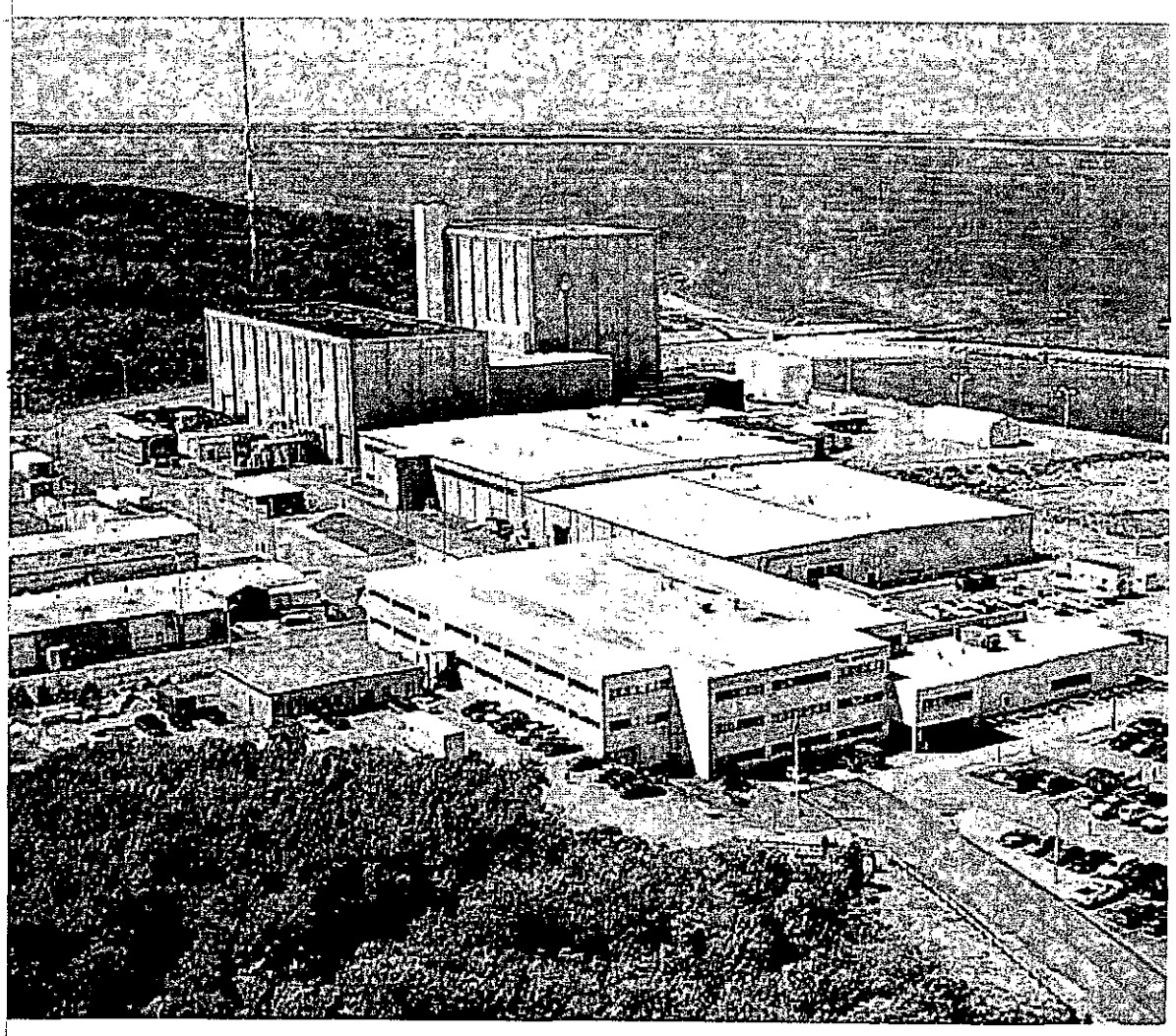
Ellen Ruff *is president of the office of nuclear development at Duke Energy.*

Thomas Flaherty *(moderator) is a senior partner at Booz & Company in the energy and utilities practice.*

Companies really have started down the road to new nuclear. As of September 30, 16 companies or consortia had sketched out 24 sites and made 17 submittals for combined construction and operating licenses; the Nuclear Regulatory Commission has issued four early site permits. As Congress debates climate change and energy policies, the issue of nuclear as a non-carbon-emitting baseload source—and as an industry that creates new high paying jobs in both construction and plant operation—has risen to the top. Nuclear provides 20 percent of the electricity generated in the United States; and the industry as a whole boasts a 91.5-percent capacity factor. Public support for nuclear has risen over the years and is particularly strong in the communities where nuclear plants provide an economic boon.

But new nuclear is not without its share of interruptions and challenges. While the industry socializes nuclear as a smart green solution, it also searches for the strategies to provide more certainty to financing and construction management. It takes a lot of time and money to build a plant, and a good part of success relies on investors and regulators holding a steady course. Moreover, no one has

Putting a price on carbon makes people say, "Wait a minute, this is going to make a difference." Being defined as a clean air energy source can make the difference for nuclear.



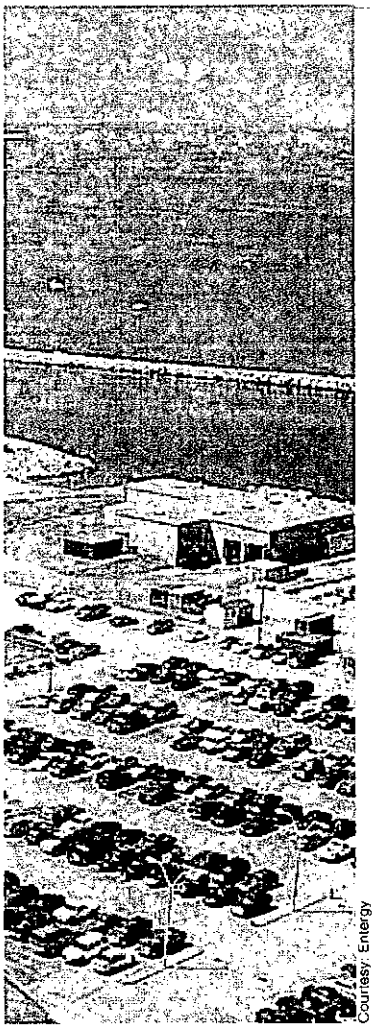
completed a new plant since 1996, and only four other reactors have been completed since 1990. Those in the industry talk of the first and second waves of nuclear construction—the first being the pioneers and the second being those companies that are spurred on by the first wave's successes or that benefit from the pioneers' experience.

Booz & Company's **Tom Flaherty** sat down with five nuclear leaders and asked how the nuclear resurgence was going.

Where we are relative to the renaissance or the rebirth of nuclear? Are we on track or are we lagging? Are there any particular impediments that have surprised you?

McCollum: The economic downturn certainly surprised everyone and changed the situation for the industry. A number of players are reassessing where they are with the demand for electricity, access to capital, and the regulatory situation, and what it means in terms of going forward with new nuclear projects. Where the country is in terms of a nuclear renaissance hinges more on the public policy side—that affects the ability to manage the licensing risks, which are still one of the key sets of risks of any future project. Everyone's concerned now with carbon and reducing carbon emissions, but what does that really mean? Of course, opinions are all over the map—from "you never need any more baseload generation in the future," to "other current baseload options have to be part of this." Getting a national strategy will be essential if there really is going to be a nuclear renaissance.

Kansler: When we started the renaissance four or five years ago, we were looking at construction and commodity prices that I would consider reasonable. Then those prices went into the stratosphere—even if you have a good regulatory structure, price volatility remains a big pill for a state to swallow when you con-



Courtesy Entergy

Old reliable in Massachusetts. The Pilgrim Nuclear Station in Plymouth began commercial operation in 1972 and was sold to Entergy Nuclear in 1999.

sider the overall cost of the plant. Unless you have a driver like carbon legislation, then we'll be stymied as an industry. Putting a price on carbon makes people say, "Wait a minute, this is going to make a difference." Being defined as a clean air energy source can make the difference for nuclear.

Initially we'll have a small round of new plants, and then we'll have a second round, because everybody's going to wait and see what happens with the first. How much do they cost? How's the regulatory treatment, both by the state and the Nuclear Regulatory Commission [NRC]? What's happening in the carbon world that will make nuclear plants better, even at the prices they're quoting today?

