

# February 12 Newsletter

## February 2012 Newsletter

### Special Interest Articles:

New Job  
Opportunities



### Individual Highlights:

- Nuclear Executive Straight Talk pg#2
- NRC Praises Safety Upgrades at Oconee pg#3
- Vogtle - AP1000 Reference Plant pg#4
- Repair Proposal Reviews by March pg#4
- Duke to Retire 1,667 MWe Coal Units by 2018 pg#5
- The Fight Continues – Yucca Mountain or an Alternative pg#5
- NOUE at Wolf Creek pg#5
- Wave & Tidal Energy Potential in U.S. pg#6
- Natural Gas Prices May Postpone Coal, Nuclear, and Wind Projects pg#6
- Renaissance Watch pg#7
- NRC Panel Proposes Enhanced Disaster Protection pg#8

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## Job Opportunities:

### Southern Company

- Mechanical Engineer (Vogtle - Waynesboro, GA)
- Nuclear Civil Engineer (Vogtle - Waynesboro, GA)
- Seismic Engineer (Birmingham, AL)
- Site Scheduling Analyst (Farley, Hatch, and Vogtle)
- Project Manager (Birmingham, AL)
- PRA Technician (Inverness, AL)
- PRA Modeler (Inverness, AL)
- Civil Engineer - Forensic Civil Structural Engineer (Inverness, AL)
- I&C Electrical Planner (Rockingham, NH)
- Junior Project Support Specialist (Jupiter, FL)
- Nuclear Scheduler (Two Rivers, WI)
- Nuclear Cyber Security Control Application Specialist (Point Beach, WI)
- Nuclear Project Engineer (Duane Arnold, IA)
- Nuclear Project Manager (Duane Arnold, IA)
- Nuclear Mech. Engineer (Point Beach, WI)

### Duke Energy

- Project Scheduler (Oconee)
- Project Controls Scheduler Fossil-Hydro (Eden, NC)
- Commissioning Manager Fossil-Hydro (Eden, NC)
- Mechanical Engineer (McGuire-Huntersville, NC)

### Progress Energy

- I&C Elect. Design Engineer (Brunswick -Southport, NC)
- BWR Fuel Engineer (Brunswick)
- Nuclear Recruiter (Hartsville, SC)

### FPL / NextEra

- Nuclear Contract Admin (Point Beach, WI)

**Contact Kaye Browder @ 864-243-6883 or [kaye.browder@gttsi.com](mailto:kaye.browder@gttsi.com) if you are interested and qualified for one of these positions.**

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**Ron Oberth:**  
President of the  
Organization of CANDU  
Industries

***It is too soon to quantify cost impacts. There will be some, but I hope they are not significant because we already face a serious business case challenge particularly with natural gas being as cheap as it is right now***

## Nuclear Executive Straight Talk

The safety of nuclear power, as well as the prospects for new plants, has been questioned since the events at Fukushima Daiichi. *Power Engineering* magazine Associate Editor Brian Wheeler moderated this year's Nuclear Power Executive Roundtable, which discussed the future of nuclear power in North America, the challenge of financing new plants and the most effective strategies for complying with proposed new regulations. Excerpts from his article are provided below:

### Power Engineering Magazine:

*Following Three Mile Island (TMI) in 1979, the cost of building new nuclear units went up as new safety and regulatory measures were put in place. What are the principal ways the costs of new nuclear construction in North America will be affected as lessons learned from Fukushima are incorporated into regulations? Given what you know now, what sort of percentage increase in overall costs should we expect as a result of Fukushima-related rules?*



