

THE ENERGY DAILY

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Exelon's Rowe: Scale Back 2020 Emission Cuts

BY CHRIS HOLLY

Exelon Corp. Chairman and Chief Executive Officer John Rowe Thursday urged a Senate panel to soften the near-term emissions cap in Democratic climate change legislation, saying a 14 percent reduction below a 2005 baseline by 2020 is “much more appropriate and achievable” than the 20 percent cut proposed in the bill.

In testimony before the Senate Environment and Public Works Committee, Rowe—for years virtually alone among investor-owned utility CEOs in calling for a U.S. response to global warming—said the softer target is appropriate because of the uncertainty surrounding the commercial availability of carbon capture and storage (CCS) and advanced nuclear technologies that utilities will need to comply with more aggressive emission caps.

“...[W]e do not expect substantial deployment of

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San Antonio Officials Choke On Huge Cost Increase At New Nuke

BY JEFF BEATTIE

Stung by an apparent multi-billion-dollar increase in the project's estimated cost, the San Antonio City Council on Tuesday night delayed by two months a vote planned for Thursday on financing the city's continued involvement in the construction of two new nuclear reactors at the existing South Texas Nuclear Project plant.

The city council put off a vote on issuing \$400 million in bonds to back the participation of CPS Energy, San Antonio's municipal utility, in the new reactor project at the STP plant, which CPS co-owns with New Jersey-based merchant generator NRG Energy Inc. and the municipal utility for Austin, Texas.

According to a knowledgeable source, the new cost estimate from the project's primary contractor, Toshiba, is up to \$4 billion higher than estimates made public by CPS in late July, which predicted a project cost of \$10 billion, or \$13 billion including financing.

The delayed vote by the city council is a clear setback for a project that got a boost only two weeks ago when CPS' board of directors voted

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Enhanced Geothermal Gets Pumped In DOE Grant Awards

The Energy Department Thursday announced

BY GEORGE LOBSENZ

the award of up to \$338 million in research and development funding for innovative geothermal energy projects, with the lion's share going to so-called enhanced geothermal initiatives that seek to harness the massive electricity generation potential of hot, dry rock far below the surface.

The grants, which went to 123 projects in 39 states, provide a total of \$132.9 million for enhanced geothermal demonstration projects and technology aimed at tapping a currently unexploit-

ed resource that experts say could generate 100,000 megawatts of low-cost, zero-emission power by 2050 with relatively modest public-private investment over the next decade.

Enhanced geothermal systems (EGS) differ from conventional geothermal operations because it seeks to “mine” heat from hot, dry “basement” rock, as opposed to the well-known but limited hydrothermal resources that provide hot water to run existing geothermal power plants, such as in California and Iceland.

While relatively shallow hydrothermal resources already offer large amounts of readily available hot water, EGS calls for fracturing or “stimulating” deep rock basins so that water or another heat transfer agent can be injected into them and then pumped back up to surface generating facilities.

Currently installed geothermal facilities can generate about 10,000 MW worldwide, but new drilling technology can now reach deeper underground to access hot rock offering far greater amounts of energy.

And although the hottest rock is in the West, the study said the resource could be tapped in other regions of the country, meaning EGS could pro-

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either new nuclear generating stations or new coal generating stations with [CCS] in a timeframe that will achieve the results mandated by the [legislation]," Rowe said. "Consequently we believe that a goal of reducing emissions 14 percent below 2005 levels by 2020 is much more appropriate and achievable than the 20 percent goal" specified in the legislation, introduced in September by Environment and Public Works Committee Chairman Barbara Boxer (D-Calif.) and Senate Foreign Relations Committee Chairman John Kerry (D-Mass.).

Rowe's endorsement of a 14 percent cut by 2020 is not surprising, given that many observers of the divisive congressional debate on climate change think that a final bill likely will include that level of reduction—the same level endorsed by President Obama in February in his fiscal 2010 budget request.

Critics of easing the cap, however, note that the economic slowdown over the past two years has sharply reduced U.S. emissions, making it easier for the United States to meet the 20 percent target proposed by Kerry and Boxer.

Sen. Jeff Merkley (D-Ore.) said that Energy Information Administration projections indicate that by the end of the year U.S. emissions will be 8.5 percent below 2005 levels, meaning that the nation already is nearly halfway to meeting the Senate bill's 2020 cap.

"This starts to look like a fairly easy target to me," Merkley said.

On a key issue, Rowe also warned the panel that the \$18.5 billion in loan guarantee authority for new nuclear construction approved by Congress in 2005 won't be enough to speed the construction of dozens of new nuclear plants the power industry says will be needed to meet growing demand for electricity without increasing U.S. greenhouse gas emissions.

