

# ECO FORUM

NEWSLETTER OF THE SOUTH DAKOTA RESOURCES COALITION

Volume XXXVI Issue 8

November 2009

## Small Community Projects Can Benefit from Wind Development

Reacting to the cancellation of plans for the Big Stone II power plant (see page 4), Governor Rounds and others have expressed concern that wind generation could be crippled without transmission lines that would have been built for the new coal plant.

Fortunately, lack of new transmission lines need not impede wind power development, John Farrell told a gathering of about fifty persons on October 31 at the Brookings Public Library during SDRC's annual meeting. Farrell, Senior Energy Policy Researcher at the Minneapolis-based Institute for Local Self-Reliance, said the centralized wind farm/long-distance transmission model of wind power development is geared primarily to benefit large utility corporations and large absentee investors.

### Community wind bypasses transmission headaches

In fact, Farrell maintained, at this point, South Dakotans can gain more from wind power if they take a different path, bypassing new high voltage transmission altogether.

For landowners, new transmission high lines are bound to bring conflict over use of eminent domain.

For utility customers, new high voltage transmission, whether for renewable or conventional power, will bring higher electric bills. Any new transmission is expensive. Interstate corridors dedicated to renewable energy—dubbed “the Green Power Express” by promoters—are most expensive of all: an estimated \$3 million per mile, up to \$200 billion all told. Furthermore, the speaker pointed out, costly inefficiency is inherent in long distance transmission, because transmission lines “leak” substantial electricity every mile the current travels. *(Continued on page 2)*



### Raffle Winner: Where's the Beef? With Parsley!

Scott Parsley of Madison was the winner of SDRC's organic beef bundle. Mr. Parsley donated the beef to the Madison food pantry.

Thank you, Scott, for your generosity to people in need.

SDRC also thanks board member Charlie Johnson of Madison who raises organic beef and who donated the quarter for the raffle.

Thanks to everyone who purchased tickets. Raffle tickets went on sale in April and were sold up to the day of SDRC's annual meeting, which was held on October 31 in Brookings. The proceeds of the raffle fund the Esther Edie environmental scholarship.

### Election Changes SDRC Board

Some changes were made to the SDRC Board of Directors during the annual meeting which was held in Brookings on October 31 following SDRC's energy program.

Luanne Napton of Brookings, who served as president for ten years, declined to be nominated for president again. Napton will remain on the board as a director-at-large.

Kaye Hunt of Wentworth, SDRC vice-president, was elected as president. Charlie Johnson of rural Madison, a board member, was elected as vice-president.

Elected to the board as a director-at-large was David Staub of Sisseton. Re-elected to the board were Gerald Lange of Madison and George Piper of Huron.

## SDPUC Promotes Big Vision for Small Energy Producers

Public Utilities Commissioners think small energy producers can be a significant part of South Dakota's renewable energy future, but they'll need help from the 2010 Legislature to make it happen.

In May, the PUC approved a set of small generation interconnection rules, which simplified who can connect to the electric grid and how. The ruling allowed electric customers to also become producers, allowing them to hook up small wind turbines or solar panels to the grid to sell off excess power.

The rules, which became law in June, govern operations that produce 10 megawatts of power or less. The PUC then embarked on its Small Renewable Energy Initiative, a five-part approach to develop distributed generation, or electricity from small sources.

The Small Renewable Energy Initiative would do a number of things such as reduce taxes, streamline the rules for interconnecting to the grid and ensure fair prices to make distributed generation possible. Three pieces of legislation are necessary for the initiative to become a reality. Legislation would cover taxes and fair pricing.

The PUC hopes to have all three pieces of legislation pushed through the 2010 session after taking the next few months to rework the initiative based on comments from the public and educate legislators on the subject.

source: *Sioux Falls Argus Leader* October 17, 2009

**Local Wind Power** (*continued from p. 1*): Where does that leave South Dakotans, who want jobs and other economic benefits from wind power development, as well as renewable energy for their own communities?

If South Dakotans want more electricity or ways to reduce their carbon footprint, Farrell stressed, they are better off harvesting the low-hanging fruit of efficiency improvement and conservation to stretch their existing electricity supply and at the same time looking close to home for additional or replacement supply using renewable resources like wind. He cited his own study published this year. Titled *Energy Self-Reliant States*, it establishes that the majority of states could get all their electricity from in-state renewable resources.

With many municipally controlled utilities and rural electric cooperatives, observed Farrell, South Dakotans are well positioned to get their own wind-based electricity by the distributed energy path, one which will actually yield more local jobs, more community prosperity, and more affordable electricity than the centralized wind farm/long-distance transmission route.

