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Inside Energy

August 31, 2009

Sandia seeks partner for small nuclear reactor

Sandia National Laboratories began looking for industrial partners last week to help it develop a small nuclear reactor that researchers say could safely and economically provide electricity to remote areas of the US and other countries, as well as help restore American leadership in nuclear energy.

The Energy Department lab called for one or more industrial collaborators who could help it complete a design for its "right-sized reactor," which the lab said is 85% complete. If successful, the project could eventually lead to mass production of the reactors, and do for the nuclear industry what Henry Ford did for the auto industry 100 years ago, the researchers say.

The idea of a small reactor is not new, but it has been receiving more attention lately. For example, the Tennessee Valley Authority earlier announced this month that it had agreed to work with Babcock & Wilcox to gain certification of a unit conceived by the Lynchburg, Virginia-based company, and Senator Lamar Alexander, a Tennessee Republican, said the TVA-B&W venture marked an important step toward revival of the US nuclear industry.

Earlier last week, the *Wall Street Journal* reported on efforts by B&W, NuScale Power and Hyperion Power Generation to develop mini-reactors. But the scheme has been brewing relatively quietly at Sandia's main lab campus in Albuquerque, New Mexico.

"DOE's as surprised by this press announcement as anyone else," Tom Sanders, the leader of the project, said in an interview Wednesday, following the lab's announcement.

Sanders said he and other engineers

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EPA mulls less stringent carbon-sequestration rule

In a potential boon for coal-fired electric utilities, petroleum refineries and other smokestack industries, the Environmental Protection Agency announced last week that it is considering a much less restrictive regulatory framework for sequestering carbon dioxide emissions in depleted oil fields, saline formations and other underground geologic structures.

In a 50-page *Federal Register* notice released Wednesday, EPA said it may allow companies to sequester their CO_2 emissions at much shallower depths than originally conceived under a proposed rule that the agency unveiled last July.

Specifically, EPA said it would consider allowing companies to sequester CO_2 "above and between" underground sources of drinking water. That would be a much less rigorous as well as a cheaper approach than the agency's July 2008 proposal, which would require companies to sequester their emissions below any nearby source of drinking water. EPA said in its 2008 proposal that the deeper sequestration depth was necessary to ensure that the trapped CO_2 did not "mobilize" arsenic, lead and other hazardous materials into nearby sources of drinking water.

EPA continued to warn against that possibility in the document it released Wednesday, saying that "improperly managed" CO_2 sequestration projects can cause "the leaching and mobilization of contaminants" into drinking water. But the agency also said it has received "new data and information" that it believes could justify allowing companies to sequester their CO_2 emissions at much shallower depths, above

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and in between sources of drinking water.

Based on that new data, EPA said it is considering setting up a "waiver process" that would allow sequestration projects to occur above the water table, as well as in "shallow formations such as coal seams and basalts." In order to be granted such a waiver, a company would have to demonstrate that its shallow CO_2 storage project "can be undertaken and completed in a manner that prevents fluid movement into overlying and underlying" sources of drinking water, EPA said in the document.

EPA said it would accept public comments on the new data, as well as its potential "new approach" to govern the underground sequestration of industrial CO_2 emissions, for 45 days.

Enesta Jones, an EPA spokeswoman, declined to comment when asked what type of benefits — environmental, economic and otherwise — the agency foresees from allowing companies to sequester their CO_2 emissions above and in between sources of drinking water. Jones also declined to estimate how much more CO_2 could be sequestered in the US under the less stringent approach, or if the scheme would increase the risk of contaminating underground sources of drinking water.

"We're in the midst of this process, and that's exactly why we're requesting public comment," Jones said.

In the 50-page document released Wednesday, EPA acknowledged that its proposal from last year "may restrict the use of sequestration in areas of the country with deep [underground sources of drinking water] where well construction would be technically impractical or infeasible." The June 2008 proposal would also "preclude injection of CO_2 into shallow formations such as coal seams and basalts," EPA said.

The new data suggesting that CO_2 might be safely stored above sources of drinking water comes from several regional carbon-sequestration projects sponsored by the Energy Department, EPA said. One such project involves injecting more than 3,000 tons of CO_2 from a coal-fired power plant into a deep saline reservoir on the Gulf Coast of Mississippi. To date, that project has shown "no indication of the return of the injected CO_2 into the shallow subsurface," EPA said last week.

EPA is also evaluating several new sequestration studies that were conducted by DOE's Lawrence Berkeley National Laboratory. Among other things, the California lab is studying how sequestered CO_2 could cause underground sources of drinking water to be contaminated with "trace elements" such as arsenic, barium, cadmium, mercury and lead.

According to EPA, the lab found that arsenic levels "could potentially exceed federal drinking water standards," and that other trace elements "may also be mobilized in certain circumstances." But EPA emphasized that the lab's studies "looked at potential consequences of CO_2 leakage into the [underground source of drinking water], not the likelihood of such leakage occurring."

If the Democratic-controlled Congress succeeds in its goal of passing climate-change legislation, the regulatory framework that EPA ultimately produces to govern the underground sequestration of industrial CO_2 emissions could play a significant role in determining where electric utilities, oil refineries and other carbon-intensive industries build new facilities. Similarly, the EPA's framework could also influence companies' decisions about which existing facilities to retrofit with carbon-capture and storage technologies. Given the expense of transporting captured CO_2 emissions to underground sequestration sites via pipeline or other means, companies would likely look to expand or build new facilities in locations with ample carbon-storage capabilities.

More information on the sequestration framework that EPA is developing is available online at www.epa.gov/safewater/uic/wells_sequestration.html. — *Brian Hansen*

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Editorial Director
William E. Loveless
Managing Editor
Brian Hansen
Associate Editors
Derek Sands, Jean Chemnick, Alexander Duncan
Contributing Editors
Cathy Cash, Matthew Cook, Gerald Karey, Mu Li, Jim Magill
Contact the Editors
+1-202-383-2240
Editorial Director, Global Power
Larry Foster
Vice President, Editorial
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To reach Platts

E-mail: support@platts.com

North America
Tel: 800-PLATTS-8 (toll-free)
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Latin America
Tel: + 54-11-4804-1890

Europe & Middle East
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WHITE HOUSE

Oil industry would see larger tax hike under latest White House budget plan

The Obama administration issued a revised 10-year budget estimate last week that would hit US oil and natural gas producers with an even bigger tax hike than the White House proposed earlier this year.

The White House Office of Management and Budget, in a 61-page "mid-session review" budget estimate released Tuesday, proposed to repeal $36 billion in tax incentives for the oil and gas industry between fiscal 2010 and fiscal 2019. That is some $4.5 billion more than the White House sought to extract from the industry when it rolled out its first long-term budget projections in May (*IE*, 11 May, 5).

According to the new estimate, the bulk of the increase would be generated by prohibiting oil and gas companies from writing off "intangible drilling costs" to produce new wells. These costs include everything from renting a drilling rig to paying salaries for workers to building oil-storage tanks at well sites.

The new projection estimates that the government would collect $7 billion over the next decade by rolling back intangible drilling costs, an increase of $3.65 billion from the May figures. OMB also projects collecting an additional $784 million by repealing "percentage depletion" for oil and natural gas wells. This tax deduction gives producers a tax break on the first 1,000 barrels of oil per day they produce, as well as other requirements. The totals OMB released Tuesday estimated that the government would collect $9.04 billion from this provision, up from $8.25 billion in May.

The largest portion of the potential tax hike — $13.3 billion — would be generated by making oil and gas producers ineligible for the so-called "manufacturers tax credit" that they have enjoyed since 2004. That amount remains unchanged last week compared to the May estimate.

Oil industry groups were quick to criticize the potential tax hike last week, as they did when the Obama administration first unveiled its budget blueprint earlier this year. The Independent Petroleum Association of America, a Washington trade group, was particularly critical of the increases on intangible drilling costs and percentage depletion of wells. Lee Fuller, the group's vice president for government relations, said those two tax credits have historically helped smaller producers and those drilling "marginal" wells.

"It really affects our capital flow," Fuller said of the proposed tax hike. "It's targeted, going after the small, independent producers."

Fuller added that the percentage depletion tax increases could drive some independent producers out of business by the end of the next decade. "Instead of getting $1.2 billion in 2019, I doubt there will be any revenue to get from those wells," he said.