**Brian Reilly:**  
Senior Vice President and  
Manager of Operations,  
Nuclear, Bechtel

***From the U.S. perspective, the NRC has not made any final rulings on what***

***changes are going to be required, in terms of incorporating lessons learned from Fukushima. Every plant is going to differ based on their site and plant conditions, so they are going to have different hurdles to comply with any changes that could come out. It is a bit premature to try to put a number on this right now. But when you compare back to TMI, you need to recognize that the situation is fundamentally different. We had many plants under construction in various stages in 1979. When new regulations and measures were put in place there was a lot of expensive rework required. Right now we have just a few plants under construction and they are in the very early stages. So if there are regulatory changes that have to be accommodated, I would see the impact on the overall price of the plant as minimal.***



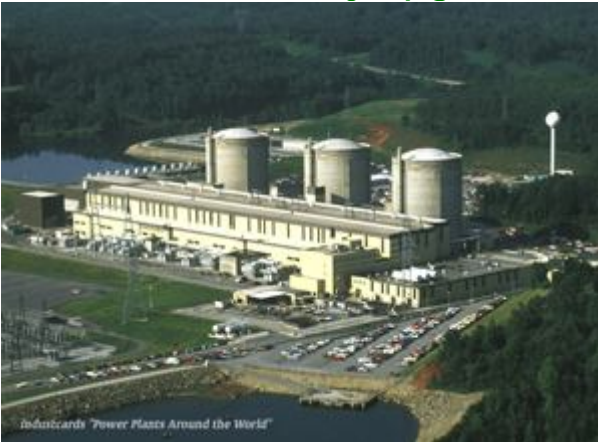
**Tom Franch:**  
Senior Vice President of  
Engineering & Projects for  
Areva North America

***We have and will continue to incorporate lessons learned. We are not waiting on industry events. We have been pro-active and as we are a continuous learning industry, we have incorporated lessons***

***learned from Three Mile Island, from Chernobyl and from 9/11. So when you look at all of the lessons learned that we have incorporated from previous events, I believe we will be able to incorporate the necessary changes and lessons learned from Fukushima and minimize the cost to customers. We can also expect to gain some plant performance improvements as well. In the end, nuclear will still prove to be viable and an economical solution to clean energy needs. When we had TMI in '79, we did not have the decades of experience, the operating hours and the safety records that we now have in the U.S. fleet, and the North American fleet in general. So there is a considerable amount that has been learned over the decades and many plant improvements have been incorporated. There are decades of safe operations here in the U.S. fleet and we have learned a lot from both internal and external events, and we have made improvements to our U.S. fleet.***



## NRC Praises Safety Upgrades - Oconee Nuclear Station (Duke Energy)



***“The rest of the industry will be catching up,” said Eric Leeds, director of the commission’s Office of Nuclear Reactor Regulation in Washington.***

***Leeds also told Duke the sooner they get in requests for approvals and inspections, the better due to their response to Fukushima. He said the event has demanded the full-time attention of 33 Nuclear Regulatory Commission engineers — and Congress isn’t about to give the agency more money to make up for the loss in manpower generally dedicated to domestic plants.”***



Besides generating millions of megawatts of energy in recent years, Oconee Nuclear Station and Duke Energy engineers have been working for about 10 years on a range of upgrades to deal with fires in plant high-risk areas, additional fortification of the plant against tornadoes, containment of steam-pipe breaks and, perhaps most important, ensuring a way to cool down the plant’s three reactors should its backup control room lose power.

A group of 12 Nuclear Regulator Commission officials recently traveled to the plant to hear Duke Energy’s Scott Lynch, general manager of Oconee major projects, talk about the status of major projects during a public meeting. Federal regulators applauded Duke on the safety improvements, including work that anticipates new regulations coming after last year’s Fukushima nuclear disaster in Japan. “The rest of the industry will be catching up,” said

Eric Leeds, director of the commission’s Office of Nuclear Reactor Regulation in Washington.

Dhiaa Jamil, Duke’s chief nuclear officer, said the Oconee site was safe 10 years ago, is safer today, and will be safer tomorrow. “The concept of adding more safety margin is the common message,” Jamil said. “Safety margin is not a static concept. We are always learning.”