I admire utilities that are moving forward, because it needs to happen. It keeps the renaissance alive. But the renaissance has hit a plateau as we wait for some of these answers to unfold.

Miller: There are some concerns if the need for your unit is driven principally by your load. The United States is passing out of the period where we didn't invest capital in our country and into a period where we are. And it's not just electric facilities—it's roads, bridges, highways, hospitals, and schools. We spent some time riding the capital investments of the 1970s and early 1980s, and now we have to invest in infrastructure again. The population is growing, and people are still buying the things they take home and plug into the walls. Sure, the load has been level for a while—in our territory, too. But the load is out there, and that will be a driver.

In our area, we have the load that can support the construction of a new facility. Others may want to replace a generation resource that for one reason or another has become unpopular—for example, due to carbon footprints. Even so, those units are getting older—and it's a matter of economics. The numbers we saw 20 years ago were quite attractive. They've changed, but the playing field has changed, too. The existing units will run 60 years, or they may run 80 years or more. The ultimate test is cost per kilowatt-hour, and in that respect nuclear, all things considered, is an efficient, long-term, long-run baseload generation resource.

Is the wait-and-see attitude just as likely to be risky to the renaissance of the industry, or do you think it'll actually help? Will a delay in being able to move forward on a broad basis send the wrong message?

Ruff: Like the earlier renaissance—the first go-around in the 1980s—it is all about the costs. It is still expensive (and more so now), particularly when you compare it to market capitalization. For instance, we have a projected estimate of approximately $11 billion for our two units. Duke Energy has about a $16 billion-$18 billion market cap on a given day—so $11 billion dollars is a bet-the-company kind of risk (along with the licensing risk) that we haven't seen. To me, it spells the absolute necessity for building nuclear with partners and sharing the risks. An intentional delay is not what we had in mind, but the economy clearly has had an impact on legislative reform.

Davis: We're obviously in a different place. The cost of one of those units is more than our market cap, so we're going slowly for a reason. On a broader front, it is important to move forward, but success in the renaissance will balance on whether the first plant is a success or not. Actually, the first two or three really have to go well. If in fact we don't need to exercise the loan guarantees on the first two or three, then there is a

At the Department of Energy's former uranium enrichment plant in Piketon, OH, Duke Energy CEO Jim Rogers announces site evaluation plans for a new nuclear power plant.

AP Images

possibility that the guarantees will remain as a long-term method to support funding. But if we get in trouble on the first few, we will, as an industry, be in trouble.

Miller: That's an outstanding point. We've had that discussion with our partners in Georgia, the Shaw Westinghouse Consortium, and Toshiba. Our units are built on the shoulders of the units of the people in this room. The United States is highly supportive of nuclear, because the existing reactors have run so well—almost a 92-percent capacity factor. [Capacity factor is a measure of total power generated as a percentage of designed production.] Fifteen or twenty years ago we were not even at 50 or 60 percent. Also, there are young people today who have never heard of Chernobyl or Three Mile Island. All they know is that electricity comes from a nuclear plant, and they've got friends whose moms and dads work there. But that puts the pressure on us to get it right. There's no question that the eyes of the world are on us.

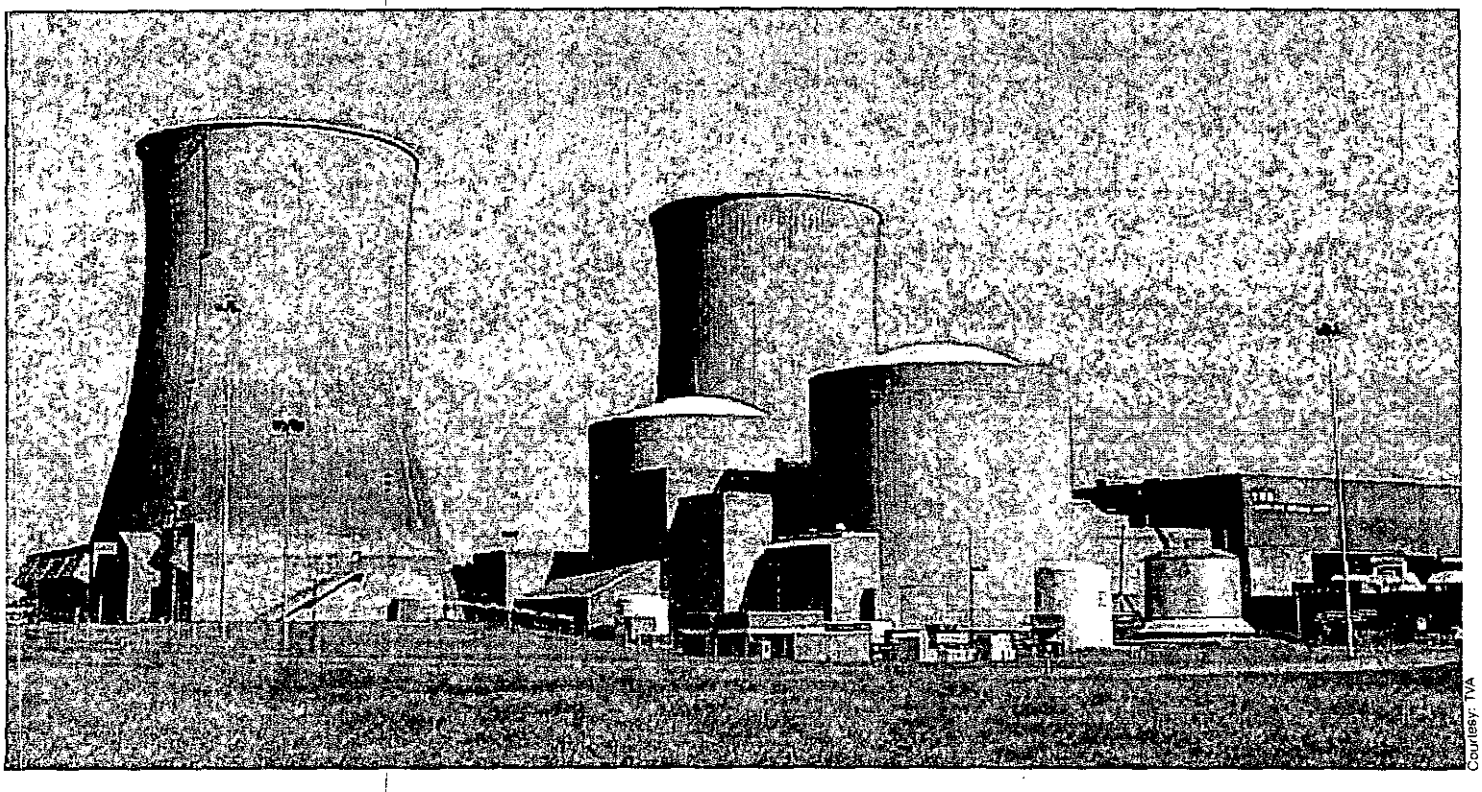
Dealing with EPCs

So, a lot depends on the success of the first couple projects. Each of you are in a different place. Some of you have completed contracts; others have been negotiating over time; others have been in the contracting environment but for a different kind of project. Could you characterize your perspectives on the current EPC environment and how you've seen that change over the last 18 months?

Miller: We executed our contract about a year ago [April 2008]. And then it was the subject of both a competitive bid process and hearings by the Georgia Public Service Commission. So we feel that, in our case, the contract fairly allocates the risk among the members of the consortium.

Ruff: Take a look at SCANA's contract with its partner, Santee Cooper. They filed their certificate in South Carolina. They had expert testimony before the Office of Regulatory Staff [ORS]—it was one of the best proceedings I've seen. They explained how they allocated their risks. Even one of the witnesses for the ORS actually said that SCANA had the better part of the risk deal and that the risk was allocated fairly. It's helpful to us to see their experience.

Miller: As we go through the regulatory process, you'll start to see paragraph clauses and regulatory templates become more standard. There was nothing on a piece of paper when we started with ours. SCANA, I suspect, had the benefit of some of our negotiating findings. But if you fast forward it two years, as more and more contracts are reviewed and customers, vendors, legislatures, and public service commissions



Courtesy: TVA

The mostly completed second unit at Tennessee Valley Authority's Watts Bar nuclear plant was mothballed in 1988. TVA wants to move the status from "terminated" to "deferred."