Since wind doesn't blow in a completely predictable manner, realizing full benefit from wind will require updating local distribution grids with computer-driven "smart-grid" technology.

As described by Farrell, a smart grid will be able to balance supply and demand virtually instantaneously, communicating with "smart appliances" in homes where customers have agreed beforehand to favorable rates and other efficiency incentives that lower their electric bills.

When enough of an area's automotive fleet has converted to plug-in electric, electric customers will also be able to earn credit toward their electric bill by permitting a utility to tap into their car batteries to balance a peak demand. The federal National Institute of Standards and Technology, as well as planning officials in a number of states and utility groups are already gearing up to pursue this vehicle-to-grid option, as are auto manufacturers. (*Continued on p. 3*)

*"By creating decentralized community based systems, tapping into the existing grid, and applying new smart grid technologies, South Dakota can maximize the economic returns of energy production."*

John Farrell

**Local Wind** (*cont. from p. 2*): Towns or coops experiencing unusual demand stress will even be able to call on the systems of other communities with which they are already interconnected along existing longer distance transmission pathways.

Farrell noted that community transition to renewable energy should be based on analysis of the need for upgrades at substations or other components of the local distribution grid, as well as the potential mix of renewable resources. Priority should be given to exploiting the cheapest of all energy sources: conservation and efficiency improvement.

First steps can begin fairly quickly, the speaker assured. It's already practical for local utilities to begin integrating locally generated power from wind or other renewable resources into existing distribution grids, increasing the power supply without costly new long-distance transmission.

### **Good example from Willmar, MN**

Farrell cited Willmar, Minnesota. Having recently activated two wind turbines to supply up to five percent of the city's electricity, Willmar now plans further local renewable energy installations. He pointed encouragingly to a study which identified potential for integration of 600 megawatts of locally generated renewable power into existing local distribution grids in Minnesota.

After the main presentation, a panel of five responders exchanged views with Farrell in dialogue which expanded to include the audience. Panelists were generally supportive of Farrell's message that communities and coops would do well to get busy pursuing renewable energy development in their own towns and coops based on efficiency improvement, thrifty use and upgrading of existing distributive infrastructure, and locally available renewable resources.

### **Public policy changes needed**

From their experience, panelists offered suggestions for changing public policies that currently present barriers to development of community-based distributed energy. Discouraging policies mentioned were weak building codes, lack of law-based and rule-based state renewable energy goals, low-bid contract rules which dictate acceptance of cheap buildings rather than energy-wise buildings, and tax incentives that are skewed to favor large corporations and absentee investors rather than investment by public or private entities on a community scale.

The five panelists were from sectors which need to cooperate to successfully integrate renewable resources into the South Dakota's energy economy: David Staub, a citizen advocate for building efficiency and renewable energy from Sisseton; state lawmakers Representative Larry Tidemann, Brookings, and Senator Dan Ahlers, Dell Rapids; Greg Zimmerman, electrical engineering research assistant from the South Dakota State University Wind Applications Center; and Scott Parsley, Assistant General Manager for Member Services from East River Electric Cooperative, Madison.

Mr. Parsley stated the rural electric coops were looking at ways for their members to become investors in renewable energy projects.

It was suggested that the South Dakota Legislature should follow the Minnesota model by adopting a standard contract for small (less than five megawatt) wind projects. Small community based projects have a potential for high economic risk. These risks can be minimized by having the small projects become part of a cooperative that would share insurance and maintenance costs.

The SDSU Wind Applications Center is researching small turbines for individual home production.

It was emphasized that small community projects cannot rely just on wind as the sole energy source. These projects should not go off the grid and need to invest in multiple renewable resources.



John Farrell addresses the SDRC event at the Brookings Public Library Oct. 31.  
(More meeting pix on page 4)

**Photos: SDRC Small Wind Program and Annual Meeting, October 31, 2009**



A good Saturday afternoon crowd listens to the panel discussion on energy alternatives for South Dakota communities.



Left: Scott Parsley of East River Electric discusses the co-ops' role in promoting local power generation.



State Sen. Dan Ahlers (D-25/Dell Rapids) and State Rep. Larry Tidemann (R-7/Brookings) listen to fellow panelists.

**SDRC's Johnson Voices Support for Climate Legislation**

Newly elected SDRC vice-president Charlie Johnson of Madison was one of several South Dakotans joining Repower America's interactive Repower Wall to voice their support for climate legislation.