Lynch said that work to protect the plant’s vulnerable areas against high winds and flying debris included:

- Installing 618 tons of structural steel beams and plates,
- Applying 13,100 linear feet of welding material,
- Pouring 450 cubic yards of reinforced concrete, and
- Wrapping outer walls of the plant with 11,300 square feet of a debris-resistant polymer fabric.

Hundreds of construction workers got the work done without incident even as hundreds of other workers reported every day to operate the nuclear power plant, Lynch said. “Twenty-eight hundred heavy lifts is not a trivial thing to do while operating a nuclear facility,” Lynch said.

In addition, Duke has gotten about 80% of its work done on what officials call a “protected

service water” system. This system will provide backup power to the plant’s standby shutdown facility, a stand-alone building outside the main plant. Once completed, this project will ensure that the standby shutdown facility will be able to continue cooling the station’s three reactors should a major disaster knock out the plant’s main control room.

The standard shutdown facility is unique to Duke Energy’s nuclear power plants, said Andy Sabisch, the Nuclear Regulatory Commission’s senior on-site inspector.

Although the shutdown facility has a diesel engine power source, it was built without a second or redundant power source, Sabisch said which has heightened risk estimates even though the facility has never been needed.

Lynch said the protected service water system could be running within the year but securing materials for all the plant’s construction projects has been a challenge.

Leeds said his regulatory office has worked with Duke at every step and so the utility will likely face no last-minute rejections or changes to the protected service water system.



## Vogtle Designated NRC AP-1000 Reference Site



Plant Vogtle units 3 and 4 construction site with Vogtle unit 4 backfill, circulating water pipes and nuclear island, and in the background, the assembly of heavy lift derrick lower sections (blue in color) and Vogtle operating units 1 and 2. November 29, 2011. © 2011 Southern Company, Inc. All rights reserved.

**“The on-site workforce (~1,750) for Units 3 & 4 has begun fabricating containment vessels, moved millions of cubic yards of back fill and built a range of support facilities.”**

2012 will include many firsts for the nuclear industry; one of them will be the expansion at Plant Vogtle, located in Waynesboro, GA, where construction of the first new generation power reactor will begin in earnest.

The \$14.8 billion project marks the first new commercial power reactors to be built in the

United States in a generation, and is unfolding in the wake of the Fukushima disaster in Japan that raised new questions about nuclear safety and construction standards.

The catalyst that will allow the project to move forward will be the issuance of the first “combined operating license” developed by the federal Nuclear Regulatory Commission to simultaneously authorize the construction and the operation of new reactors.

The Vogtle project also heralds the American debut of the Westinghouse AP1000 reactor, a new design that features a cooling reservoir above the reactor vessel that can be

fed into the unit by gravity in the event of an emergency.

Because other proposed nuclear expansions in the U.S. will use the same design, the Vogtle project has been designated as the NRC’s official “reference site” for future AP1000 construction.

Already, ~ 1,750 workers are in Burke County performing preliminary tasks for the primary nuclear construction. The workforce is expected to grow rapidly once the final licenses are issued, peaking at about 3,500.

The first new unit is scheduled to go online in 2016, followed by the second new unit sometime in 2017.

## Progress Energy to Complete Repair Proposal Reviews by March



**“Progress plans to repair the plant at a cost of at least \$2.5 billion.”**

Progress Energy informed the Florida State Service Commission in a status update on its out-of-service power plant, Crystal River, that it

continues to “analyze and refine information related to the engineering, costs and schedule” to bring the reactor back online. That analysis will continue through the first quarter of this year.

Progress plans to repair the plant at a cost of at least \$2.5 billion. The utility wants its 1.6 million Florida customers to pay for at least a quarter of those expenses, if insurance covers the rest.

The nuclear plant broke during a project to replace old steam generators in fall 2009. The plant’s 42-

inch-thick concrete containment building that houses the nuclear reactor cracked during the project. After Progress repaired that crack, the building cracked two more times.