While OMB and the Treasury Department both declined to comment on how they came up with the new total of $36 billion, officials at the American Petroleum Institute, a Washington-based trade group, said the higher estimates is likely the result of recalculating the numbers, and not any changes to the tax proposals themselves.

"My sense is that their revenue estimators went back and looked at the provisions and reran the numbers," said Michael Planter, API's tax director. "That's why the numbers are different. Revenue estimates are just that. They do change from time to time as people take another look at things."

John Felmy, API's senior economist, said the larger potential tax hike for the industry "reinforces that a bad policy is even worse than it was originally estimated to be."

The joint budget resolution that both chambers of Congress passed in April omitted OMB's assumptions for receiving revenue from the oil and gas industry, as key Democrats from oil-producing states opposed the provision. House and Senate budgeters also left out OMB's assumption that the government would collect more than $600 billion in so-called "climate revenues" over the next decade by creating a mandatory cap-and trade program for industrial greenhouse gas emissions.

The revised estimate that OMB released last week continued to assume that the federal government would collect some $627 billion in climate revenues from 2012-2019, a $3 billion increase from the May forecast. OMB said the government would generate that revenue by auctioning off 100% of all available "emissions allowances," an approach that is not reflected in the climate-change bill that the House passed in June. That bill (H.R. 2454) would allocate 85% of the allowances for free in the early years of the program, a compromise that the legislation's authors had to make in order to win support for their measure.

The OMB mid-session review also estimated that the federal budget deficit would exceed $9 trillion over the next decade, and that it would hit $1.5 trillion in fiscal 2010 alone.

OMB Director Peter Orszag told reporters that the sharp increase in the deficit is due in part to $787-billion economic stimulus bill and the $700-billion bank bailout bill that former President George W. Bush signed late last year. But Orszag emphasized that the administration was crafting policies to help relieve pressure on spending. "We're in the midst of the policy process surrounding the fiscal year 2011 budget, and that process will include proposals to put the nation back on a fiscally sustainable path," he said.

A spokesman for House Speaker Nancy Pelosi, Democrat-California, dismissed the notion that concerns over the deficit would derail efforts to pass climate and energy legislation. "As long as you adhere to fiscal discipline, there are ways to get these things done," said Pelosi spokesman Drew Hammill.

— Alexander Duncan, Gerald Karey

CONGRESS

EPA's 'endangerment finding' could spur Senate to act on climate legislation

The battle over health-care reform is expected to remain front-and-center when the Senate reconvenes next week, but action on climate change could heat up if the Environmental

Protection Agency kick-starts its own efforts to regulate industrial greenhouse gas emissions.

Some climate-policy experts say EPA will finalize its so-called "endangerment finding" on GHG emissions by the end of September or early October. The finding, which is grounded in the landmark global-warming case that the Supreme Court decided in 2007, could give the agency the authority to regulate heat-trapping emissions from automobiles, power plants and other sources without congressional input.

"It will remind people in the Senate what 'no action' would result in," said Manik Roy, federal affairs chief at the Pew Center on Global Climate Change in Washington. Moreover, EPA's expected "command-and-control" approach could be much more rigorous than the market-based system that Congress is working on, Roy said.

EPA is expected to initially focus on GHG emissions from motor vehicles, which was the subject of the 2007 Supreme Court case. But policy experts predict that under the Clean Air Act's "prevention of significant deterioration" provisions, the endangerment finding would lead to carbon regulation of power plants and other stationary sources as well.

Experts also expect EPA's proposed mandatory GHG reporting rule to serve as guidance for which stationary sources would face emission regulations. The rule targets about 13,000 facilities, which emit more than 25,000 tons of GHG a year. Public comment on this rule concluded June 9.

Kevin Book of ClearView Energy Partners, a Washington-area consulting group, said finalizing the endangerment finding would be akin to "a boom coming down" from the Obama administration to motivate the Senate to pass climate legislation this year. The finding is still in the proposal stage, and EPA is reviewing more than 300,000 public comments it received ahead of a June 23 deadline.

Book said EPA's action would be "subject to opportunistic timing," with the agency finalizing its endangerment finding and then following up with proposed regulations on motor vehicles before December's UN Climate Conference in Copenhagen.

"There are two bullets in the gun," said Book. "It's not clear they are going to fire both barrels at once."

President Barack Obama has said several times that he would prefer Congress to pass climate-change legislation as opposed to EPA writing regulations to curb GHG emissions using the existing Clean Air Act. Many lawmakers have echoed this view, with Representative John Dingell, a Michigan Democrat, remarking that using the Clean Air Act to address climate change would result in a "glorious mess."

But Book said EPA has given all indications that it is serious about a carbon rulemaking, in keeping with the Supreme Court's 2007 decision that the agency had the authority to regulate greenhouse gases under the Clean Air Act once it found the emissions endangered public health and welfare.

For example, Book noted that EPA has hired attorney Lisa Heinzerling, who wrote the legal brief that carried the day in the Supreme Court case. David McIntosh, a former Senate aide who drafted climate legislation for Senator Joseph Lieberman, has also gone to work for the agency. These personnel choices indicate the agency's readiness to draft and defend a carbon rulemaking, Book said.

Meanwhile, business lobbies continue to stir the pot with opposition. The National Association of Manufacturers and the National Federation of Independent Business launched an ad campaign last week in swing-vote states urging voter action against the "anti-jobs, anti-energy" House bill. And the US Chamber of Commerce filed a request to EPA for a hearing "to debate the evidence" on which the agency is basing its expected finding against GHG emissions.

Still, senators are expected to turn out legislative proposals shortly.

Environment and Public Works Committee Chairwoman Barbara Boxer, a California Democrat, has said she would unveil a draft cap-and-trade bill September 8, the day Congress comes back to work. The draft is expected to closely track the timelines and targets of the H.R. 2454, the bill that narrowly passed the House in June.

Senate Finance Committee Chairman Max Baucus, a Montana Democrat, said before the break that his committee would take up the allocation of emission allowances — considered a linchpin of the cap-and-trade bill, which is expected to create a carbon market worth hundreds of billions of dollars.

The death last week of Senator Edward Kennedy, the Massachusetts Democrat and leader on health-care reform, also could play a role in the Senate's action on climate legislation. If senators come together quickly to pass health-care legislation in honor of the 46-year Senate veteran, they will have more time to debate and work out a cap-and-trade package, according to Book. If the health-care debate stalls without Kennedy's leadership, the climate policy will fall into a deeper quagmire, Book suggested, but he predicted a "legacy effect" would help advance a healthcare vote.

"That is going to free up a lot of political capital," he said.

Roy, of the Pew Center, said it was difficult to predict the impact of Kennedy's death on health-care legislation. But "if health care is resolved in a positive way," he said, "it does help with energy and climate." — *Cathy Cash*

Utility execs illustrate continuing rift over wisdom of mandatory carbon caps

With the Senate expected to take up a major energy and climate-change bill next month, the heads of two major electric utilities gave a good illustration last week of just how differently they view the push on Capitol Hill to require their sector to reduce its greenhouse gas emissions.

Jim Rogers, the CEO of Duke Energy, said at a meeting of the Southern Governors' Association in Williamsburg, Virginia, that the power sector can successfully transition to low-carbon electricity generation. "I believe that we can modernize and decarbonize," he said.

Rogers, who has publicly called on Congress to pass a cap-

and-trade program for GHG emissions, said the US faces a tough uphill battle to catch up to other countries in developing renewable-energy technology. But Rogers said the US can lead in the arena of nuclear power.

"The only edge we have is in nuclear ... Nuclear is where we can win," said Rogers, whose company already operates more than 7,000 MW of nuclear power, and which plans to add more.

Senate committees are set to take up an energy and climate bill in September, with a floor vote possible by the end of the year. The House narrowly passed a climate bill (H.R. 2454) in June.

David Ratcliffe, the CEO of Atlanta-based Southern Company, voiced a different view at the southern governors' meeting. Ratcliffe said that although his company has begun to reduce its carbon footprint by investing in nuclear and other means, he could not support the House-passed bill.

"It's too aggressive, moves too fast, and costs too much," Ratcliffe said, noting that the US, by curbing its power-sector emissions, will make only a minor dent on global emissions levels. "Domestic policy is trying to wag the global dog with the tip of the tail," he said.

Ratcliffe said capping emissions from US industries would have almost no impact on climate change if China, India and other developing countries do not follow suit.