"Deployment of new nuclear plants simply will not happen, given the large up-front capital costs, without a much more robust federal loan guarantee program than currently exists," Rowe said, suggesting that an additional \$50 billion in loan guarantee authority is needed to speed deployment of new nuclear generation.

Cooperative utilities in the Midwest also urged the panel to delay the bill's emission caps until CCS technology is commercially available, and to sharply boost utility allowance allocations.

East Coast utilities with more diverse generation portfolios said that Congress must establish a clear price on carbon emissions as soon as possible to accelerate innovation in low- or zero-emitting technologies.

Public Service Enterprise Group Chairman, President and Chief Executive Officer Ralph Izzo, whose company produces roughly half of its electricity from nuclear and the rest fueled equally with coal and natural gas, testified Wednesday that without a strong carbon price signal, the nation's power companies can't make crucial decisions on new capital investment.

"Without action, our industry is paralyzed," Izzo said. "Uncertainty about a national program slows our transition

to a green economy, complicating investment decisions about whether to retrofit old coal plants to reduce emissions, pursue development of new nuclear or invest in offshore wind."

Association of Missouri Electric Cooperatives CEO Barry Hart, who also testified Wednesday, said that the Senate bill's 2020 target is far too ambitious for coal-dependent utilities, warning the panel that the target could force a "dash to gas" that will harm consumers.

"Missouri's electric cooperatives' generation portfolio is currently 81 percent coal," Hart said. "In the near term, we have relatively few technology choices available to reduce our greenhouse gas emissions. Our energy efficiency programs and additional renewable energy will yield some reductions. But in the absence of new, commercially available technologies, it is likely that we would need to switch from coal to natural gas to comply with the caps in the bill, at substantial cost to our customers."

However, Kevin Law, president and CEO of Long Island Power Authority (LIPA), a municipal utility and a participant in the Regional Greenhouse Gas Initiative (RGGI), a coalition of 10 northeastern and Mid-Atlantic states that has established targets for utility emission reductions, said LIPA supports the 2020 target in the Kerry-Boxer bill.

"One lesson learned from RGGI is the importance of setting the initial cap and subsequent reductions at the proper level," Law said. "In 2005, modeling for the electric utility sector did not take into account that we would be in the midst of the greatest economic crisis since the Great Depression. Since New York set its cap at the highest levels, it is now 10 percent above where actual emissions are. The cap in the Senate bill will avoid making the same mistake."

Law also boldly sailed into a stiff political wind by calling on the Senate to auction from the onset of the cap-and-trade program all of the allowances utilities and other regulated entities will need to comply with the caps, adding that a substantial portion of auction revenues should be set aside to fund aggressive energy efficiency programs by states and municipalities. LIPA may be the only U.S. utility calling for a 100 percent auction at the beginning of the program.

Law noted that LIPA, a member of the Large Public Power Council and the American Public Power Association (APPA), was not speaking for those public power trade groups.

Indeed, APPA President and CEO Mark Crisson sent a letter to Boxer and Kerry Thursday urging the lawmakers to retain the bill's current allowance allocation, which calls for distributing some 35 percent of the total allowance pool to utility local distribution companies and requiring state utility commissions to ensure the value of the allowances is passed through to utility ratepayers to ease the impacts of the emissions caps on electricity prices.

Law said, however, that distributing allowances to utility customers "interferes with the price signals that should drive the transformation to the clean energy economy."

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EIA: U.S. Gas Reserves Soared In 2008

The Energy Information Administration said Thursday that proved U.S. natural gas reserves reached a record high last year, but that the country's proved reserves of crude oil fell by more than 10 percent despite a third year of increased discoveries.

The independent Energy Department statistical agency said that largely due to surging supplies of unconventional shale gas, proved reserves of dry natural gas rose by 6.9 trillion cubic feet (tcf) from about 238 tcf in 2007 to about 245 tcf in 2008.

The agency said that increase was on top of production of 20.5 tcf—and a record 29.5 tcf of new discoveries—and reflects the highest level of natural gas proved reserves since EIA began reporting them in 1977. Production in 2008 rose 5.4 percent from 2007.

EIA cited a “dramatic” 51 percent growth in shale reservoirs of some 32.8 tcf, or 13 percent of total proved reserves

of dry natural gas. Shale gas production also rose 65 percent over 2007 levels, surpassing 2 tcf in 2008.

In contrast to gas, reported crude oil proved reserves declined by more than 10 percent to 19.1 billion barrels, even though discoveries of crude oil rose for the third year in a row, mainly in the Gulf of Mexico, west Texas and in the Bakken formation in North Dakota.

However, EIA said that “from a long-term perspective, the steep decline in crude oil proved reserves is probably misleading” due to the use of current Securities and Exchange Commission (SEC) rules on calculating proved reserves.