Where Their Programs Stand

Georgia Power

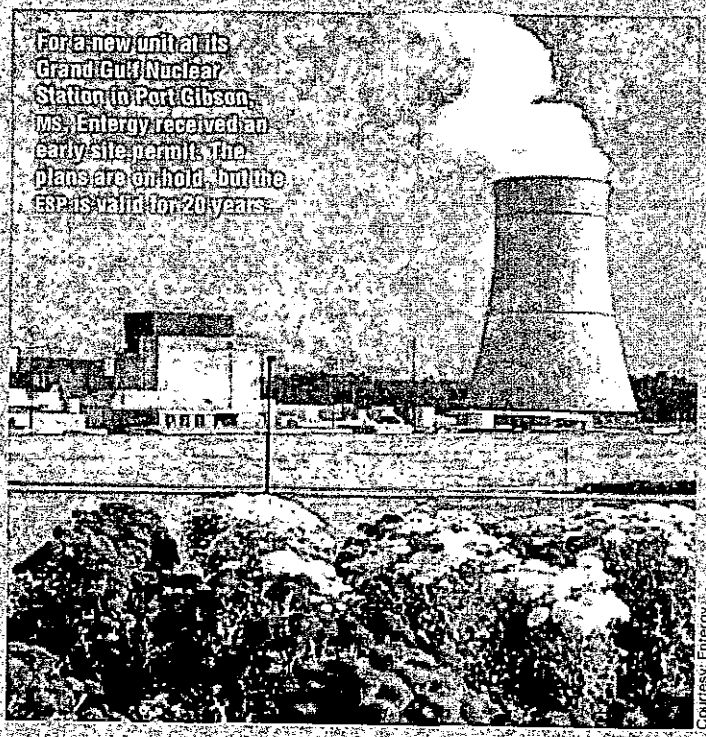
Georgia Power Company is building two reactors at its Vogtle site near Augusta, GA—Vogtle III and IV. Georgia Power owns about half of it; Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton have the same percentage in Vogtle III and IV as they have in Vogtle I and II. "But that's every electricity supplier in the state," said Jim Miller, chairman, president, and CEO at Southern Nuclear, "and that has made it a project that the state enthusiastically supports." In April 2008, Georgia Power signed an agreement with an engineering procurement contract (EPC), Shaw Westinghouse Consortium, and received an early site permit in August 2009. It has begun some peripheral construction, with the timetable of 2011 to get a combined construction and operating license [COL]. "We've got our challenges ahead of us, but this is a good time to be in this line of work," said Miller.

Tennessee Valley Authority

TVA has worked for five years to return Browns Ferry Unit 1 to operation after it was out of service for more than 20 years. TVA is also completing the second unit of the Watts Bar nuclear (WBN) site, which was roughly 80–85 percent complete when it was mothballed in 1988. "Now, with the need to replace some equipment and restore the unit to the same condition and requirements as the first WBN unit, it is probably closer to 65 percent complete," said Bill McCollom, TVA's chief operating officer. TVA also has made license applications for two reactors at the Bellefonte site and recently received a favorable decision on restoring construction permits for two Bellafonte reactors that were mothballed until 2005, when TVA decided to drop the construction permits. Those permits have been restored in a terminated plant status, and now TVA is working with the Office of Nuclear Reactor Regulation on how to go from terminated to deferred plant status.

DTE Energy

"We really see ourselves as a second wave of new generation for a lot of reasons," said Jack Davis, senior vice president and chief nuclear officer at Detroit Edison. In September 2008, the company applied for a COL for Fermi III and expects to receive it in 2012. At the same time, DTE Energy sees low growth in Michigan's gross domestic product—which, with all the problems in the auto industry, is actually going down. But Davis considers that the timing may not be as much a function of demand as it is the climate change legislation, so DTE Energy wanted to have the nuclear baseload option available. The company's selected technology is GE's pressurized water reactor, so DTE is working with GE and the licensing process to move that forward. "And we'll continue to watch how the front runners move and take a lot of their leads as far as how we want to progress," said Davis.



For a new unit at its Grand Gulf Nuclear Station in Port Gibson, MS., Entergy received an early site permit. The plans are on hold, but the ESP is valid for 20 years.

Courtesy: Entergy

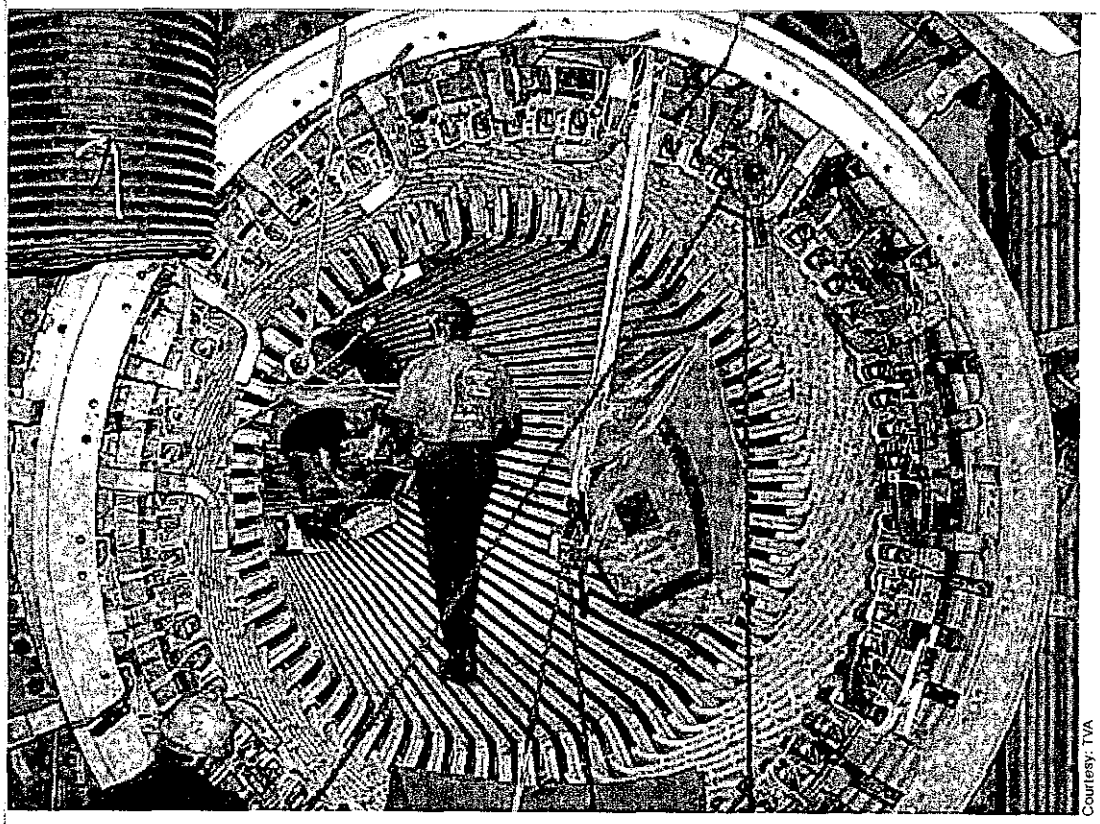
Entergy

Entergy, wanting to be in the initial group of new nuclear plants built, received an early site permit for a new reactor at its Grand Gulf site in Mississippi. "It was originally a first wave plant," said Michael Kansler, the recently retired president, CEO, and chief nuclear officer at Entergy Nuclear, "but we subsequently have become a second wave plant, mainly because we really couldn't come to terms with our EPC" in terms of risk sharing. Entergy has backed off its COL and now is looking at 2020 and beyond. In the meantime, with the goal of keeping carbon emissions to 20 percent below its 2005 levels now, the company is building two new gas plants and pursuing power uprates of its current nuclear fleet, among other things. "We won't be the first wave," said Kansler, "but we're not out of the game."

Duke Energy

Duke Energy has seven operating nuclear units at three sites. It has a COL on file for two units at Cherokee County, SC, but has not reached agreement with an EPC. "Once the economic crisis occurred, we decided it was the better part of valor to see how it shook out," said Ellen Ruff, president of the office of nuclear development at Duke Energy. Even more relevant to Duke's position, she said, is that South Carolina allows it to use construction work in progress (CWIP) as a tracker and to collect cancellation costs. "In North Carolina, we could get CWIP only if we were in financial distress—which would mean it was too late," she said. "Rating agencies have to know that they can count on the stream of cash flows. If you don't have CWIP, it's a tough row to hoe." She wants to force North Carolina's hand.