"What we will do will have very little impact unless they are involved," he said.

Ratcliffe also underscored how economies in the South would lose their historical benefit from reliable, diverse and cheap generation. "This is going to be an expensive proposition. [The utility industry] is not a cheap business ... This cannot and should not happen overnight. We have 50 years in our judgment [to] change out our existing fleet," he said.

Ratcliffe said that a Senate bill (S. 1462) to create a 15%-by-2021 renewable portfolio standard is a better approach then the House bill, which has a 20%-by-2020 RPS and a 2.5 cents a kilowatt-hour alternative compliance penalty for those utilities that cannot meet the RPS.

"[It's] a much better piece of legislation," he said, highlighting that the Senate bill's 2.1 cents/kWh penalty goes back to the states whose utilities have contributed to the fund, a key issue for southern states that boast far less renewable options than other states.

The climate split between the CEOs of two major utility holding companies could also be seen among SGA's 18 members, who were unable to present a united front on reducing GHGs.

New SGA Chairman and Republican Alabama Governor Bob Riley and Democrat governors Joe Manchin III of West Virginia and Steven Beshear of Kentucky expressed concern that a national GHG-cutting plan would harm their local coal-mining industries and raise the cost of coal-fired generation.

"We embrace the change. Do I agree exactly with the way the bills have come out? No, I don't. They've identified and villainized [coal], but they haven't fixed anything," Manchin said.

Beshear said the bill burdens southern states with too much of the program's costs. "Right now, the approach of some seems to be to distribute most of that cost on those of us that produce the energy, and we feel it ought to be spread equitably among those that produce it and those that use it," he said. — *Christine Cordner*

300 advocacy groups tell senators to strengthen House-passed climate bill

Calling the House-passed climate bill too weak, about 300 advocacy groups urged the Senate last week to pass legislation that sets more stringent emission-reduction targets and does not give electric utilities and other industries the bulk of their needed emissions allowances for free.

In a letter Tuesday to senators and the Obama administration, the groups said they were "profoundly concerned" about the House-passed climate bill (H.R .2454), which was significantly weakened in the run-up to the June 26 vote in order to win the support of lawmakers from industrial states in the Midwest and elsewhere.

"We urge you to draft a companion bill that provides the transformational change and greenhouse emissions reductions required to avert catastrophic climate impacts," the groups said in the letter.

Specifically, the groups said the GHG-reduction targets in the House-passed bill are "insufficient" to keep the atmospheric carbon dioxide level below 350 parts per million, which many scientists say is crucial to prevent the polar ice caps from melting more quickly and causing massive coastal flooding.

The groups also complained that the House bill rolls back provisions of the existing Clean Air Act to combat global-warming pollution from coal-fired power plants, saying the measure could even spark a resurgence in the construction of new coal-fired power plants.

The groups told the Senate to "eliminate or greatly limit and restrict" the use of carbon "offsets," which would allow regulated industries to fund certain carbon-reduction projects in the US and abroad in lieu of reducing their own emissions.

"We recognize the massive political effort that is necessary to pass climate legislation, but a bill with inadequate targets, loophole-ridden mechanisms, rollbacks of our flagship environmental laws, and inadequate financing for developing countries to address climate change will move us in the wrong direction," the groups told the senators.

The groups that signed the letter included the Carolinas Clean Air Coalition; the Delaware Audubon Society; and Montana Rivers, among others.

California Senator Barbara Boxer, the Democratic chairwoman of the Environment and Public Works Committee, has said she would unveil draft climate legislation on September 8, the day Congress returns from its summer recess. Hoping to use the bill proponents' success in the House, Boxer has said she would "tweak" the House-passed bill. — *Cathy Cash*

ECONOMIC STIMULUS

Clean Cities Program awards $300M for alternative vehicles, fuel stations

The Energy Department last week awarded $300 million in economic-stimulus funds to support 25 projects nationwide to speed the transition from oil to alternative fuels in the nation's vehicle fleet.

The funds will be funneled through DOE's Clean Cities Program, which supports a range of energy-efficient and advanced-vehicle technologies, such as hybrids, electric vehicles, plug-in electric hybrids, hydraulic hybrids and compressed natural gas vehicles. Refueling infrastructure for these alternative fuel vehicles will also be funded.

DOE said the cost-sharing projects will put more than 9,000 alternative-fuel and energy-efficient vehicles on the road, establish 552 refueling locations across the US and help displace about 38 million gallons a year of petroleum.

The vehicles and infrastructure being funded use natural and renewable gas, propane, ethanol, biodiesel, electricity and hybrid technologies. Under the program, grant recipients will match every federal dollar with nearly two dollars of their own.

In a visit to DOE headquarters Wednesday, Vice President Joseph Biden said the initiative is "another step in the direction of energy independence." Biden also praised Energy Secretary Steven Chu, saying his appointment by President Barack Obama was "the wisest choice the president made."

"You've assembled a first-rate staff, and you've taken on a role that is going to … in large part determine the success of these next three and a half years, whether or not we make a genuine dent, genuine progress, in moving toward an energy policy that can help America lead the world in the 21st century as it did in the 20th century," Biden said.

The vice president, however, cut short his planned discussion of energy to comment on the death Tuesday of Senator Edward Kennedy, Democrat-Massachusetts.

DOE's Clean Cities Program, which was initiated in 1993, has displaced more than 2 billion gallons of gasoline, according to the department.

Among the awards announced Wednesday, Texas received more than $38 million for three projects.

The North Central Texas Council of Governments received more than $13 million to deploy in the Dallas-Fort Worth area refueling stations and alternative-fuel vehicles with different technologies and fuels.

With more than $12 million, the Texas Railroad Commission will deploy 882 propane school buses, trucks and vans, and light-duty vehicles for school districts and public agencies. To support the vehicles, 35 propane refueling stations will be constructed.

Texas State Technical College will get more than $12 million to develop a national liquid propane refueling network, a "clean school vehicle" incentive and a "green" jobs outreach program.

Among other DOE awards are $14.9 million for a Utah Clean Cities Coalition initiative to develop 16 CNG public fueling stations, upgrade 24 existing CNG fueling stations, and build three liquid/compressed gas facilities and three new biodiesel public refueling stations. In addition, the project will increase by 678 the number of natural gas vehicles operating in Utah. The agency estimated that the project will help displace 1.1 million gallons of oil annually.

DOE will provide $14.9 million to the Clean Energy Coalition's Michigan Green Fleets Initiative, a program designed to increase the use of natural gas, electric and hybrid-electric vehicles at 13 sites across Michigan. The department estimates the program will help displace 1.3 million gallons a year of oil.

The agency also will provide about $15 million to Chicago's Department of Environment for a project designed to deploy 554 alternative-fuel and hybrid-electric vehicles and install 153 alternative fuel and electric-vehicle charging stations across the Chicago region. DOE estimates the project will help displace 3 million gallons a year of oil. — *Mu Li*

ENVIRONMENTAL MANAGEMENT

Four companies discuss purchasing DOE's cache of contaminated nickel

Energy Department officials met with representatives of four private companies last week that are interested in purchasing thousands of tons of radioactively contaminated nickel that DOE has long been trying to remove from two defunct nuclear weapons sites it is responsible for remediating.

The four companies — Babcock & Wilcox, EnergySolutions, Toxco and the Avatar Group — met with DOE officials Wednesday and Thursday in Cincinnati to discuss purchasing the tainted metal, which is housed at DOE's Oak Ridge Reservation in Tennessee and Paducah Site in Kentucky. Selling the nickel would be a boon for DOE, as the department would otherwise have to pay to decontaminate and/or dispose of the material. DOE hopes to garner between $15 million and $45 million by selling the nickel, according to a draft request for proposals that the department released in July (*IE*, 27 July, 8).

DOE is offering the nickel at a significantly lower price than companies would pay on the open market; the 9,700 tons at the Paducah site alone could fetch up to nearly $200 million if it was not tainted. But because the metal is contaminated with trace amounts of uranium, plutonium and other radionuclides from the nuclear weapons manufacturing process, DOE has imposed strict limitations on how it could be used. Companies that purchase the material would have to thoroughly decontaminate it, but even then, it could only be used at "radiologically controlled" facilities such as nuclear power plants and military bases. At those types of sites, the

metal could be used to make stainless steel or rechargeable nickel-cadmium batteries, for example.