EIA said that the use of new proved reserve rules issued by the SEC in 2008—but not due to take effect until 2010—would have shown “a smaller drop (or possibly even an increase)” in crude oil proved reserves.

Proved reserves are those volumes of

oil and gas that geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions.

“The overall drop in oil reserves [in 2008] reflects use of low end-of-year prices to assess reserves under existing financial accounting standards,” EIA said, noting that the price of oil on Dec. 31, 2008, was \$44.60 per barrel, compared to \$99.64 per barrel on the same day the previous year.

“New accounting standards adopted by the Securities and Exchange Commission will now require companies to use an annual average price and will help mitigate a similar situation in the future,” EIA said.

Under the SEC's new rules, oil and gas companies will also for the first time be allowed to count fast-growing unconventional resources such as oil sands and shale gas in proved reserves in certain cases.

San Antonio Officials Choke On Huge Cost Increase... (Cont. from p. 1)

to proceed with the reactor build-out despite concerns about cost from environmentalists and some city officials.

It also represents another case in which the primary albatross for nuclear construction—high and unpredictable costs—are dogging another new plant plan.

According to sources, CPS' initial \$13 billion estimate included a payment of about \$8 billion directly to Toshiba for purchase of the two advanced boiling water reactors planned for STP, with the balance going for other costs and to subcontractors.

Those numbers are impossible to confirm because NRG Energy and CPS are negotiating a project price with Toshiba for inclusion in an engineering, procurement and construction contract, and neither utility will disclose the numbers they are working with.

The parties are scheduled to come to an agreement on a cost by the end of this year, according to CPS and NRG Energy spokesmen.

The source said the bond issuance vote was delayed until January largely so city council members could have that number in hand.

Officials from both CPS and NRG stress that they are in negotiations with Toshiba and that they can push downward the cost numbers that are currently under discussion.

The CPS spokesman said the utility recently received “preliminary cost estimates from Toshiba that caused some questions to be asked.”

He said senior CPS officials plan to travel to Japan in November to try to “come up with a cost estimate at the end of this year that is fair to all parties.”

An NRG Energy spokesman also refused to confirm any current project cost estimates but insisted the final number would be lower than many think.

“If we thought that the cost estimate that the papers are reporting, or even the initial estimates, were [legitimate], we no longer would be spending any money against the project,” he said.

In the October vote, CPS made some concession to cost con-

cerns by lowering its stake in the project to 20 percent—down from 40 percent—in response to worries expressed by new San Antonio Mayor Julian Castro (D).

The two existing reactors at STP are owned by NRG Energy (44 percent); CPS Energy (40 percent); and Austin Energy, the municipal utility of Austin, Texas (16 percent).

But CPS' October 15 vote, along with a February decision from Austin Energy not to take part on the STP expansion, has effectively left 45 percent of the new STP nuclear project up for sale.

Austin Energy's decision initially left NRG and CPS Energy owning 50 percent apiece of the new reactor plan, and both have since been seeking to shed 10 percent of their stakes. NRG is responsible for finding a buyer for that 20 percent slice of the project.

Further, CPS' October 15 decision reduces the muni's share from 40 percent to 20-25 percent. And that leaves CPS responsible for finding an investor for another 20-25 percent of the new STP reactors.

The STP project may attract substantial investor interest because it appears to be one of the more likely new reactor projects to get built among the 13 that the Nuclear Regulatory Commission is now reviewing.

That is largely because the STP project is one of only three nuclear projects that the Energy Department selected earlier this year to receive a highly coveted federal loan guarantee, which is designed to sharply cut financing costs. NRG Energy has said it also will seek financing help from Japanese export agencies due to the role of Toshiba and other Japanese firms in the project.

The STP project would also benefit from a legislative change that nuclear utilities' lobbying group, the Nuclear Energy Institute, is currently seeking in Congress. That change would let municipal nuclear plant owners (like CPS) transfer nuclear production tax credits to private sector partners (like NRG Energy). Because munis are tax-exempt, the credits would otherwise go to waste.

GE-Hitachi Names Walsh To Head Nuke Fuel Business

GE Hitachi Nuclear Energy announced the promotion Monday of Kevin Walsh, currently senior vice president for nuclear services, to senior vice president of the company's global nuclear fuel cycle operations and chief executive officer of Global Nuclear Fuel, the company's fuel manufacturing subsidiary.

Walsh succeeds Lisa Price, who was named general manager of corporate business development for GE in China, effective October 19.

In his new role, Walsh assumes leadership of all nuclear fuel cycle activities for GE Hitachi Nuclear Energy (GEH) and Global Nuclear Fuel (GNF), which includes boiling water reactor fuel fab-

rication, mixed oxide fuel design and component supply, fuel engineering services, advanced reactor and fuel recycling technologies and uranium enrichment.