Citizens across the United States are being asked to log onto Repower America's interactive site—[www.repoweramerica.org](http://www.repoweramerica.org)—to voice their support for climate legislation pending before Congress:.

"I believe in clean energy," Charlie Johnson, an organic farmer and former Lake County commissioner, said in his message. "I believe in a healthy environment and a more viable economy for South Dakota, and better times for a new generation of young people in South Dakota. Clean energy and young people go together."

Climate change legislation passed by the House this summer and now before the Senate will create green energy jobs and reduce America's need for foreign oil. According to the Center for American Progress, a transition toward a clean energy economy will create more than 5000 jobs in South Dakota. If that sounds good to you, join Charlie in saying so on the Repower Wall: [www.repoweramerica.org](http://www.repoweramerica.org).

**Utilities Pull Plug on Big Stone II**

The Big Stone II coal-fired power plant project is no more, as the remaining partners in the venture said on November 3 that building the \$1.6 billion plant near Milbank no longer is economically possible.

Those partners include the Central Minnesota Municipal Power Agency, Heartland Consumers Power District, Missouri River Energy Services and Montana-Dakota Utilities Co.

Big Stone II had been in jeopardy since September, when Otter Tail Power Co. withdrew its support. Otter Tail was the lead utility looking to build the plant, next to its existing Big Stone coal plant that came online in 1975. The project first was proposed in 2003. Big Stone II was to generate about 580 megawatts of electricity by burning low-sulfur, pulverized coal from Wyoming.

Environmental groups hailed the decision, saying the Midwest needs to divest itself from coal and invest heavily in green power, such as wind and solar. About 76 percent of the electricity generated in the West North Central region—Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota and South Dakota—is coal-fired.

"I think this is an opportunity for the remaining institutions, the remaining utilities, to invest their expertise and capital into a speedy transition to a cleaner energy future," said Pete Carrels of Aberdeen, regional representative of the Sierra Club. "I just think that these utilities and energy organizations have the expertise that can be utilized in a positive way, and those advantages can move us forward to a cleaner energy future faster."

## Federal Agency to Take Second Look at Pipeline Safety

Federal officials charged with ensuring pipeline safety said they will prepare an environmental analysis and reopen the comment period on TransCanada's application to use thinner, cheaper steel for most of a tar sands pipeline's route through Montana and North Dakota.

The Pipeline and Hazardous Materials Safety Administration (PHMSA), part of the US Department of Transportation, made the announcement in response to an overwhelming public response to TransCanada's application. That response included calls and letters from landowners along the route and a joint letter (issued in May) from the Western Organization of Resource Councils, Dakota Rural Action (in SD), Dakota Resource Council (in ND), the Northern Plains Resource Council (in Montana), Nebraska's Landowners for Fairness, and the United Steelworkers.

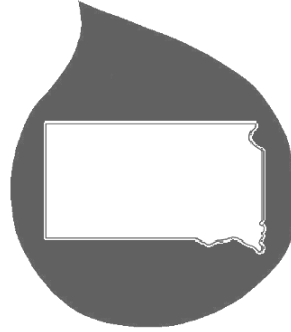
TransCanada's Keystone XL pipeline would run from Hardisty, Alberta through Montana, South Dakota and on to refineries on the Texas Gulf Coast. The groups challenged TransCanada's application for a special permit from PHMSA, which would allow the company to use thinner steel pipe with a lower margin of safety across most of its route from the Canadian border down to Texas, including almost all of the way across Montana and South Dakota, except for "High Consequence Areas," such as river crossings and heavily populated areas. The groups also challenged PHMSA's approval last year of a special permit for TransCanada's Keystone I pipeline, now in the final stages of construction on the east side of the Dakotas, without any environmental analysis.

The United Steelworkers, Native American Tribes, and conservation groups also sent letters protesting the use of thinner pipe and asking for stringent environmental analysis of TransCanada's

application. The groups asked that the Department of Transportation consider the potential impacts of the pipeline in an Environmental Impact Statement (EIS), which should also consider TransCanada's "Risk Analysis and Integrity Management Program," the company's plans for preventing and dealing with spills, leaks, and other emergencies.