While the meetings last week took place behind closed doors, DOE did disclose the names of the four companies it met with, as well as the general topics that were discussed. According to a document posted online, DOE asked the companies if they could satisfy the radiological "control requirements" within the draft RFP. DOE also asked if the companies were willing to assume full legal liability by putting up "performance bonds" to ensure the tainted nickel would not be not recycled back into general commerce. DOE also wanted to know how changing market prices for nickel would affect the companies' bids, and whether possible "technical differences" between the Oak Ridge and Paducah lots may warrant separate RFPs for the metal at the two sites.

Another area of concern was the timetable for delivering the material once it is sold. The RFP says that the first of the metal will be delivered 180 days after the award, and the rest will be delivered within one year. Furthermore, DOE wanted to know how requirements to aid the site's surrounding community might affect a firm's bid.

In interviews last week, officials from the companies told Platts that DOE needs to make significant changes to the RFP before they would be willing to officially bid on the tainted nickel.

"It's a very challenging RFP to say the least," said David Eaker, vice president of Toxco's Materials Management Center in Knoxville, Tennessee. "The challenge is determining what the end requirements will be from DOE."

Eaker said he did not attend last week's meeting, but added that his company has been keenly interested in the possibility of purchasing the DOE nickel for about five years. "Everything we do will be dependent on the final RFP," said Eaker, whose company recycles nickel-cadmium and other types of batteries.

Another company showing interest is Avatar Group, a small consulting firm based in Paducah which has done work with DOE and the Pentagon. Avatar is interested in using the nickel to build batteries that they could sell to certain types of regulated facilities across the country.

"Nuclear power plants would be a logical place to use them, and at other DOE facilities," said Larry Copeland, the company's CEO. "We know DOE and the kind of engineering it takes to deal with the nickel."

Babcock & Wilcox, a Virginia-based company that designs nuclear power plants and a wide variety of other products, is considered to be well positioned to use the nickel since it holds several DOE cleanup contracts at Oak Ridge and other sites.

"If B&W submits a proposal and is awarded the contract, the company would plan to use the nickel in its manufacturing processes for government and commercial customers within the restrictions set forth by the Department of Energy," spokesman Jud Simmons said in an e-mail.

EnergySolutions, based in Salt Lake City, Utah, has also expressed interest in the nickel. The company holds several DOE cleanup contracts, including one to build a waste-processing facility at the Savannah River Site in South Carolina. Officials from EnergySolutions did not respond to requests for comment on DOE's contaminated nickel.

While only four companies have publicly expressed interest in the nickel, other firms are watching the process as potential partners to one of the four. Michael Hargett, the president of metals refining company CVMR-USA, said he has had "active discussions" about teaming with Avatar, but that no commitments have been made. — *Alexander Duncan*

DOE plan for 'energy parks' struggles for lack of coordination, group says

An Energy Department plan to build wind farms, biofuels plants and other energy-manufacturing facilities at remediated nuclear weapons sites is struggling to get off the ground because of insufficient attention from DOE headquarters, according to an environmental cleanup advocacy group.

The Energy Communities Alliance sent a letter last week to DOE Under Secretary Kristina Johnson recommending "a cross-cutting office" to promote participation in the so-called "Energy Parks Initiative" among the department's divisions.

ECA Executive Director Seth Kirshenberg wrote that the program is hobbled because DOE's Office of Environmental Management, which administers cleanups of contaminated defense facilities, appears to be the only department division committed to the energy-parks concept.

Kirshenberg said ECA would like to see similar involvement by DOE's National Nuclear Security Administration and the department's offices of energy efficiency and renewable energy, science, and nuclear energy. Communities near DOE sites also want to support such projects, he added.

"ECA feels this project needs direction from the top leadership at DOE to allow difference DOE offices to work together to achieve Energy Park goals," Kirshenberg said. "ECA is concerned that the Energy Parks Initiative is not moving forward because the Office of Environmental Management is the program's only supporter."

DOE is committed to the Energy Parks Initiative's success, department spokeswoman Jen Stutsman said Friday. "Under Secretary Johnson supports the Energy Parks Initiative as a way to help move America toward a clean energy future," Stutsman said. "She received the invitation from the Energy Communities Alliance and looks forward to working within the department and with communities across the country to ensure the success of the energy parks program."

DOE first floated the Energy Parks Initiative in December, during the transition period between the Bush and Obama administrations. In a nine-page document provided that month to the Obama transition team, DOE said certain tracts of land could be "transferred" to local governments, private developers and other "third parties" that would build "large-scale energy-related facilities" (*IE*, 27 April, 12).

DOE said in the memo that one benefit of the initiative would be to show states and local communities that there are "future activities which could provide jobs and a tax base" at

defunct nuclear-weapons sites.

Under the Obama administration, DOE officials have been meeting with representatives of the communities and department facilities to discuss initial plans for energy parks.

Kirshenberg said the energy parks could become models for collaborations between other federal facilities and the communities in which they reside, including incubators for energy technologies developed by DOE's national laboratories.

"We know that a couple of cross-over meetings have occurred, but when we talk to staff that attended the meetings, the response is usually that they are very interested and energized by the ideas, but their management is not focused on the issue since they have 'their' own initiatives … ," Kirshenberg said. He added that the absence of political appointments across DOE until recently has probably hindered participation in new initiatives by department offices.

— *Bill Loveless*

FEDERAL LANDS

Citing new federal law, BLM rejects bids on 23 oil and gas parcels in Wyoming

Citing the recent passage of a federal law that protects a large portion of the scenic Wyoming Range, the Bureau of Land Management said last week it is rejecting pending bids on 23 oil and natural gas lease parcels totaling about 24,000 acres.

Don Simpson, the director of BLM's Wyoming office, issued a letter August 23 notifying all interested parties that the bids on the 23 parcels in the Wyoming Range Withdrawal Area within the Bridger Teton National Forest will be rejected. Although the parcels were sold at BLM lease sales held in 2006, the bureau declined to issue leases on the parcels after several environmental groups protested their sale.

Simpson said that after reviewing the history of the bids, BLM decided not to issue the leases in light of the passage of the Wyoming Range Legacy Act and a preliminary ruling on the protest by the Interior Board of Land Appeals.

In addition, Simpson announced the continuing suspension of 31 oil and gas leases within the withdrawal area that already had been issued to energy companies. Nineteen of the 31 leases were issued between 1992 and 1998, one in 2005, and 11 in 2006.

In February 2007, IBLA upheld an appeal of a BLM decision denying the protest of the 11 leases issued in 2006 and remanded the case back to BLM. Those leases are subject to further review, pending the completion of a supplemental environmental analysis being done by the Forest Service in cooperation with the BLM and state of Wyoming, Simpson said.

The WRLA, which was signed into law on March 30 by President Barack Obama as part of the Omnibus Public Land Management Act of 2009, withdraws 1.2 million acres of public land in the Wyoming Range from future mineral leasing.

Under the new law, companies that hold valid leases in the withdrawal area can voluntarily relinquish their interest in those leases or sell their interest to non-federal government entities willing to relinquish those interests back to the US government.

But Bruce Hinchey, president of the Petroleum Association of Wyoming, told Platts that companies that hold a valid lease in the area should be allowed to "either sell it back or develop the lease, under the terms of the WRLA."

"They should be allowed to go forward and meet whatever environmental requirements the agencies might want them to meet in order to go forward and develop those leases that were sold and issued," Hinchey said. "The buy-back was an option left up the operator, not left up to the government."

Hinchey said the leases currently under suspension are potentially valuable to the leaseholders, who might be reluctant to relinquish them voluntarily. "I'm not sure the government would want to pay what those leases might be worth," he said. "The potential is quite great that there is quite a bit of gas and oil underneath those leases."

Wyoming Governor Dave Freudenthal, a Democrat, praised the passage of WRLA, which was primarily the work of two Republican senators from Wyoming. The bill was originally drafted by the late Senator Craig Thomas and later was re-introduced by Senator John Barrasso.

"In 2004, when 170,000 acres were up for lease in the Wyoming Range, we knew that the steep slopes, the streams and the crucial wildlife habitat were no place for drill rigs," Freudenthal said. "So we set to work and got the offering scaled back from 170,000 to less than 45,000 acres. Today, five years later, the 45,000 acres has been cut to 21,000, and we're still hoping to get to zero."