One Browns Ferry lesson is that there is no level of detail too great to get into in order to make sure that things are happening the way they should and the project stays under control.



Courtesy: TVA

Five years of modification and then a successful restart at Browns Ferry Unit 1.

start to send the signal about what they'll accept or reject, you'll start to find the same risk allocation processes across the board because it's become standard in the industry.

Kansler: Jim, I hope you're right, but I believe that it depends on whom you're negotiating with. We need to do more of what's already been done.

Miller: I agree. You'll never take away American horse-trading that negotiation brings out in both parties. But if two, three, or four regulatory agencies reject or accept something, that gives you an indication of what your future is.

Everyone, including vendors, is in a different position relative to risk tolerances. What are the areas that concern you the most about risk sharing?

Kansler: We have our view of what it means. We've talked to a lot of different people but haven't really changed our standards. We are interested in how others allocate risk, but in reality we know what we're looking for. We'd be willing to meet in the middle with companies, and the major vendors are willing to talk about risk sharing, but what it really boils down to is the liability that your company is willing to take on. That's probably the hardest part.

Davis: The most important change over the last few years is a shift from the all-or-nothing thinking. The thought was that an utility would sign a turnkey EPC contract, where an EPC company would take all the risk and just deliver a product at the end, risk-free, to the utility. Or, correspondingly, some of the EPC companies believed that the customer really has all the risk of the project, and you just do the work in good faith. But there's been a recognition that there will have to be some sort of risk sharing. The key is that, regardless of your risk-sharing mechanism, failure at the magnitude of cost that we're talking about is not acceptable. The question is now, how do all the parties focus on making sure that the project is successful?

Bill, you've been involved with two particularly large-scale restoration projects—Browns Ferry and Watts Bar. What's surprised you about the way those projects have gone and what have you done differently than you originally anticipated?

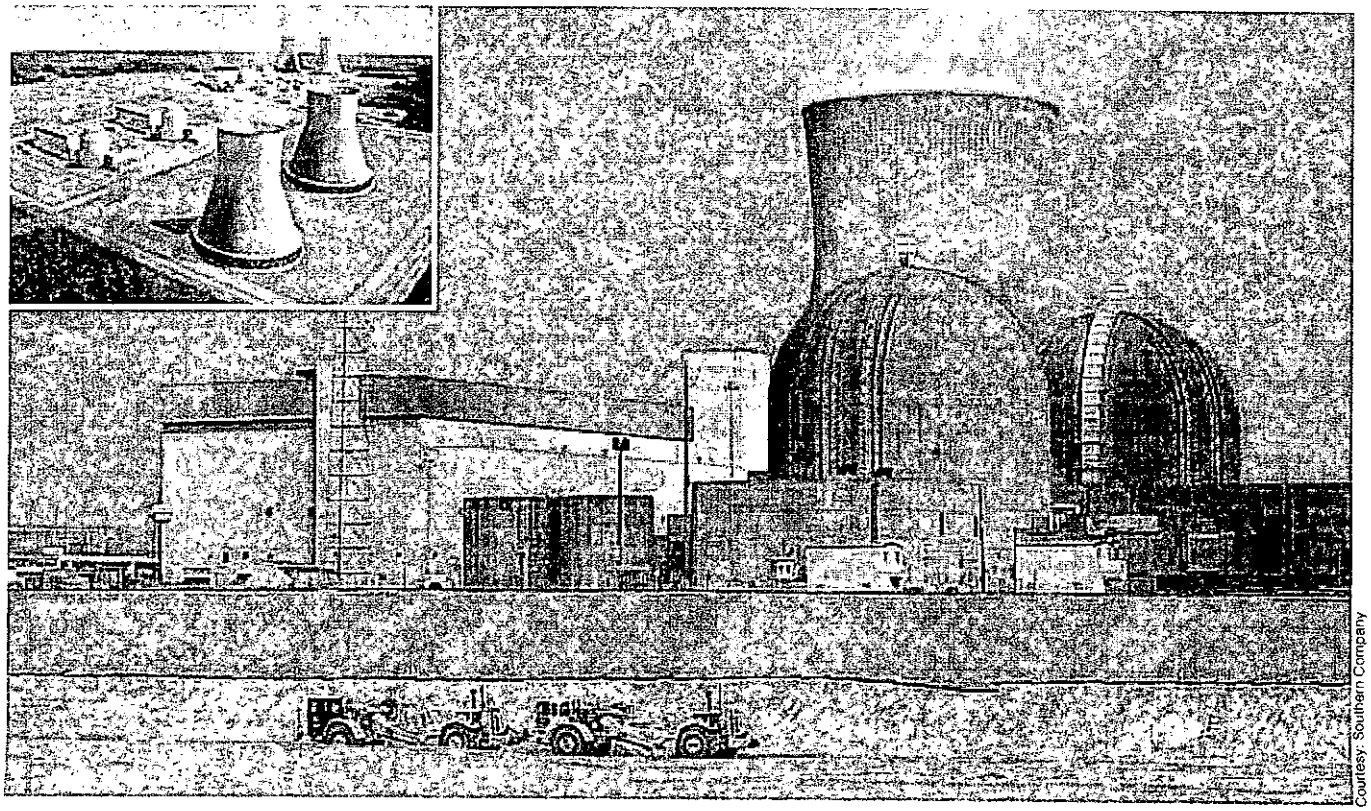
McCollum: The Browns Ferry Unit I restoration project was a five-year, roughly $1.9 billion

project. Although it was successful, we rolled a tremendous number of lessons learned from it over into Watts Bar. We had too many overlapping contracts at Browns Ferry and had an opportunity going into the Watts Bar II project to have much better clarity about the roles and responsibilities, the contract terms, and the whole project structure. We'll apply those lessons in future projects, too. As we look at the last round of nuclear construction, most of those projects were fast-tracked, and we did a lot of the engineering in parallel with the construction. There's quite a bit of cost and schedule risk involved in that, and you saw that play out in some of the delays the industry experienced. So, we're very reluctant to get ourselves into that situation again. Specifically on Watts Bar II, before we turn loose significant physical construction in the field on safety-related components and systems, we're working hard to get the engineering done down to the detail that allows work packages to be ready. We want to replicate that in new projects, even to the extent that we might break up the EPC parts of the contracting to make sure that there are clear dividing lines.

On the project management side, we have a structure at Watts Bar Unit II that parallels our EPC contractor project management structure. It is not a duplicate structure, but rather a parallel one that controls the project and is very engaged. One Browns Ferry lesson is that details matter—we can leave no stone unturned in making sure that things are happening the way they should and the project stays under control. If anything needs to be adjusted, you need know it before the cart's in the ditch.