In its reply, the PHMSA said it would do an environmental analysis, instead of doing its environmental review as part of the more rigorous EIS already being prepared by the US Department of State. The State Department must prepare an EIS on its decision to issue a "presidential permit" allowing the pipeline to cross the U.S. Canadian border. The conservation organizations who are working for landowners trying to minimize impacts on their land, water, homes, farms and ranches, believe the analysis of environmental and safety risks of the pipeline should be done in a full EIS, before decisions are made to approve permits piecemeal by different agencies.

source: *Western Organizing Review*, Oct. 2009



## Oil Pipeline Concerns Ranchers

Ranchers who live along the route of a crude oil pipeline that TransCanada Keystone wants to build across western South Dakota are worried about oil spills and damage to their land, water and roads.

More than 50 landowners and others showed up at a public hearing held in Pierre on November 3. The SD Public Utilities Commission held a formal hearing on TransCanada's application for a construction permit.

The landowners' comments were not submitted as formal evidence. However, if the PUC approves the construction permit, the commissioners could also take into account the landowners' comments when setting construction conditions.

Many landowners are frustrated with how easily TransCanada, a foreign company, has pushed South Dakota residents aside. (*cont.*, p.6)

**Ranchers and Pipeline** (*cont. from p. 5*) “I would really like the PUC to stand up for the landowner so they can continue to be good stewards of the land instead of letting foreign companies come in and run rough-shod over the people of South Dakota,” said JT Vig, a rancher in Meade County whose land will be crossed by the proposed pipeline.

Keystone I, a similar TransCanada pipeline being built in eastern South Dakota also had, and continues to have, many landowners concerned. Many of those Keystone I landowners are now sharing their experiences with other landowners



Keystone (solid) and proposed Keystone XL South Dakota routes. View detailed XL maps at [transcanada.com/keystone/kxl.html](http://transcanada.com/keystone/kxl.html)

affected by the western Keystone XL pipeline. “I am totally disappointed in the lack of fairness and impartiality by the PUC during TransCanada’s permit process for the Keystone I pipeline,” said Kent Moeckly, an East River landowner

whose property continues to be affected by the construction of Keystone I. “I only hope that the PUC can treat the western landowners with a fairness that was not given to eastern landowners.”

The proposed Keystone XL pipeline would enter South Dakota from Montana in Harding County and cross Butte, Perkins, Meade, Pennington, Haakon, Jones, Lyman and Tripp counties before entering Nebraska.

TransCanada wants to start construction in 2011. The pipeline would deliver up to 900,000 barrels of crude oil a day through a 36-inch pipe running from near Hardisty, Alberta, to Texas terminals near Port Arthur and Houston.

Under state law, the PUC will decide whether to approve construction along the proposed route based on whether the project would comply with all applicable laws and rules, would not pose a serious threat to the environment, would not harm the health and safety of the region, and would not interfere with area economic development.

sources: Associated Press and Sept/Oct 2009 newsletter of Dakota Rural Action

## Still No Answer from EPA on Hyperion Project

Until last month, no government body or agency had requested an Environmental Impact Statement (EIS) for the proposed Hyperion Energy Center, a huge oil refinery planned for Union County. Representing Union County's next-door neighbors, the Clay County Commission has made a written request to the U.S. Environmental Protection Agency (EPA). Commissioner Jerry Wilson (an SDRC member) says several weeks have passed, however, and they have yet to receive a response.

While the project could mean jobs that are sorely needed in the area, Wilson says government leaders and citizens also need to know the downsides of having a refinery in the region before they proceed.

"I think that we citizens just need as much information as possible, the kind that only an Environmental Impact Statement would deliver to us."

Wilson says the Clay County Commissioners have asked for the EPA's help because they wonder how they can plan for the refinery without detailed information about its potential impact on roads, bridges, schools, police and fire protection. In Hyperion's air permit application, Wilson notes, the company lists vast quantities of pollutants that would be emitted.

"Even though they advertise it as 'green,' it really is anything but green. It would actually pollute more CO<sub>2</sub> per barrel than any existing refinery in the United States."

The company claims that, when it is in operation, the proposed refinery and power plant will rank among the cleanest, most environmentally-friendly in the world.

source: SD Public News Service, November 11, 2009

## Tell Congress: Protect South Dakota's Wild Grasslands

Please tell South Dakota's three members of congress that you support lasting protection for South Dakota's wild grasslands. A brief handwritten note or a phone call will send a strong message that South Dakotans want to protect our wild heritage. See the back panel for contact info.