Representatives of the coalition of conservation organizations and other groups opposed to energy development along the Wyoming Range expressed satisfaction at BLM's announcements.

"It's a great step forward," said Jared White, a spokesman for the Wilderness Society. "The Wyoming Range is just one of those places that are too special and too important for other things like hunting and fishing and recreation."

However, Hinchey said the WRLA goes beyond protecting the most environmentally significant parts of the Wyoming Range by removing too much prospective acreage from exploration.

"We were firmly opposed to the bill as drafted," he said. The act "got expanded far beyond what the existing Range area was, from 400,000 acres to 1.2 million acres. It included all kinds of frontage areas, which is where these leases and other leases that have huge potential for oil and gas are." — *Jim Magill*

INSIDE DOE

DOE aims to further streamline process for energy saving performance contracts

Contractors have long been upgrading federal facilities to conserve energy and save the government money. Yet lingering problems such as delays in implementing contracts for

the work, including obtaining "buy-in" on projects from senior Energy Department and contractor officials, have have often hindered such work.

While DOE has made some progress in streamlining the process, the department is looking for further improvement. Last week, staff from DOE's Federal Energy Management Program and contractors met to review options, including one that would limit the time it takes to arrange so-called energy savings performance contracts to 18 months, at most.

The proposals, made last month in a memo from Cathy Zoi, DOE's assistant secretary for energy efficiency and renewable energy, would follow steps taken by the department last year, when it reduced the time spent arranging contracts to an average of 19 months, far less than the previous average of 37 months.

While contractors at the meeting on Wednesday generally welcomed DOE's latest move, they also advised the department to make sure that senior officials give sufficient attention to projects to assure their implementation. They said they were supportive of Zoi's effort, which would build on that of her predecessor, Alexander "Andy" Karsner, during the Bush administration.

Zoi's involvement, the contractors said, is important to convince companies that such projects are worthwhile, they said, adding that without such intereset, projects can flounder.

"Then it goes into this no-man's land for months and months and months, and dies a slow death," said Britta MacIntosh of energy contractor NORESCO. On the government side, MacIntosh said involvement from top officials would create more accountability. "There's no penalty for inaction," she said of the current process.

DOE officials at the meeting agreed that strong signals from the department's senior management often drive results for programs. "If you have that extreme red hot attention from the top dog, things get done," said Ab Ream, FEMP's operations and maintenance director.

Energy savings performance contracts enable federal agencies to acquire improvements in facilities, such as new boilers, windows, lighting and air-conditioning, without up-front capital costs and special congressional appropriations. An ESPC is a partnership between a federal agency and energy service companies. The companies conduct energy audits for federal facilities and identify improvements to save energy.

The contractors design projects that meet the agencies' needs and arrange the financing. They also guarantee that the improvements will generate energy-cost savings sufficient to pay for the project over the term of the contracts. Once the contracts end, all additional cost savings accrue to the agencies. Contract terms up to 25 years are allowed.

More than 460 ESPC projects have been awarded by 19 federal agencies in 47 states, according to the FEMP Web site.

About $2.3 billion has been invested in federal facilities through the contracts, saving more than 18 trillion Btu annually, an amount equivalent to the energy used by a city of more than 500,000 people. The projects have resulted in $7.1 billion in savings for the government, $5.7 billion of which has gone to finance the projects. The net savings to the government is $1.4 billion.

Zoi, in her July 17 memo, said she wants DOE to develop the guidelines this fall. She would not only "fast-track" the contracting process, but also "increase the amount of direct price-based competition" between contractors. Installing more renewable power and reducing carbon emissions would receive more attention, she said.

More internal DOE oversight is necessary as is a "full 'life of contract' audit function" to best anticipate possible savings, she said. The department must also develop guidance "relating to responsibilities associated with energy cost fluctuation risk over the term of the contract," she added.

Zoi confined her planned improvements to projects involving DOE facilities, figuring they could eventually apply to the Defense Department and other federal agencies.

"It is my intention that these reforms enhance the already significant contributions that ESPC's make to energy savings within DOE and across the Federal Government, and establish DOE as a model for other agencies to follow," she wrote.

Proposals drew praise

In December, DOE selected 16 contractors to bid on ESPCs. The nearly three dozen contractor personnel at the meeting agreed with many of Zoi's recommendations, and appeared particularly interested in seeing the department devise a better system for appointing officials to oversee individual proposed projects and tracking their consideration.

"We need someone to recognize hurdles down the road," urged Jay Johnson of Chevron.

"Does someone have the responsibility for tracking it?" asked Andrew Morton of Johnson Controls.

Morton acknowledged that contractor visits to sites and subsequent audits take substantial time. However, he said DOE must review proposed projects faster. "The holdup was the review on the government side," he said.

DOE officials at the meeting said other problems, such as recognizing technology changes over time, fluctuating power rates, and other variables, pose dilemmas for contractors negotiating ESPCs. Better coordination early on and anticipating potential problems would get projects moving smoother, the officials said.

"Your ability to influence the quality of a project is sort of front-loaded," Ream said.

Daryl Berg, a contracting officer in DOE's Golden, Colorado, field office, agreed with Ream, adding that sometimes the "scope of the project changes so much that it doesn't resemble" what was initially envisioned, and then "you've got another project." Such circumstances can complicate bidding, because a project may change over time and the original contractor may be not as well suited as another for performing a certain task.

In those instances, Morton added, "You have the potential for a protest" of the contract that DOE decides to award.

— Alexander Duncan

NATIONAL LABORATORIES

Berkeley lab chief share's Chu's vision of replicating Bell Lab structure at DOE

The Energy Department's national laboratories are often touted as incubators of scientific and technological innovation. But according to Paul Alivisatos, the acting director of DOE's Lawrence Berkeley National Laboratory, the labs should also be open to finding new ways to get those technologies from the workbench to the marketplace.

Paul Alivisatos

"There are many successful models for how to do it, we can also try to invent new ones if they are not there," Alivisatos said in a recent interview with Platts. "We do have a pretty good track record, but we could probably do ten times better if we all put our minds to it."

Berkeley lab is located close to the high-tech venture capital heartland of California's Silicon Valley, and it is well-regarded in the research community for its technology-transfer practices, especially engaging with industry. Energy Secretary Steven Chu was the lab's director before he became part of President Barack Obama's Cabinet in January, and during his tenure, the lab aggressively pursued a $500-million project with BP to build an advanced biofuels research center.

While it has made some strides in tech transfer, the lab is still trying to improve. Specifically, Alivisatos said he is attempting to avoid "the invented here and thrown-over-the-fence model" by bringing businesses and industry in earlier.

"We would love for them to tell us that early so we are not wasting time and money. We also know that [with] some of our discoveries, people in industry are just not aware of them early enough to take advantage," Alivisatos said.

The lab is not only trying to work more closely with industry, but also trying to help integrate applied and basic research across the department. This includes the Joint BioEnergy Institute, or JBEI, a model for DOE research integration. The facility is aimed at developing advanced plant-based biofuels, and is home to researchers looking at every aspect of the problem, from plant genetics to the technology that will go into a biofuels pilot plant the lab hopes to eventually build.

The one-stop-shop model, where the scientists from a broad range of disciplines are concentrated in one location to work on a specific energy problem, is just one that DOE is embracing.

Alivisatos first met Chu when they both worked at Bell Laboratories in the 1980s. Bell labs was the source of many breakthroughs during its 50-plus-year heyday, including the laser and the transistor. Chu has said several times that he would like to replicate some of the Bell lab structure in DOE's national labs.

"Bell Labs was an amazing place," Alivisatos said. "You just walked in the door and you could feel the energy and intensity and the excitement of the place because it was just chock full of the worlds experts." Scientists could quickly test ideas by bouncing them off of more experienced colleagues, he said.

"When we are talking about making these integrated structures where we have basic and applied research together, one implicit in that is they need to be critical mass, they have to be big enough that there are enough people inside there, thinking and rubbing shoulders, that they can quickly move through issues and get to the right answers without going down blind alleys too much," he said.

But certain aspects of Bell Labs are unlikely to be replicated at DOE, according to Alivisatos. For example, while Bell Labs' funding procedures were largely determined by managers, DOE will almost certainly continue to make those decisions through the proposal system, which involves formal competitive appraisal, Alivisatos said.