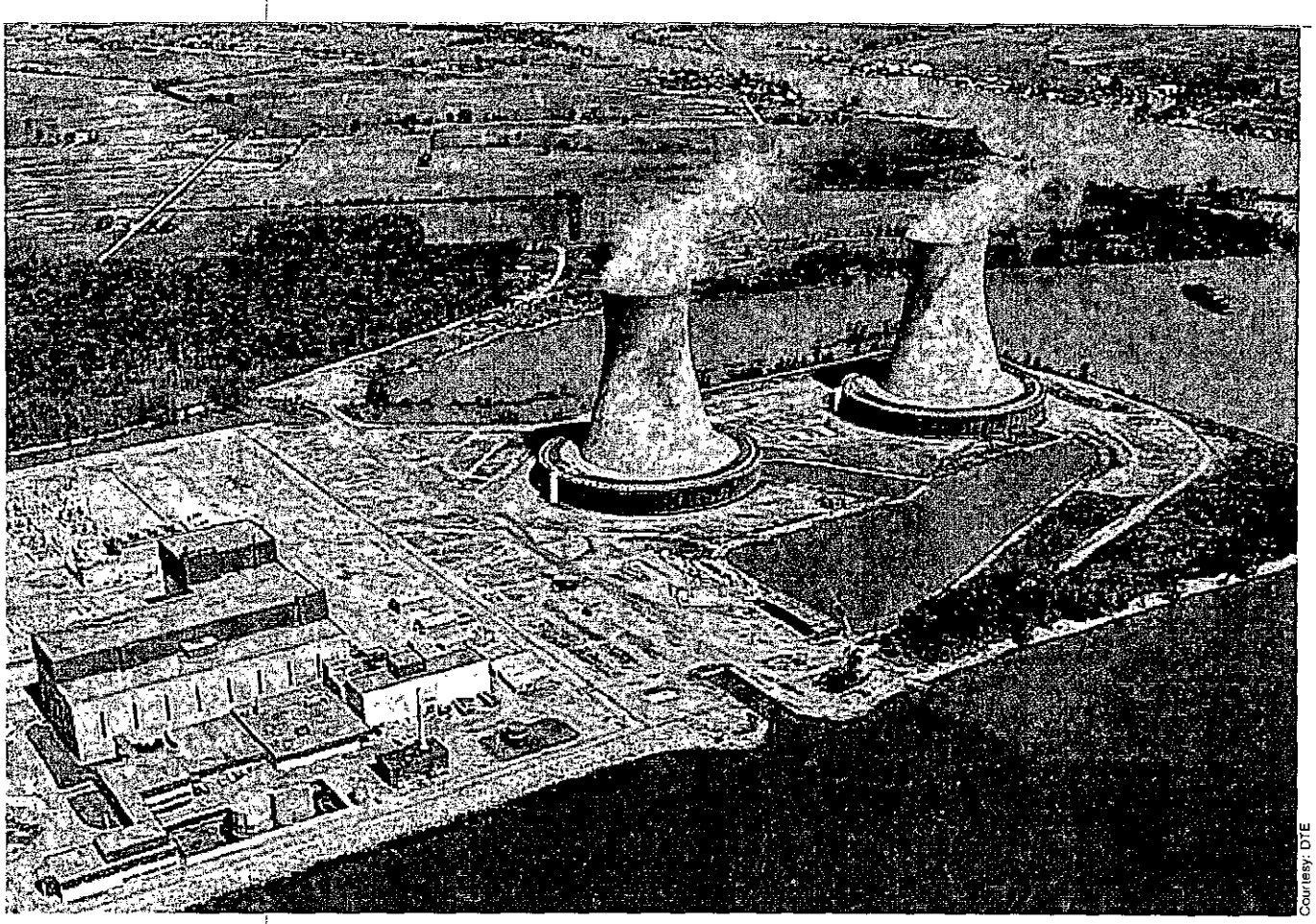
Kansler: We all paid the price in the last round of construction—there was always a horror story in every utility-built plant. That drove a lot of us to say that if we're going to do this again, we will have demands from the PSC that are much different. Tell your public service commission what lessons the company learned, because the commission will still look for comfort. Whether it's nuclear or gas or pet coke, it doesn't matter. If you can assure them that the plant construction will go well, then you can protect yourself as far as the risks involved in moving forward with that project; and the commission is probably going to be satisfied. But if things don't turn out well, they'll be the first ones to say, good idea but stop, it's not the right place to go.

Miller: The experience of Vogtle I and II was challenging and filled with anxiety—even though today it's clear that that project has been very successful. Lessons learned are embodied all over the place, in state legislation, integrated resource plans, and reciprocating processes in-



Georgia Power's engineering and procurement contractor already has begun basic site preparation at the Vogtle Nuclear Power Plant site for units III and IV.

Courtesy: Southern Company



Courtesy: DTE

DTE Energy's Fermi II plant. The company has filed a combined construction and operating license for a new plant on the site but has not committed to building it.

side the company and board committees. We need to understand what our liability is as far down as keeping up with vendors and the supply chain. We have a deeper interest in international supply chains, quality assurance, and quality control because of this. We have an active staff that tries to monitor the moving pieces and parts of the things that Shaw Westinghouse and its consortium will build. We're not going to be an absentee owner. We have in fact named a site vice president of Vogtle 3 and 4 whose job it will be to get up every day and be at the site. We've got another vice president named on our engineering and construction interfaces whose job it will be to get up every day and be at the site. So we will bring to bear years of experience with construction with due consideration for some of the difficulties of Vogtle I and II and the ever-changing regulations that affect us.

Financing

Could you elaborate on the magnitude of the financing challenge and the elements that you think Wall Street will be insisting upon?

Ruff: In fact, we have a list—not anything said to us directly, but S&P has been saying it to everyone and writing it down so we can put it in front of the regulators and say, "It's not enough to have cost recovery in a rate." It's hard to talk about ratings in public and how much they can cost you. You can talk about how much less the plant will cost over time if you can include construction work in progress (CWIP) in the rate-base, but regulators often need to focus not only on the long-term impact, but also on the immediate impact to customers. The financial community, however, is absolutely clear: You have to recover your financing costs; you have to be able to recover the costs if you cancel the plant; you can't have undue prudency reviews. They are really clear about cash flow and full cost recovery as you go. They don't say you have to have a partner, but you do need a strong, supportive state regulatory environment. It's helpful to have rules of the road that are clear—but the most important thing you need is an environment where you can count on cost recovery.

Davis: We totally agree. But it's a question of our ratepayers being able to swallow that, given

Investing in nuclear, even at some of the costs we see today, makes a lot of sense. But you have to make the case that it is a long-term strategy—that's tough.

the circumstances. Michigan has been in a very deep recession, for some time now. So when you start talking to the ratepayers about raising their rates even for a renewable portfolio, it's a hard pill for them to swallow.

McCollum: On the plus side, the rules are becoming clearer, so the rating agencies and others are being much more explicit about their view. The challenge is really what it has been with nuclear all along—that it's a large up-front investment to get a long-term benefit to the ratepayer. The educational challenge is not only about energy supply and security and the challenges of running the grid with a large quantity of renewables, but also the cost of electricity. The folks who can do the math have shown that under any reasonable scenario, if we're going to reduce the carbon intensity of the United States, the cost of electricity will go up in the future. Investing in nuclear, even at some of the costs we see today, makes a lot of sense. But you have to make the case that it is a long-term strategy—that's tough, because there never seems to be a really good time to do that.

Miller: State regulatory agencies have to be thoughtful. When you do the math, it is a progressive, customer-friendly decision to say, I can save you serious money in the future by using CWIP as part of the financing tools of the next nuclear plant. That's where a responsible state agency will look if it genuinely cares about its constituents' pocketbooks. If it doesn't allow CWIP and the cost of capital goes up, it does not go up just for the nuclear plant, but also for the transmission system and renewables.

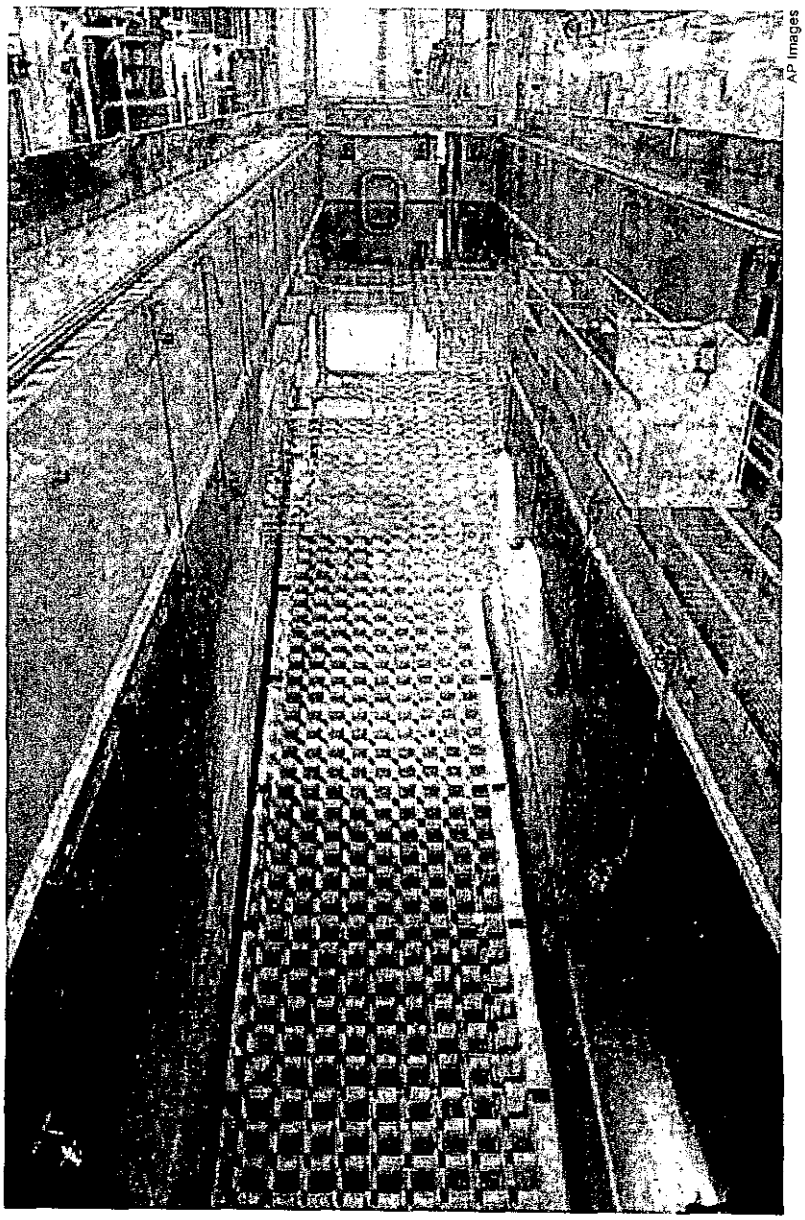
Spent fuel pool. Will the issue of nuclear waste have an impact on nuclear construction?