***Below are some examples to help you create your own personal message:***

- Wilderness ensures that South Dakota's wild grasslands will stay the same for generations to come while protecting grazing rights, wildlife habitat for hunting and fishing, and opportunities for hiking, camping, horseback riding, bird watching, recreational rock collecting and more.
- Now is the time to ensure lasting protection for places like Red Shirt, Indian Creek and Chalk Hills – the best of what's left in South Dakota's three national grasslands.
- Wild, wide-open public lands are part of South Dakota's unique character, but less and less of this once-vast prairie remains wild. By creating America's first national grassland wilderness, we will ensure that these wild places will remain a legacy for future generations.
- For those who say wilderness "locks us out," hundreds of thousands of acres remain open to recreational motorized access on South Dakota's national grasslands. Protecting this very small portion is only fair and reasonable.
- Prairie grasslands epitomize the landscape that has shaped the strength and character of South Dakotans. We should protect these small but extraordinary pieces of Buffalo Gap National Grassland – the best of what's left in America's Great Plains
- Protecting our prairie grasslands as wilderness would benefit adjacent communities. Businesses and individuals are increasingly looking to locate in areas that provide significant outdoor recreation opportunities, open space and scenic vistas. Also, having the nation's first grassland wilderness would complement South Dakota's marketing as a tourist destination and a hunting paradise.
- Wilderness in these three areas will provide a non-motorized big game hunting experience sought by South Dakota residents and non-residents alike.
- Prairie grasslands are the fastest dwindling and least protected ecosystems on the continent. We should protect some of South Dakota's remaining wild grasslands.
- Wilderness protection helps safeguard air quality, watersheds, wildlife habitat, and open space.

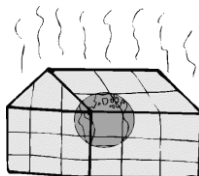


For more grasslands info, see August/September 2009 ECO FORUM or visit [www.sdwildgrassland.org](http://www.sdwildgrassland.org)

### GLOBAL WARMING MYTH NUMBER 8:

*Recent cold winters and cool summers don't feel like global warming to me.*

**FACT: While different pockets of the country have experienced some cold winters here and there, the overall trend is warmer winters.**



Measurements show that over the last century the Earth's climate has warmed overall, in all seasons, and in most regions. Climate skeptics mislead the public when they claim that the winter of 2003–2004 was the coldest ever in the northeastern United States. That winter was only the 33rd coldest in the region since records began in 1896.

Furthermore, a single year of cold weather in one region of the globe is not an indication of a trend in the global climate, which refers to a long-term average over the entire planet.

*Note: For 2009 each issue of ECO FORUM will debunk a global warming myth.*



## Disagreement at Rapid City Uranium Conference

Not surprisingly, there was disagreement at the Western Mining Action Network Conference that was held in Rapid City on October 2-4.

The proposed Powertech uranium mining project northwest of Edgemont isn't financially feasible and won't provide enough protection against groundwater contamination, said Paul Robinson, a critic of the project. Robinson, research director of the Southwest Research and Information Center in Albuquerque, NM, said there isn't enough demand for uranium worldwide and that the current spot price of \$43 a pound isn't enough to cover the cost of production for the uranium mine proposed in the Dewey-Burdock area, 13 miles northwest of Edgemont.

Robinson said there aren't enough nuclear reactors being built to even replace the ones that are aging.

Mark Hollenbeck of Edgemont, project manager for Powertech USA, said he could not divulge the figure at which the proposed mine would break even. But last spring, Hollenbeck said the \$47 to \$49 price for uranium on the spot market was well within the range that Powertech needed to make a profit.

"Currently, there are about 35 reactors under construction in the world, and every country is looking at expanding their nuclear fleet," Hollenbeck said.

The United States produces only about 10 percent of the 55 million pounds of uranium it uses each year to produce 20 percent of the nation's electricity.

Like similar mines in Nebraska, Wyoming and Texas, Powertech plans to inject chemically treated water into wells to dissolve the uranium, then pump out the solution and then extract the uranium for processing.

processing.

Robinson said neither the Nuclear Regulatory Commission nor state regulators require this process, known as in situ mining, to return affected groundwater to its pre-mining condition. In Wyoming, Texas and Nebraska, regulators have allowed the in situ mines to leave contamination at higher levels than existed before mining, Robinson said.

Hollenbeck said the groundwater at Dewey-Burdock is already highly contaminated and unfit for drinking. "The radionuclides are through the roof on this groundwater. It does not meet any kind of drinking water standard whatsoever. If there weren't all these radionuclides in there, we wouldn't be going after it." Hollenbeck acknowledged that the water after in situ mining won't be exactly the same as before.