DOE labs also have to deal with relatively inconsistent budgets from year to year, relying on Congress to provide enough money. Berkeley has been carefully reviewing its operations budgeting — such as food and travel services, and information technology — and comparing it to universities and private companies to make sure they are a good value, Alivisatos said.

"If a certain amount of money comes for a research program, and so much of it gets diverted into operations that we don't deliver enough science, than that is an issue, so we pay careful attention to that," he said. This benchmarking is being adopted throughout the department, according to DOE's chief financial officer.

Another budget issue that has plagued national labs is investment in infrastructure, such as new buildings. This was partially addressed with funding in the economic-stimulus package, but the history of underfunding has led to some ironic disparities.

Meanwhile, many of the energy-efficiency technologies pushed by Chu, such as compact fluorescent light bulbs and efficient roofs, have not yet been adopted by the labs themselves.

"Our lab has invented a lot of these technologies, or come up with a lot of these ideas that are out there," Alivisatos

said. "And in some cases we haven't been able to implement them in our laboratory because we don't have the resources to do it."

Alivisatos, a chemist by profession, got into the energy field after becoming intrigued with the problem of producing low-cost solar photovoltaic cells, which can produce electricity directly from sunlight. Getting the cost down is still one of the major hurdles to widespread adoption of solar power.

Alivisatos took the helm of Berkeley lab when Chu stepped down from the director's chair to head DOE. The University of California, which manages the lab, is expected to name a permanent replacement for Chu this fall.

Having a former lab director at the helm of DOE has made a difference in how the current directors coordinate and work together, according to Alivisatos.

Chu has refocused the routine meetings between DOE and directors, allowing the directors to center their attention more on the science their labs are pursuing and less on management issues, Alivisatos said. In an interview with Platts on the sidelines of the American Chemical Society's meeting in Washington on August 18, Alivisatos said the meetings have changed dramatically under Chu.

"We spent the whole time, the lab directors, talking about really important science issues. It felt very liberating because that is what our labs are good at doing," Alivisatos said. "We were talking about our mission and how are we going to cooperate to achieve it, and we were not talking about contracts. I'm not saying these things are not important, but you can get overwhelmed with bureaucratic aspects of large organizations and lose sight of what the organization's purpose is."

Chu, who is a Nobel Prize-winning physicist, has personally made research and development at the department a priority.

This experience is a drastic change from prior energy secretaries, Alivisatos said without mentioning any names.

"Some of the people who have run the department in the past have been more distant from those technologies and science [and] have probably had a harder time really differentiating, and have therefore maybe focused on other things," he said.

Some past energy secretaries not only had no energy experience, but were chosen for their antagonism toward the department. Spencer Abraham, a former Republican senator who served as energy secretary under former President George W. Bush, once sponsored legislation that would have abolished DOE.

Alivisatos welcomed Chu's leadership.

"Energy is such a science-related topic, having a first-class scientist in there is just a different world," Alivisatos said.

— Derek Sands

Editor's Note: This is the fifth in a series of interviews with directors of the Energy Department's national laboratories, which Energy Secretary Steven Chu has said will play prominent roles in the Obama administration's plans to promote the development of transformational energy and environmental technologies for the US. Other interview stories will appear in coming editions of Inside Energy.

OIL

Green groups to seek court order to halt work on Enbridge oil pipeline

A coalition of environmental groups is expected to sue the State Department this week for approving a Canadian company's plan to build an oil pipeline from tar-sands fields in Alberta to refineries in the Midwestern US.

Sarah Burt, an attorney with Earthjustice, told Platts last week that the groups will seek an injunction to prevent Calgary-based Enbridge Energy from proceeding with construction on the US portion of its Alberta Clipper pipeline project. Burt said an injunction would give the groups more time to appeal the State Department's August 20 decision to sign off on the project, which was required because the pipeline would cross the US/Canadian border.

"The environmental review the State Department did was very limited in scope," Burt said.

Burt said Earthjustice would ask for the injunction on behalf of the Sierra Club, the Minnesota Center for Environmental Advocacy, the Indigenous Environmental Network and the National Wildlife Federation.

Enbridge's Alberta Clipper pipeline is designed to carry 450,000 barrels a day of crude oil from Hardisty, Alberta, to Superior, Wisconsin. The 36-inch-diameter pipeline would cross the border near Neche, North Dakota, traversing Minnesota to an Enbridge terminal near the western shore of Lake Superior. The 1,000-mile-long project calls for the pipeline to eventually expand to 800,000 b/d.

Burt said the lawsuit will argue that the permitting process did not take into consideration the environmental impact of US refiners processing heavy crude oil derived from Canada's oil sands. She also said the State Department did not consider the impacts of greenhouse gas emissions from the increased extraction rates of Canada's oil sands, or the cumulative effect that the Clipper Line and TransCanada's Keystone line will have.

Burt said the Clipper project and the Keystone project together would bring an additional 2.9 million b/d of capacity for heavy crude from Canada.

"That's really a significant shift," she said. "None of that was considered in the environmental assessment."

The State Department said August 20 when it issued the permit that it considered several factors in its decision, including greenhouse gas emissions. The department added that reducing heat-trapping gases "is best addressed through each country's robust domestic policies and a strong international agreement." President Barack Obama "is committed to reducing overall emissions and leading the global transition to a low-carbon economy," the department said at the time.

Denise Hamsher, an Enbridge spokeswoman, said last week that she could not comment on the potential lawsuit, since nothing had been filed. However, Hamsher said she is familiar

with Earthjustice's concerns.

"All of the statements that we have heard are the same types of issues that were raised in front of the Minnesota Public Utilities Commission," she said.

The Minnesota PUC has already approved the project, despite efforts by environmental groups to block it at that level. Hamsher said the project has been granted 63 permits to date at the federal, state and local levels, and that Enbridge is confident the issues raised by Earthjustice have been addressed.

"There are no new issues that haven't already been fully addressed by Enbridge," she said.

Hamsher said Enbridge began "full-swing construction" the day it received regulatory approval. She also noted that a similar challenge was made to TransCanada's Keystone permit, and that line also remains under construction. — *Matthew Cook*

Refineries would be heavily impacted by House climate bill: industry study

US oil refineries would have to scale back their production of gasoline, diesel fuel and other petroleum products if the climate-change bill that the Democratic-controlled House narrowly passed this summer became law, according to a new study commissioned by an oil-industry trade group.

The study, which was paid for by the American Petroleum Institute and conducted by EnSys Energy, a Lexington, Massachusetts-based consulting firm, also found that the House-passed climate bill would hurt domestic refiners' abilities to export their products to foreign markets.

API, the oil industry's main Washington-based trade group, asked EnSys to write the study just days after the House in June narrowly passed a major climate and energy bill sponsored by Representatives Henry Waxman and Edward Markey. The study found that US oil consumption would drop if the Waxman-Markey bill (H.R. 2454) became law. But because the bill's mandatory carbon caps would force refineries to pay for the bulk of their needed emissions allowances, the US would have to import a larger portion of its gasoline, diesel fuel and other refined petroleum products from foreign countries, the study found.

Specifically, the study found that US refiners would process between 12 million and 14.9 million barrels per oil per day in 2030 if the Waxman-Markey bill became law. But without the bill, refiners would process upwards of 16.4 million b/d in 2030, the study found.

Similarly, the study found that the US would have to import between 14% and 19% of its refined petroleum products from other countries if the bill took effect. Without the bill, the US would only have to import 9.6% of its refined products, the study found.

EnSys President Martin Tallett acknowledged that the costs of the House-passed climate bill could vary based on the availability of international "carbon offsets," as well as the rate of low-carbon technology deployment. But Tallett said US oil use would decrease under all scenarios because of tougher automobile fuel-efficiency standards that Congress passed two years ago, as well the federal renewable-fuels standard that requires more use of ethanol and other biofuels.

Tallett also said that a major impact of the Waxman-Markey bill would be that US refiners would only be able to provide refined products for the US market, and not be able to export abroad as they do now. As a result, foreign refineries that are not under mandatory carbon caps would ship more refined products to the US, he said.

"Foreign refineries not burdened by the same costs help make that up," he said. "As soon as you unlevel the playing the field … that ability to export is adversely affected."

The Waxman-Markey bill seeks to would reduce greenhouse emissions 80% relative to 2005 levels by 2050. The bill would dole out billions of dollars' worth of free emissions allowances to various sectors of the economy, partly to ease economic transition for different sectors but also to receive votes in narrow 219-212 House vote.