Partnerships

Do you foresee partnerships being leveraged for nuclear development? What will it take to make these partnerships successful?

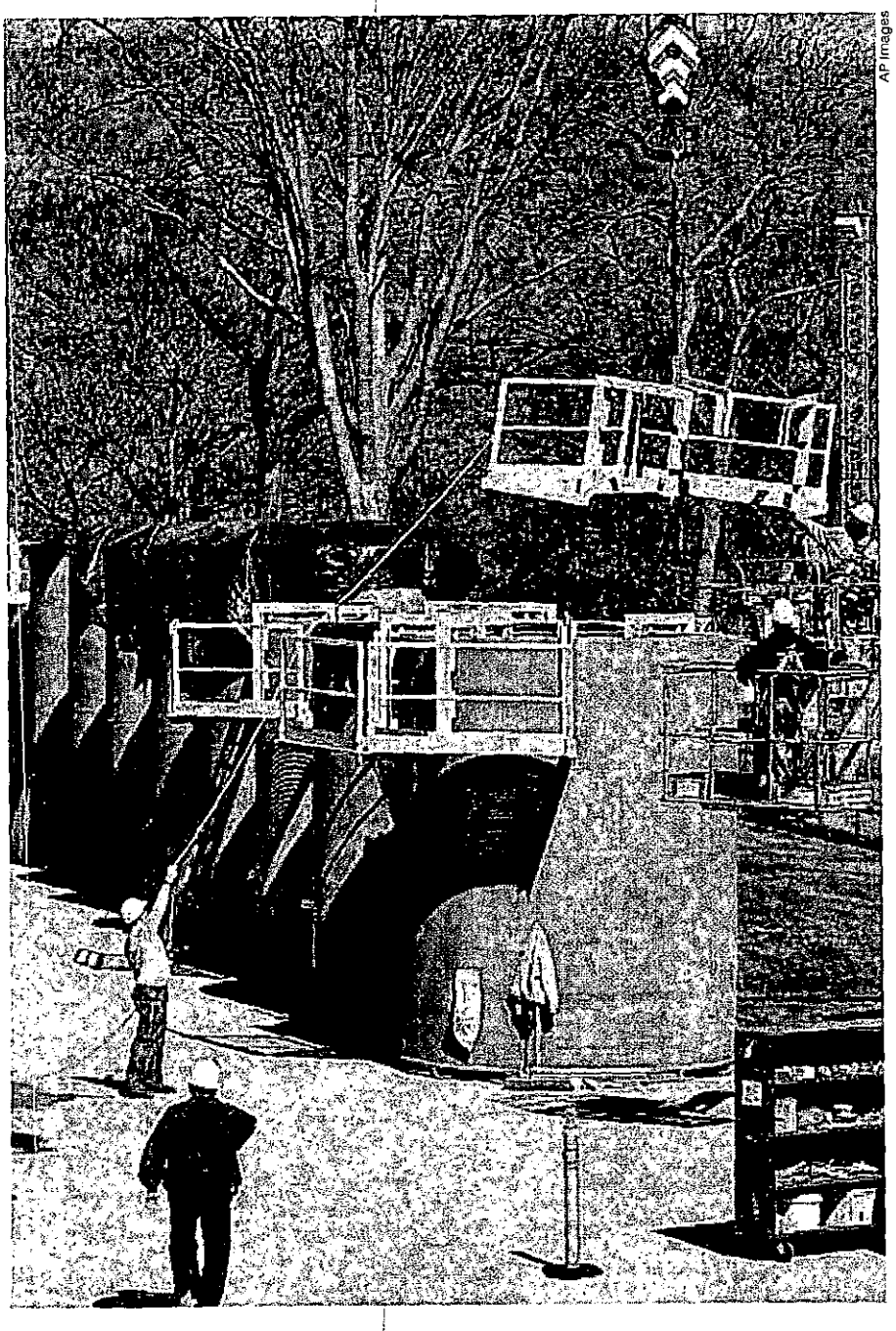
Miller: We've had a longstanding partnership with electric suppliers in Georgia. They are participants in both nuclear plants there—Vogtle and Hatch. From a business risk perspective, it's enormously helpful to have them. In addition, these are smart companies working inside the state of Georgia with a variety of city and county officials. They, too, have people in Washington who listen to them. We see that as a successful alignment of common interests.

Ruff: We own 12.5 percent of the Catawba plant now, and the rest of it is owned by municipals and co-ops that were in our service territory. This was the perfect marriage in that they were already our wholesale customers and could



AP Images

raise money at attractive rates. A partnership of two regulated utilities can spread the timing of the plant across longer periods and share the risks. If it's an undivided ownership interest, do you create a separate entity or just operate separately? Truthfully, a lot of state regulation is not particularly well set up for that. Each company has to do an integrated resource plan; and we each have dispatch issues related to integrating new systems. When you talk to regulators about two regulated utilities needing to build nuclear plants, the greatest concern is that we're both going to go out separately and build more than we need. When you talk about it in terms of a partnership, this helps you to be within the confines of what you need to share the risk ultimately. In our regulatory system, every time you talk about regional generation sharing, you get a very positive response from most regulators, but it's sometimes difficult to go further than that.



AP Images

Building dry storage for spent nuclear fuel at Entergy's Indian Point Energy Center in Buchanan, NY.

McCollum: Even though TVA is a completely different type of company—a federal corporation and not a state-regulated utility—we're looking very hard at partnerships. The first thing that makes the most sense, of course, is to look at partnerships with current customers. We are having discussions with some of our customers about co-owning generation. We've done some initial contracts along those lines and are looking at the financing and operational details. It makes a lot of sense to look at partnerships for large generation projects, not only from the standpoint of sharing the financing risks, but also in terms of how to build a local solution and get support to really make the project work.

Is there a future for moderate to small companies with respect to nuclear or is it only a large-cap company situation?

Davis: Even the large companies are struggling with financing. Being a small cap, our company will have to look very hard at a partnership to finance it. We're obviously not far enough along to say how that would look or who the partners might be.

Ruff: We would be considered a large-cap company, and even for us it is daunting. It's not that you can't; but when you look at the risk that it entails given the licensing and state regulatory support for it, it's hard for everybody, particularly the small caps.

What About Waste

What impact does the absence of a permanent waste solution have on your plans?

Davis: I don't see it having any impact whatsoever. We can demonstrate that we can safely and securely store it on site. And if you look 60 years beyond the end of this next wave, that's a long time, and surely we can solve the problem by then. Anybody who really thinks about this from a technological point of view would ask where technology was 200 years ago. Where is

What's your general sense of the sentiment around Washington to support a nuclear resurgence?

Marv Fertel, *president of Nuclear Energy Institute:* Much better than the spin about it. [There are positive provisions in the energy bills vis-à-vis new nuclear mitigating the amount of renewables you need to build; there are also fixes for problems with the Loan Guarantee Program. Part of the debate in general involves the expansion of nuclear construction.] Secretary Chu has said that the administration is fully committed to nuclear—both to building new plants because we can't deal with carbon without it and to closing the fuel cycle, which would allow us to get the energy out of the used fuel that's coming out of the current plants.