In its status update, Progress said it has taken actions to keep the containment building in a safe condition. The physical condition of the building has not changed over the past few months, it said.

Progress is planning to bring the reactor back online by 2014



**“Duke reached the settlement to resolve an administrative challenge to an air permit for the 825 MWe Cliffs Unit 6.”**

## Duke Energy to Retire Coal Units (1,667 MWe) by 2018

In a recent settlement (**mid-January**) reached between Duke Energy Carolinas and the Environmental Defense Fund, the National Parks Conservation Association, and the Sierra Club, Duke Energy will retire 1,667 MWe of coal-fired capacity by 2018.

Duke reached the settlement to resolve an administrative challenge to an air permit for the 825 MWe Cliffs Unit 6, located in North Carolina.

The Cliffs Unit is under construction and near completion; the Cliffs unit will use a selective catalytic reduction system. A flue gas desulfurization system, or scrubber, was added at Cliffs in 2010.

Duke had previously committed to retiring 200 MW of older capacity at the Cliffs station when the new unit came online (**scheduled to be online mid 2012**) and retiring another 800 MW of capacity elsewhere by

2018.

However, under the settlement, retirement of 1,667 MW of coal-generation will be required. The settlement includes a specific schedule that is enforceable and also requires Duke Energy to demonstrate best practices to decrease emissions during malfunction, shut down, and start up situations.

## The Fight Continues - Yucca Mountain or an Alternative?

While the Obama administration has mothballed Yucca Mountain, operators at 104 U.S. reactors are storing used fuel rods in pools or augmenting storage capacity with dry casks because of failed efforts to establish a permanent repository.

The final report by the Blue Ribbon Commission on high-level nuclear

waste management is expected to recommend consolidated, interim storage of used nuclear fuel and the establishment of a quasi-governmental entity to manage it.

The search for an alternative continues, for example, In Eddy County, N.M. plans are being weighed for the storage of commercially generated nuclear waste in a 250

million-year-old salt bed.

In Utah, Private Fuel Storage (PFS) has offered a plan based on leasing land from the Goshute Tribe in Tooele County's Skull Valley. PFS has already received a license from the U.S.NRC to store up to 44,000 metric tons of high-level waste in above-ground cement containers on a 100-acre site



**“Wolf Creek Nuclear Generating Station, near Burlington, Kansas is the only nuclear power plant in Kansas (~1,200 MWe).”**

## NOUE at Wolf Creek – Loss of Off-Site Power

A Notification of Unusual Event (NOUE) occurred at the Wolf Creek Nuclear Power Plant in Kansas due to a Loss of Off-Site Power.

The NOUE was terminated after plant officials determined that a circuit breaker in the switchyard had failed, causing the loss of off-site power to the plant.

Diesel generators, which provide backup power for Safeguards Equipment, performed as designed, keeping the reactors cool until the plant could be safely shut down.

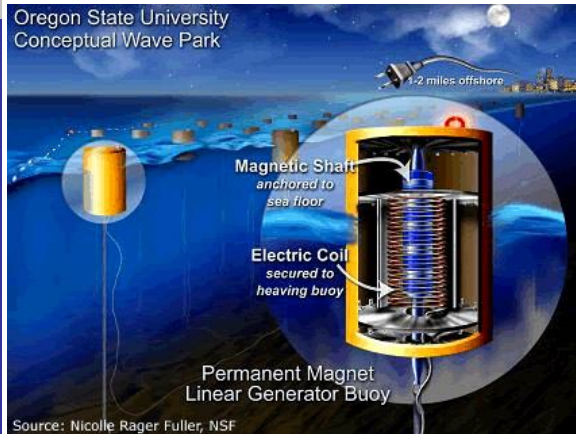
An investigation continues into the cause of the breaker failure and the loss of power.

Hageman, an official spokesperson for Wolf

Creek, said in an email, “that officials plan to replace the failed breaker, restore power to non-safety-related equipment and systems and inspect additional plant equipment to ensure there is no further damage”.