GEH said Walsh's top priorities will include continued development of GE's planned laser enrichment plant in Wilmington, N.C., and development of fuel specifically tailored for GEH's new economic, simplified boiling water reactor, which the Nuclear Regulatory Commission is currently reviewing for potential deployment in the United States.

For her part, Price has been handed a huge set of responsibilities in China, a booming nuclear market based largely on government goals of building at least a

dozen new reactors over the next decade.

However, GE did not bid in at least the first round of proposals for new reactor sales to China's state-owned nuclear power corporation. China Guangdong Nuclear Power Corp. has instead signed blockbuster reactor purchase agreements with GEH's two main competitors in the reactor vending business—Westinghouse and France's Areva.

GEH still has significant nuclear service and other business in China, and the company said Price "will be responsible for leading and growing GE's business development center of excellence based in Shanghai to support GE's inorganic growth initiatives and drive mergers and acquisitions" there.

Enhanced Geothermal Gets Pumped In Grant Awards... (Cont. from p. 1)

vide significant power generation in many parts of the United States—and the world—where geothermal power is now impossible.

The winner of the biggest single DOE grant, \$25 million, was AltaRock Energy Inc., which proposed demonstrating an EGS at Newberry Volcanic Monument at Bend, Ore. The company also received a separate \$1.4 million grant to develop new methods for identifying potential geothermal drilling targets.

The DOE awards follow a \$6.25 million investment in AltaRock last year by Google, which is backing clean energy firms it considers most promising.

AltaRock was founded by Susan Petty, a longtime geothermal expert who was involved in the world's first EGS project, conducted by the Energy Department's Los Alamos National Laboratory at Fenton Hill, N.M., in the early 1970s. Utilizing drilling methods similar to that of the oil industry, including directional drilling, the Fenton Hill project produced 5 megawatts of power with its groundbreaking experiments in water circulation and heat exchange.

Also receiving large EGS demonstration grants from DOE Thursday were TGP Development Co., which got \$14 million to demonstrate the commercial application of EGS techniques in Nevada, and Naknek Electric Association, which received \$12.3 million to generate 25 MW to supply three communities in Alaska.

Other notable EGS awards include \$5 million for Potter Drilling Inc.—which also received \$4 million last year from Google—to advance faster, cheaper EGS well drilling techniques.

And two oil and gas service companies received substantial grants to develop drilling technology that can withstand temperatures up to 300 degrees Centigrade. Baker Hughes Oilfield Operations Inc. got \$5 million to adapt directional drilling technology now used in oil and gas drilling, and to design a special-purpose drilling fluid for EGS. Schlumberger received \$4.7 million to develop temperature-resistant drilling tools.

Companies receiving significant DOE grants for cutting-edge conventional geothermal projects were Ormat Nevada Inc., which received a total of \$12.4 million for projects in Cali-

fornia, Hawaii and Oregon; Magma Energy Corp., \$10 million for two projects in Nevada; and Sierra Geothermal, \$10 million for two projects in Nevada.

DOE also awarded a total of \$24.6 million to develop a comprehensive nationwide geothermal resource database to help identify and assess new fields, with \$17.8 million going to the Arizona State Geologic Survey and 40 other state geologic surveys to provide state-specific geothermal data.

In addition, the department awarded a total of \$61.9 million for 37 projects to install ground-source heat pumps for heating and cooling of a variety of buildings, including schools, local governments and commercial buildings.

The potential of EGS was first widely recognized when a panel of geothermal experts convened by the Massachusetts Institute of Technology issued a report in January 2007 concluding that EGS could provide 100,000 MW of clean, baseload electricity supplies by 2050 with a relatively modest public-private investment of \$800 million to \$1 billion over a 15-year period.

"Most of the key technical requirements to make enhanced geothermal systems (EGS) work economically over a wide area of the country are in effect, with remaining goals easily within reach," said the study, *The Future of Geothermal Energy*, which drew on a diverse group of 18 energy, technology and economic experts not tied to the existing geothermal industry.

"There are no anticipated 'show-stoppers' or fundamental constraints that will require new technologies to be discovered and implemented to achieve success."

And unlike solar and wind energy facilities that provide only intermittent power-generating capacity, EGS can supply steady, baseload electricity supply similar to that provided by coal-fired and nuclear plants.

Significantly, the MIT study also said EGS could help address global warming by using liquefied carbon dioxide (CO₂)—the main greenhouse gas—instead of water as the transfer agent used to bring underground heat to surface power generating facilities. Large amounts of CO₂ could be effectively sequestered underground in the huge basins of hot rock that would be tapped by EGS.