Waxman and Markey agreed to give electric utilities and other industries billions of dollars' worth of free emissions allowances in the early years of the cap-and-trade program in order to make it cheaper for them to reduce their GHG emissions. But Waxman and Markey also used the free allowances to win the votes of dozens of centrist Democrats who had expressed concern that the bill would hurt electric utilities and other smokestack industries in their districts. Even with the provision for free emissions allowances, more than 40 Democrats broke party ranks to oppose the bill.

The biggest winner under the Waxman-Markey bill would be the electric power sector, which would receive 35% of the legislation's free emissions allowances. Refiners would get just 2.25% of the bill's free allowances, even though a full 43% of the GHG emissions that the bill seeks to regulate would come from burning gasoline and other refined products, EnSys said.

API President Jack Gerard said that the disparity between the totals puts undue pressure on the refining sector. "Climate legislation should not come at the expense of US economic and energy security," Gerard said in a statement.

EnSys found that the utilization rate for refineries would be 83.3% in 2030 with no carbon caps, and that it would drop to between 63.4% and 78.1% with carbon caps. The Energy Information Administration said in April that the utilization rate would be 77.6% under business-as-usual in 2030, but the EnSys report takes into consideration greater domestic capacity in the future, Tallett said.

Environmental groups said the study works against API's intentions because it shows that less oil is ultimately used. Andy Stevenson, a finance analyst with the Natural Resources Defense Council's Center for Market Innovation, said industry concerns over dropping utilization rates show that less oil is being used — which is one of the main purposes of the carbon cap.

"It's kind of a shoot-yourself-in-the-foot argument," he said. "Under business as usual without [the bill], they are going down to a level that doesn't require consolidation."

The study also shows that refiners in the Gulf Coast, which make up nearly half of US refining capacity, would be impacted significantly. In 2030, 7.7 mb/d oil would be refined

in the Gulf Coast with no carbon caps, while 5.1 mb/d to 6.8 mb/d would occur with carbon caps.

The Senate is expected to take up its own climate-change bill this fall, and President Barack Obama supports efforts to create a national cap-and-trade system for greenhouse gases.

An aide to Waxman disputed the study, saying that the provisions within the bill would not harm refineries as much as API contends. "We are reviewing the oil industry analysis. It appears to have serious flaws and is not an accurate assessment of the legislation," the aide said. — *Alexander Duncan*

RESEARCH & DEVELOPMENT

DOE awards $27.6M for studies or risks associated with carbon-dioxide storage

The Energy Department last week picked 19 projects to simulate, track and evaluate the potential risk of carbon dioxide leaking from sites where it is stored, as industries are seeking verifiable permanent storage for the carbon emissions from coal-fired power plants.

The projects, managed by DOE's National Energy Technology Laboratory, have a total value of $35.8 million over four years, with $27.6 million funded by DOE. They will examine wide-ranging geological storage areas in Indiana, Illinois, Kentucky, Michigan and Ohio.

Coal supplies nearly 50% of domestic electricity. In order for relatively low-cost electricity from coal-fired power plants to remain available, DOE said that it is necessary to develop economic ways of capturing and storing CO_2 without leakage from deep geologic formations.

A climate-change bill passed by the House in June would invest $60 billion in carbon capture and sequestration technologies to serve that purpose.

Among DOE's awards, Planetary Emissions Management, Cambridge, Massachusetts, would receive about $2 million to deploy a carbon analyzer, which can detect about 1 part per million of CO_2 in the ambient air at storage sites with CO_2 leaks, and a pilot CO_2 injection site for testing and validation.

Other monitoring projects selected by DOE include Columbia University's system for tagging CO_2 at the atmospheric level, Fusion Petroleum Technologies' development of seismic data software, and Montana State University's project to build a differential absorption light detection and ranging instrument.

Also to be funded are Schlumberger Carbon Services, Stanford University, the University of Miami Rosenstiel School, the Bureau of Economic Geology at the University of Texas at Austin, the University of Wyoming and West Virginia University Research Corp.

DOE will also assist projects to develop models to predict subsurface CO_2 behavior so that geologic storage projects can be better designed and implemented. Recipients of such department funding include Advanced Resources International, Battelle Memorial Institute, Colorado School of Mines, Missouri University of Science and Technology and the New Mexico Institute of Mining and Technology.

Of those, Battelle, based in Columbus, Ohio, will get more than $1.5 million from DOE to build a geologic model for CO_2 storage along the US Arches geologic province in Indiana, Kentucky, Michigan and Ohio, and to complete reservoir simulations necessary for large-scale CO_2 storage.

DOE also picked projects to assess programmatic and technical risks submitted by GoldSim Technology Group, Headwaters Clean Carbon Services, Princeton University, and the Bureau of Economic Geology at the University of Texas at Austin.

Princeton will receive $2 million over three years to develop a framework for examining carbon capture and storage investment decisions for such risks as CO_2 leakage, potential subsurface liability, and the associated losses in carbon credits.

"It is anticipated that the projects will create nearly 100 jobs that will last for up to four years," said DOE in a statement.

— *Mu Li*

Competition for first hydrogen prize opened by DOE; $1 million offered

The Energy Department plans to award a $1-million prize in 2011 for a breakthrough in hydrogen-storage technology, a key challenge to advancing hydrogen and fuel-cell technologies.

In a *Federal Register* notice last week, DOE said the H-Prize would help spur investment in such technologies. "The mobilization of private funding .... is at the heart of the H-Prize concept." the department said.

DOE said the goal of the award is to produce a material that can be used for on-board rechargeable hydrogen storage, adding the prize will be offered only if the material can meet or exceed technical criteria set by the department.

The H-Prize is administered by DOE's Hydrogen Education Foundation, under provisions of the Energy Independence and Security Act of 2007. The law authorized biennial awards in four categories: storage, production, distribution, and utilization.

The award for a storage advance would be the first H-Prize offered by DOE.

The law authorized prizes of up to $1 million for advancements; $4 million for prototypes; and a grand prize of $10 million for "transformational technologies." All told, EISA calls for $50 million in prizes from 2008 to 2017.

Patrick Serfass, the director of communications and technology at the Hydrogen Education Foundation, said the H-Prize will help DOE promote a portfolio of alternative-energy technologies. "It is a good step in that direction," Serfass said. "It shows that it is important to develop hydrogen technologies as well as battery technologies."

For years, DOE has supported development of hydrogen and fuel-cell technologies for applications across sectors, including transportation, where the department sees the

potential to help reduce greenhouse-gas emissions and oil use.

But in its fiscal 2010 budget proposal, DOE asked Congress to reduce funding for hydrogen fuel-cell research to $68 million, from $169 million this year. The department said then that it planned to stop funding for vehicle fuel cells and focus instead on fuel cells for stationary purposes, which Energy Secretary Chu previously said could have a more immediate impact (*IE*, 11 May, 1).

Registrations for the H-Prize are due by February 15, 2010, and material samples must be submitted by November 15, 2010. An independent third-party laboratory will test the samples.

DOE said it plans to make the award in February 2011.

— *Mu Li*

Sandia seeks industry partner to develop small nuclear reactor … *(from page 1)*

and scientists at Sandia, one of DOE's three defense labs, began work on the idea about five years ago, driven by the notion that a mini-reactor might provide a reliable self-contained source of electricity for US military bases in this country and abroad — and a new option for US attempts to promote safe use of nuclear energy in developing countries.

"From our perspective, the fact that we were no longer a major player in the global nuclear enterprise, that is, the supply of goods and services, has an impact on our ability to influence proliferation safety and security cultures around the world," Sanders said. "We have no carrots to offer."

"There is a tension between proliferation concerns and growth [of nuclear energy]," he said. "You can't influence one and not be in business on the other one. That was our motivation for rebuilding the US manufacturing capability, to provide for both domestic needs and export opportunities. Mini-reactors are a way to get started."

Sandia's right-sized reactor would produce somewhere in the range of 100 MW to 300 MW of thermal power, and could supply electricity to remote areas that lack transmission lines and other types of energy infrastructure. Sanders said the mini-reactor reactor would produce power at a lower cost than conventional-sized plants, and that it would take only two years to build, compared to seven years for larger facilities. The goal is to produce electricity at less than five cents per kWh, making them economically comparable to gas-turbine systems.