No word was provided on when Wolf Creek expected to restart the plant.

## Wave & Tidal Energy Potential in U.S. – 1,420 TW-hours



**“Analyses show that conventional hydropower and wave, tidal, and other water power resources can potentially provide 15% of our nation’s electricity by 2030.”**

The U.S. Department of Energy (DOE) released two nationwide resource assessments showing that waves and tidal currents off the West and East coasts could generate up to one-third of the nation’s electricity usage per year.

The analyses show that water power, including conventional hydropower and wave, tidal, and other water power resources,

can potentially provide 15 percent of our nation’s electricity by 2030, or 1,420 TWh. The U.S. uses about 4,000 TWh of electricity per year, according to the DOE.

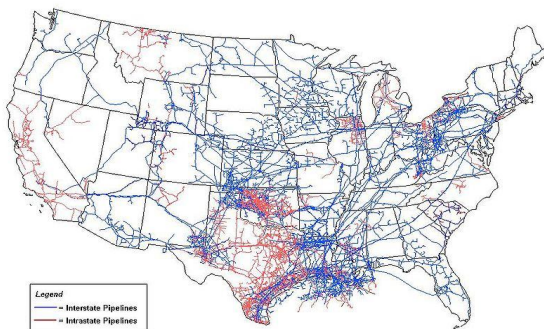
The West Coast, including Alaska and Hawaii, has especially high potential for wave energy development, while significant opportunities for wave energy also exist along the East Coast. Additionally, parts of both the West and East Coasts have strong tides that could be tapped to produce energy.

Earlier this year, DOE announced the availability of its national tidal resource database, which maps the maximum theoretically available energy in the nation’s tidal streams. This database contributed to the

"Assessment of Energy Production Potential from Tidal Streams in the United States" report, prepared by Georgia Tech.

The wave energy assessment report, titled "Mapping and Assessment of the United States Ocean Wave Energy Resource," was prepared by the Electric Power Research Institute (EPRI), with support and data validation from researchers at Virginia Tech and DOE’s National Renewable Energy Laboratory (NREL). The report describes the methods used to produce geospatial data and to map the average annual and monthly significant wave height, wave energy period, mean direction, and wave power density in the coastal United States.

## Natural Gas Prices May Postpone Coal, Nuclear, and Wind Projects



**“Abundant new supplies of gas make it the cheapest option for new power generation.”**

The shale-driven glut of natural gas has cut electricity prices for the U.S. power industry by 50% and reduced investment in costlier sources of energy. The

falling prices are expected to postpone or abandon coal, nuclear and wind projects, decisions that may slow the shift to cleaner forms of energy and shape the industry for decades to come.

Abundant new supplies of gas make it the cheapest option for new power generation, the largest U.S. wind-energy producer NextEra Energy, Inc. has shelved plans for new U.S. wind projects next year and Exelon Corporation called off its plans to expand two nuclear plants

in the Midwest. Michigan utility, CMS Energy Corporation canceled a \$2 billion coal plant after deciding it wasn’t financially viable in a time of “low natural-gas prices linked to expanded shale-gas supplies,” according to a company statement.

Prices in the west hub of PJM Interconnection LLC, the largest wholesale marketer in the U.S., declined to about \$39 per mega-watt hour by December 2011 from \$87 in the first quarter of 2008.