Secretary Chu actually indicated to the Democrats at a recent meeting that not only does he support it, but so do White House climate chief Carol Browner and National Economic Council director Larry Summers.

David Owens, *executive vice president of business operations at Edison Electric Institute:* There is a growing recognition that nuclear, as a noncarbon source, must be a vital part of what we do in the future. We do need to continue to encourage the secretary of energy to be a little more explicit publicly about the support for nuclear. And we also need to have the regulatory agencies, such as the Federal Energy Regulatory Commission [FERC], recognize that it's not just going to be energy efficiency and renewables, that we do need baseload capacity, and that nuclear is the most significant baseload capacity because it's not a carbon-based source.

There is also a realization that whatever we do will be extremely expensive. It's very difficult building any transmission—let alone a transmission line that must cross more than one state boundary—to integrate renewable resources. In addition, there are elements of risk with the other technologies that really haven't been well explained, and they have to be publicized. When they are publicized, the nuclear option becomes substantially more attractive.

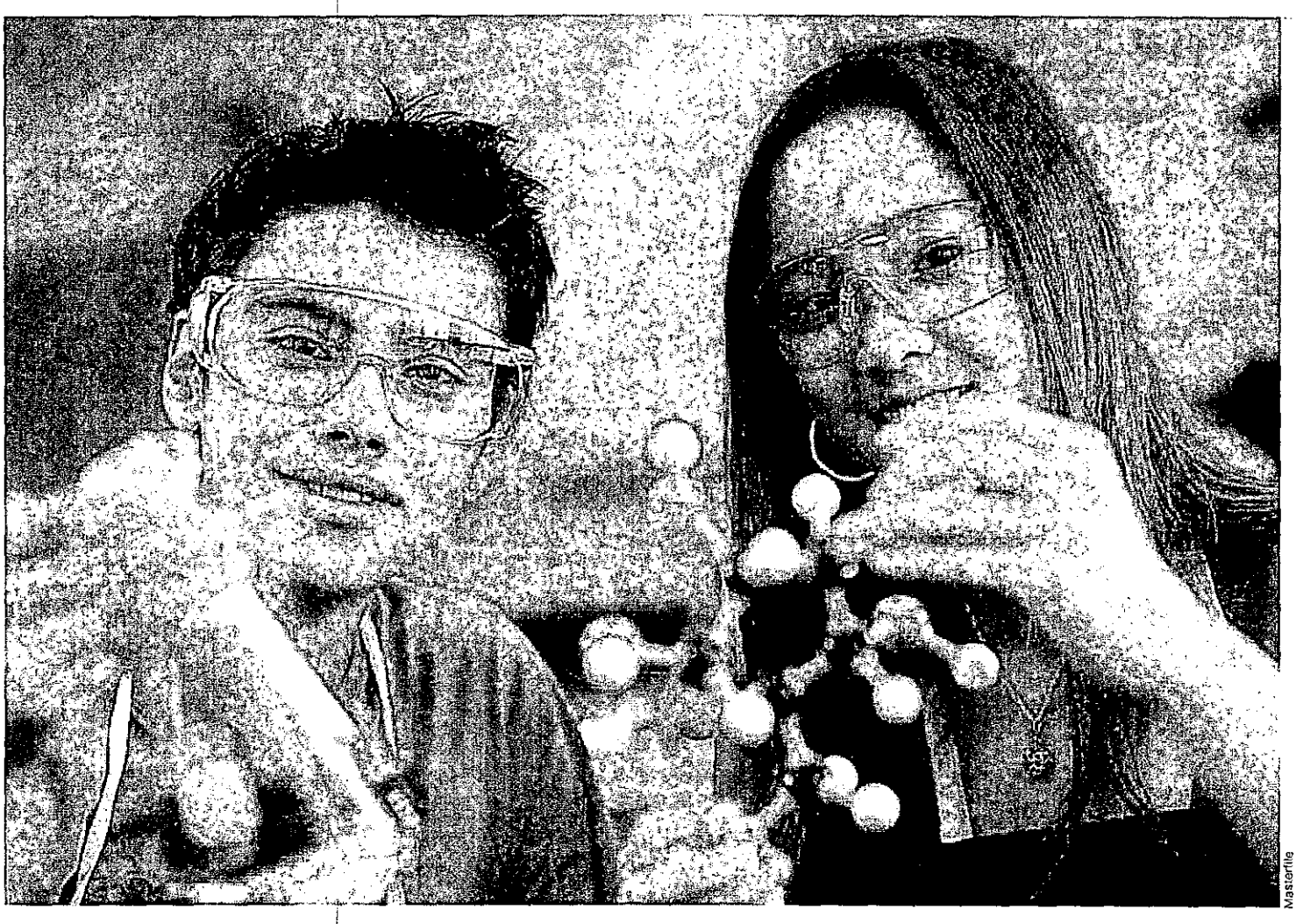
Fertel: The variability of wind is lost in the discussion. In fact, the wind industry talks about it as a 30- or 35-percent capacity factor.

Owens: All the renewables create operating challenges, relating to how you regulate your system, how you maintain your voltage, and how you maintain the frequency. Variable resources require not just back-up and standby, they require a whole range of ancillary services, which are not factored in when people talk about these technologies. So in a nutshell there needs to be education about all these other factors—we need to point out the operational challenges and risks. Then, look at nuclear technology: stable, high capacity factor, proven technology. In many instances, the transmission is there because we're expanding existing sites. All those factors should be brought to the discussion.

Fertel: We have no nuclear renaissance if you don't build the first ones correctly. One of the challenges is expectations. We shouldn't be expected to build 20 plants by 2016. Let's build four to eight plants that are in the hopper and get them built right. If that happens, you'll have a pipeline of plants, letting Entergy, Duke, and others make decisions. And the education on renewables won't happen this year. It's a religious fervor right now. If I were on the utility side, I'd try to educate customers, because they're the ones who will take the brunt.

Owens: Let's talk about clean energy jobs. Everyone talks about the jobs that will be produced for renewable technology, but look at the jobs that are produced when a nuclear facility employs a lot of people. There is a strong economic development message here that is lost. We can revitalize economies through nuclear. People don't realize that those facilities are a tremendous tax base, a tremendous employment base. In addition, it's a good base for young people who want to get into science and engineering; it's a way to exploit new talent and create new excitement. All those things can really revitalize and create the nuclear renaissance because they're all factors that are essential to the economy as it revitalizes.

Fertel: We've never committed as an industry to do the education. In the past, most companies avoided talking about nuclear—now, we really have to educate for the long term. In the near term, what it takes is for Vogtle, for SCANA's project [two new units at the V.C. Summer Nuclear Station, near Jenkinsville, SC], and for whatever upcoming project to have an effective construction program and be successful; and for the Nuclear Regulatory Commission to show that it can be diligent in issuing the combined construction and operating licenses. It is paramount that we demonstrate near-term success in the plants. We operate the best plants in the world right now. America is only 20 percent nuclear, but we consume enormous amounts of electricity—so we generate more with our 20 percent than France (80 percent nuclear capacity) and Japan (37 percent) combined.



Masterfile

New nuclear beneficiaries and leaders. Nuclear science education in the United States has suffered, say roundtable participants. The industry must play a greater role.

it today? Where is it going to be in 2209? It can definitely be solved.

Kansler: It's all tied to what happens with the aftermath of Yucca Mountain and what the United States is going to do about interim storage, either on site or centralized. If our country is serious about closing the fuel cycle, then we also have to talk about reprocessing.

I think we could build a perfectly good spent fuel reprocessing facility for $20 billion. Let the government fund it, but let private industry build it, so it is done quickly and done right. Don't let it be an R&D project for the next 50 years. In the meantime, find a couple of centralized interim storage sites, take care of the facilities that are really in a bind, and start to build reprocessing facilities so you have a way to deal with the spent fuel. We may as well get the useable fuel out of current supplies.

After, you can start dealing with proliferation and other uses of the fuel coming out of these reprocessing plants at that point.

Anybody who hasn't been to France to see their reactors should go. We can effectively deal with fuel with the technology that currently exists. It's clean, modern, unique, and it works.

Education Is the Key

To wrap up, where you see the state of play advancing the case for nuclear from this point forward?

Kansler: Entergy recently collaborated with EnergySolutions and put together a whole curriculum on nuclear science for grade-school and high-school kids—we just introduced it in Mississippi. We made it available for all public schools, and it's the first of its kind in the country. Focusing on growing the next generation of engineers and scientists is certainly important for the future of our industry.