Such reactor units could be multiplied at a site over time to increase baseload capacity, much as electricity generators do now with small natural gas units, Sanders said.

The right-size reactor would be about the size of a "fairly large" office building, which would make it considerably smaller than conventional US nuclear power plants. Those plants typically produce about 3,000 MW of power.

Moreover, the reactors, built around a small uranium core, submerged in liquid sodium, would be resistant to intrusions, a major concern in global discussions about the expansion of nuclear energy in developing countries, Sanders said.

Because the reactors are "breeders," generating their own fuel as they operate, they are designed to operate for a couple of decades without the need for fresh fuel, he said. Conventional nuclear power plants have their reactors refueled once every 18 months.

The Sandia design also includes a monitoring system called "nuke-star" that enables exporters of the systems to watch them for safety, security and legitimate use, another member of the lab team, Gary Rochau, said in a statement from the lab.

The reactors would be factory-built and mass-assembled, with potential production of 50 a year, according to Sandia. Mass production would keep costs down, possibly to as low as $250 million per unit.

Just as Henry Ford revolutionized the auto industry with mass production of cars through an assembly line, the Sandia team's concept would transform the nuclear industry, Sanders said.

Sanders also draws a comparison with the government's development of small nuclear reactors for Navy submarines, which have operated for more than 50 years without an accident. "We see an opportunity to repeat that process," he said.

Sanders' work on mini-reactors is not confined to Sandia. He is also the president of the American Nuclear Society, a professional organization that promotes nuclear energy, and has made mini-reactors a leading theme for him in that role. He said he plans to include a presentation on the topic at ANS' winter meeting in Washington on November 15-19.

How likely are mini-reactors to become viable commercial options for the US nuclear industry? "The need for small reactors continues to be identified," said John Keeley, the media relations manager for the Nuclear Energy Institute, the trade association for the nuclear industry. But Keeley added: "It sure seems we're still some years away from seeing commercial licensing of small reactors here."

Sanders said he is encouraging all of the developers of small-reactor technology to "move full steam ahead" to bring their units to the market. "I hope these guys are successful, too," he said. "Competition is always healthy." — *Bill Loveless*

NEWS IN BRIEF

Scientists map Alaska GHG emissions

US government scientists are mapping the locations of greenhouse gas emissions in Alaska — including oil-drilling activities in Prudhoe Bay — in an effort to predict how climate change will impact the Arctic in the next few years, officials said last week.

Using a large Coast Guard aircraft outfitted with high-tech air-sampling equipment, scientists from a National Oceanic and Atmospheric Administration laboratory in Boulder, Colorado, are traversing Alaska pinpointing sources of human-induced as well as naturally occurring carbon dioxide and methane.

Colm Sweeney, a NOAA scientist heading the project, said it is important to locate and quantify natural sources of heat-trapping emissions so the effect of human activities such as energy development can be properly gauged.

"It's important to locate natural sources and measure how much methane and carbon dioxide are being released now so we can watch for signs of increasing emissions," Sweeney said.

Oil development in Alaska's Prudhoe Bay releases a significant amount of methane, a greenhouse gas that is some 25 times more potent than CO2, but which has a significantly shorter lifespan once it is released into the atmosphere. But there are also billions of tons of methane and CO2 contained in frozen Arctic tundra, and many scientists — including Energy Secretary Steven Chu — have expressed concern that climate change will allow those heat-trapping gases to escape into the atmosphere. "We're especially interested in those sources," Sweeney said.

Sweeney said some tundra is already melting south of the Brooks mountain range, which stretches across northern Alaska into Canada's Yukon Territory. Sweeney said scientists have already found "significant enhancements in methane emissions near the surface" north of the Brooks Range, but he said it is unclear if the heat-trapping gases were generated by humans, or if they are naturally occurring.

"We're eager to find out," he said.

Vehicles program awards $300M

The Energy Department said last week it will use $300 million in economic-stimulus funds to support 25 projects nationwide to speed the transition from oil to alternative fuels in the US vehicle fleet.

The funds will be funneled through DOE's Clean Cities Program, which funds a range of energy-efficient and advanced-vehicle technologies, such as hybrids, electric vehicles, plug-in electric hybrids, hydraulic hybrids and compressed natural gas vehicles. Refueling infrastructure for these alternative fuel vehicles will also be funded.

DOE said the cost-sharing projects will put more than 9,000 alternative-fuel and energy-efficient vehicles on the road, establish 552 refueling locations across the country and help displace about 38 million gallons a year of petroleum.

The vehicles and infrastructure being funded will use natural and renewable gas, propane, ethanol, biodiesel, electricity and hybrid technologies. Under the program, grant recipients will match every federal dollar with nearly two dollars of their own.

In a visit to DOE headquarters, Vice President Joseph Biden said the funding initiative is "another step in the direction of energy independence."

Biden also praised Energy Secretary Steven Chu, saying his appointment by President Barack Obama was "the wisest choice the president made," though the vice president otherwise discarded his prepared remarks to comment on the death Tuesday of Senator Edward Kennedy, Democrat-Massachusetts.

DOE's Clean Cities Program, which was initiated in 1993, has displaced more than 2 billion gallons of gasoline, the department said on its web site.

DOE funds $7M in sensor projects

The Energy Department will fund seven projects to develop sensors and process controls to facilitate the adoption of power-generation technologies with lower emissions, DOE said last week.

The projects, managed by DOE's National Energy Technology Laboratory, will receive $7 million to develop components vital to efficiently operate complex future power facilities, the department said.

DOE said new materials are needed for developing sensors that monitor the composition of combustion gases in real time, in order to improve the efficiency of the combustion process of fossil fuels.

Among the projects awarded by DOE, the University of Connecticut will develop nanostructured materials for gas sensors that can stand high temperatures — between 700 and 1,600 degrees Centigrade.

DOE funded Missouri University of Science and Technology, Prime Research, Stanford University and the University of Central Florida for their projects to develop novel approaches to conduct real-time multi-dimensional mapping of key parameters, using such technologies as sensor networks, imaging techniques, and distributed and heterogeneous sensors designed for harsh environments.

Also funded is Oregon State University's modeling and simulation project, which will seek a solution for sensor coordination by developing criteria for assessing effectiveness and system impact of sensor performances.

Reaction Design, a company based in San Diego, will use DOE funds to develop and advanced form of modeling to rep-

resent key unit operations in flow-sheet simulations.

Advanced modeling and simulation solutions are needed, said DOE, so that pilot and demonstration-scale facilities can be designed with less time and trial runs, and therefore lower the cost and technical risk for constructing high-efficiency, near-zero emission plants in the future.

Savannah River lab, USCAR team up

An organization representing US-based automakers is collaborating with Savannah River National Laboratory to develop a wireless sensor network that could improve operations in vehicle and defense manufacturing facilities, the Energy Department lab said last week.

The Energy Department lab and the US Council for Automotive Research hope to establish an industry standard for similar networks worldwide, SRNL said.

USCAR and SRNL, which signed a cooperative research and development agreement earlier this year, said they envision a new physical layer of radio-frequency circuitry for short-range wireless sensor networks that would meet security requirements of DOE's National Nuclear Security Administration.

The lab said ressearchers aim to create a prototype of the network by 2010.

USCAR, whose members are Chrysler, Ford and General Motors, said the auto industry and NNSA need wireless sensors that are "reliable, secure, high-speed and able to resist interference from existing systems."

Among its applications, such a network could replace hard-wired robots in auto-manufacturing plans with wireless-controlled robots, said Mike Read, a Ford representative to USCAR's Manufacturing Plant Floor Controllers Task Force, in a statement from the DOE lab in South Carolina.

"It's an opportunity for the US automakers to save a lot in manufacturing costs while developing wireless equipment that meets our requirements and establishes a new standard for all industrial controls," Read said.

Under the agreement, SRNL will design the new wireless hardware, and then work with a wireless manufacturer to make prototypes to be tested and validated.

NNSA, the nuclear-weapons division of DOE, and its contractors use sensors in their facilities to monitor chemical processes, vibration on large pumps and blowers, and other environmental conditions.

The goal of the agreement, said USCAR, is to produce a standard for wireless-sensor platforms that can be adopted by the International Society of Automation, a North Carolina-based organization that develop instrumentation, systems and automation standards.