# U.S. Nuclear Renaissance Watch Update

## U.S. Nuclear Renaissance Watch Update



The following is a listing of the projects for which the **NRC** has received applications or have announced as being notified of the intent to apply for licenses (36 total plants):

State	Plant	Utility	Reactor Type
Alabama	Bellefonte 3&4 * ^ ##	NuStart / TVA	TBD
AL or GA	<i>Greenfield</i>	Southern Company	TBD
Florida	Levy 1&2 ## & ^	Progress Energy	AP-1000
Florida	Turkey Point 6&7 ## ^	FP&L	AP-1000
Georgia	Vogtle 3&4 <i>COL &amp; \$ L</i>	Southern Company	AP-1000
Ohio	<i>Piketon</i>	Duke Energy	TBD
Idaho	<i>Payette</i>	Unistar / AEHI	TBD
Idaho	<i>Idaho National Lab</i>	DOE	NGNP
Illinois	Clinton 2 \$	Exelon	TBD
Louisiana	River Bend 3 #	Entergy	ESBWR
Maryland	Calvert Cliffs 3 ## #	EDF	Areva US-EPR
Michigan	<i>Fermi 3 ##</i>	DTE Energy	TBD
Mississippi	Grand Gulf 3 # \$	NuStart / Entergy	ESBWR
Missouri	Callaway 2 #	Unistar / Ameren UE	Areva US-EPR
New Jersey	<i>Salem</i>	PSEG	TBD
New York	<i>Nine Mile Point 3 #</i>	Unistar / Constellation	Areva US-EPR
North Carolina	Harris 2&3 ^	Progress Energy	AP-1000
Pennsylvania	Bell Bend ^	Unistar / PP&L	Areva US-EPR
South Carolina	<i>Lee 1&amp;2 ^</i>	Duke Energy	AP-1000
South Carolina	Summer 2&3 <i>COL &amp;</i>	SCANA / Santee Cooper	AP-1000
Texas	Comanche Peak 3&4 ^	Luminant	MHI US-APWR
Texas	South Texas 3&4 ## & ↓	NRG Energy	Toshiba ABWR
Texas	<i>Amarillo 1&amp;2</i>	Amarillo Power	Areva US-EPR
Texas	Victoria 1&2 #	Exelon	TBD
Utah	<i>Blue Castle Project</i>	Blue Castle Holdings	TBD
Virginia	North Anna 3 ## \$ ^	Dominion	MHI US-APWR

# NRC reviews suspended at applicant's request.

# Concern over ownership by foreign entity

## Recent Contentions for Licensing Review.

& Signed EPC Contract

\* Only one reactor is currently expected.

\$ Received Early Site Permit

L Limited Work Application

COL Construction Operation License Expected

@ Other vendor designs being considered.

^ Delay expected; no scheduled target dates.

#? Contention forth coming or expected

*Pink italics indicate Notice of Violation.*

*Blue italics indicate application is forthcoming.*

*Red italics indicate a delay announced by Applicant.*

↓ Project activity decreased by Utility



## NRC Panel Proposes Enhanced Disaster Protection

Calling the Japan nuclear disaster "unacceptable," an expert task force convened by the Nuclear Regulatory Commission has concluded that nuclear power plants in the U.S. need better protections for rare, catastrophic events.

The series of recommendations, included in portions of a 90-page report will reset the level of protection at the nation's 104 nuclear reactors after the worst nuclear disaster since Chernobyl by making them better prepared for incidents that they were not initially designed to handle.

The panel will tell the commission that nuclear plants should be ordered to re-evaluate their earthquake and flood risk, add equipment to address damage to multiple reactors, and make sure there is electrical power and instruments in place to monitor and cool spent fuel pools after a disaster.

In a recent news release, the NRC said that the 12 steps recommended in the report would "increase safety and redefine what level of protection to public health is regarded as adequate." The full report will be released late January 2012, the NRC said.

The three-month investigation was triggered by the March 11 earthquake and tsunami that cut off all electrical power to the Fukushima Dai-ichi nuclear power plant in Japan, resulting in core damage at multiple reactors, the loss of cooling at spent fuel pools, hydrogen explosions and radioactive releases into the environment.

The task force says that there is no imminent risk to public health and the environment from operating nuclear power plants in the U.S. But its members admit that the current patchwork of regulations is not given equal consideration or treatment by power plant operators or by the NRC, during its technical reviews and inspections.

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