It is wonderful material, and the state board of education welcomed the contribution. If we don't start educating kids early, we're going to

have these same anti-nuclear arguments—or at least apathy that makes it difficult to get support—20 years from now. Kids like to learn for themselves, form their own opinions, and not be biased by skewed information.

One thing we have not done well in this industry is pay attention to good nuclear science education for younger students. For the people who do not understand nuclear technology, we must do a much better job of presenting it to them so it makes sense. If we don't focus on education, then people will fight us every step of the way. If we do, this industry's renaissance can really take off and thrive for generations to come.

Ruff: We find ourselves in the position where very well-educated people don't understand why you would choose to build an expensive nuclear plant instead of a wind farm. For those of us that talk to ourselves all the time, we fail to make the case. Part of the reason is that we've built an excellent system—flip the switch, and the electricity goes on. But we have to choose who we want to be in the next 50 years.

Miller: I've seen the materials Entergy has, and they're outstanding. I can tell you what I think the future is because we're committed and we have people right now that are building tomorrow's plant today. We think nuclear is going to be there. We wouldn't be doing what we're doing now if we did not think that.

McCollum: The key is education. For the last 30 to 40 years the nuclear industry has basically assumed that the case for nuclear is fundamentally so compelling that once you understand the facts, you'll want to support it as part of the energy picture. That hasn't worked tremendously well. It's even more important today that education be broader than just nuclear.

To make the case to people effectively, we have to educate people on how electricity works, what an energy picture looks like, and why nuclear makes sense in part of an overall energy picture. No matter how compelling you make the case for nuclear, if the belief is that there's an easy, cheap solution out there from some other source, then why would you deal with any of the real-world problems with nuclear or any of the other solutions?

Davis: We need to explain to the public how nuclear relates to a clean environment and energy security An educated public is our best strength—not only the voting public, but also the kids in school, too. Nuclear is a safe, reliable source of electricity that is emission free and will help break our dependence on foreign oil. It is vital we clearly communicate this message to the public. ◆

GOOD JOBS IN NUCLEAR POWER

By Carol L. Berrigan, senior director of industry infrastructure at the Nuclear Energy Institute.

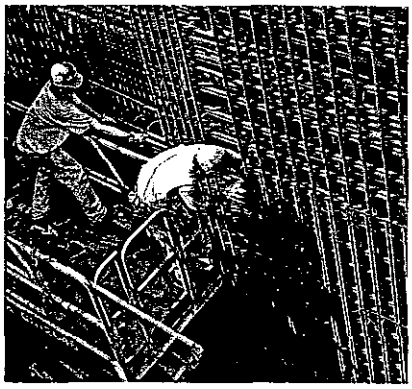
This essay is based on her testimony before the U.S. Senate Committee on Finance in November.

Today, 104 nuclear power plants produce one-fifth of America's electricity. In addition, U.S. electric utilities are preparing to build advanced-design nuclear power plants to meet our nation's growing electricity demand and clean-air goals. More than $4 billion has been spent on new nuclear plant development over the last few years, including the ordering of long-lead components. The industry plans to invest approximately $8 billion in the next few years to be in a position to start construction of the first new reactors in 2011-12.

Construction of new nuclear power plants could create tens of thousands of jobs in project development, construction, operations, and manufacturing. Further, American companies have an unprecedented opportunity to expand the nuclear manufacturing base to new international markets as well as supplying domestic projects. These firms have the potential to expand production and repurpose existing infrastructure to re-emerge as world leaders in the nuclear energy industry. In the process, nuclear suppliers can contribute substantially to job creation, economic development, and the reduction of greenhouse-gas emissions.

Job Creator

Each operating reactor directly employs 400 to 700 people. In addition to direct employment, the industry relies on numerous vendors and specialty contractors in each of the 50 states for additional expertise and services. For example, during maintenance and outages, nuclear plants require skilled labor to complement full-time utility staff, in some cases as many as 1,000 additional workers over a four-to-eight-week period. Based on an extrapolation of data supplied from the Associated Maintenance Contractors, more than 30 million staff-hours are worked by supplemental craft



labor each year at the nation's nuclear energy facilities.

But the nuclear industry will need more workers. The Nuclear Energy Institute's 2009 workforce survey indicated that 21,600 nuclear utility employees (38 percent of the total nuclear utility workforce) will be eligible to retire by 2014. In addition, the industry continues to experience non-retirement attrition, which over the same five-year period may require replacement of an additional 10 percent of the workforce, or 6,000 workers.

Building new reactors will lead to increasing demand for skilled labor at all levels. According to an analysis by the National Commission on Energy Policy, the development of a nuclear plant will require 14,360 staff-years per gigawatt installed. That staff includes such skilled crafts workers as welders, pipefitters, masons, carpenters, millwrights, sheet-metal workers, electricians, ironworkers, and heavy equipment operators, as well as engineers, project managers, and construction supervisors.

If the industry were to build the 22 reactors that are under active construction and operating license review by the U.S. Nuclear Regulatory Commission, this would require almost 316,000 staff-years of labor. Once built, these plants would require 8,800 to 15,400 permanent full-time workers to operate them.

A Boost for Manufacturing

In addition to payroll spending, nuclear power plants generate substantial economic value. In 2008, nuclear utilities procured more than $14 billion in materials, fuel, and services from more than 22,500 domestic suppliers—all for ongoing operation and maintenance. While only 31 states have nuclear power plants, nuclear procurement takes place in every state, with an average of $277 million of procurement per state.

The nuclear supply chain represents a major opportunity for American manufacturers to supply the growing world nuclear energy market. Fifty-three reactors are under construction around the world and 137 plants are on order or planned in 26 countries. U.S. suppliers of components and fuel-cycle facilities are responding by hiring design and engineering staff, expanding their capability to manufacture components, and building new manufacturing facilities. The result has been the creation of more than 15,000 new U.S. jobs since 2007 in such areas as engineering and services and the manufacture of pumps, valves, reactor pressure vessels, heat exchangers, and other components. In the last two years alone, the number of domestic nuclear energy suppliers has increased 22 percent.

The Right Stimulus

Reducing carbon emissions will require a portfolio of technologies, including carbon-free nuclear energy. But the expansion of nuclear energy in the United States and globally also provides a significant opportunity for American workers and industry, increasing high-wage employment and significantly expanding our manufacturing sector. Congress should promote policies as part of job-creation or energy legislation that helps the industry realize these goals. ◆

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January 5, 2010

The Honorable Robert Clayton
Missouri Public Service Commission
P.O. Box 360
Jefferson City, MO 65102

Dear Chairman Clayton:

I am writing on behalf of the members of Missourians for a Balanced Energy Future (MBEF). Our non-partisan, not-for-profit organization is comprised of retirees, utility workers, labor union members, farmers, small business owners, students and many others. Our goal is to support and advance energy projects that create jobs and provide balance to Missouri's energy portfolio.

With regard to financing mechanisms available in Missouri, MBEF supports and recommends changes to the Credit Metrics (CMR) legislation the Missouri Public Service Commission (PSC) is considering for this upcoming legislative session. We strongly urge, however, that it not be limited to "cost-effective baseload generating plants or facilities."

With the "goings on" in Washington, D.C. relating to energy policy, there is potential for major energy projects in Missouri that do not fit the narrow definition of "baseload generating plants or facilities." The renewable industry is in its infant stage and major transmission upgrades will be required to preserve energy reliability and affordability in Missouri for future generations. We believe these projects and others could rise to a level where all options in a "financing toolbox" must be examined.

If Missouri is truly looking to devise a long-term energy strategy, the removal of the anti-CWIP provisions of RSMo 393.135 is a step to further allow the advancement of the above mentioned projects. While the timing and circumstances may not have been right last session, there is no denying that Missouri will need look to all forms of energy production and projects to satisfy consumer demand. As such, all forms of financing should also be considered.

We applaud you and your fellow Commissioners for holding open forums in an effort to establish a statewide energy policy. The work of the Joint Committee on Missouri's Energy Future should also be commended.

Missouri cannot afford to remain merely an energy importer or jobs and new investment will continue to leave our state. Missouri must be proactive so that future generations can enjoy the economic and environmental benefits of a balanced energy portfolio.

Sincerely,

Ed Scissors
Executive Director
Missourians for a Balanced Energy Future