Around 160 people from all of the western United States and Canada attended the conference. More info about the Western Mining Action Network is available at <http://www.wman-info.org/>.

source: *Rapid City Journal* October 2-4, 2009

### Asking for Mercury Free Flu Shots

Jim Thompson, SDRC member, Colman SD

On February 9, 2009 my wife and daughter and I were rebuffed by the South Dakota Department of Health while asking members of the state legislature to inform parents about mercury in flu shots given in South Dakota. The mercury is contained in the Thimerosal preservative. But flu shots are available without the mercury preservative for a few dollars more.

And now the *Argus Leader* article of September 21, 2009, entitled "Early Dose of Flu Shots Begins Today" quotes Lon Kightlinger, state epidemiologist for the South Dakota Department of Health, as saying that last year "about 87 percent of children" got the flu shots.

But what he does not say is that most of the children in South Dakota that received the flu shots got them with the mercury preservative! And mercury is a neurotoxin. And the USEPA mercury level for hazardous waste is 0.2 parts per million. But the flu shots with Thimerosal have 50 parts per million mercury!

So right now, South Dakota residents still do not know that their children will get flu shots with 50 parts per million mercury--unless they ask for flu shots without the preservative called Thimerosal.

More online: <http://frwebgate.access.gpo.gov/cgi-bin/get-cfr.cgi?TITLE=40&PART=261&SECTION=24&TYPE=TEXT>

## Tiny Super-Plant Can Clean Up Animal Waste, Make More Ethanol

Researchers at North Carolina State University have found that a tiny aquatic plant can clean up animal waste at industrial hog farms and may help solve the global energy crisis. According to researcher Dr. Jay Cheng, growing duckweed on hog wastewater can produce five to six times more starch per acre than corn. Ethanol production using duckweed could thus be "faster and cheaper than from corn," says fellow researcher Dr. Anne-Marie Stomp.

"We can kill two birds—biofuel production and wastewater treatment—with one stone—duckweed," Cheng says. Starch from duckweed can be readily converted into ethanol using the same facilities currently used for corn, Cheng adds.

Corn is the primary crop used for ethanol production in the United States. However, its use has come under fire because of concerns about energy inputs and commodity price disruptions. Duckweed presents an attractive, non-food alternative that has the potential to produce significantly more ethanol feedstock per acre than corn, exploit existing corn-based ethanol production processes for faster scale-up, and turn pollutants into a fuel production system. The duckweed system consists of shallow ponds that can be built on land unsuitable for conventional crops, and is so efficient it generates water clean enough for re-use. The technology can utilize any nutrient-rich wastewater, from livestock production to municipal wastewater.

Large-scale hog farms manage their animal waste by storing it in large "lagoons" for biological treatment. Duckweed utilizes the nutrients in the wastewater for growth, thus capturing these nutrients and preventing their release into the environment. In other words, Cheng says, "Duckweed could be an environmentally friendly, economically viable feedstock for ethanol."

"There's a bias in agriculture that all the crops that could be discovered have been discovered," Stomp says, "but duckweed could be the first of the new, 21st century crops. In the spirit of George Washington Carver, who turned peanuts into a major crop, Jay and I are on a mission to turn duckweed into a new industrial crop, providing an innovative approach to alternative fuel production."

Contact: Matt Shipman, [matt\\_shipman@ncsu.edu](mailto:matt_shipman@ncsu.edu).  
Source: Environmental News Network

### Greener Cement

Oakland, CA—The cement industry contributes at least 5 percent of global carbon dioxide emissions. Cement, the glue that binds concrete, is one of the most carbon-intensive materials out there: It produces one ton of CO<sub>2</sub> for every ton of cement made. The main culprit is Portland cement, the most commonly used type of cement, which is created through an energy-intensive process of crushing raw materials and heating them to up to 3,000 degrees Fahrenheit.

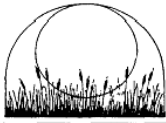
Many companies are reducing the amount of Portland cement needed in concrete by replacing some of it with fly ash, a byproduct of coal-fired power plants. In addition to eliminating some of the emissions and raw materials associated with Portland cement, fly ash makes concrete stronger and easier to work with.

Ceratech offers a wide range of cement products that are completely free of Portland cement. Ceratech's products contain 35 to 95 percent industrial waste like fly ash and wood ash. Most of the company's products, which are made through low-energy blending processes, contain 65 percent of higher post-industrial content.

The Louisiana Tech University's Geopolymer Laboratory has been working to get rid of Portland cement completely as well by using a hard, cement-like paste known as geopolymer. Compared to concrete made with Portland cement, concrete made with geopolymer sets faster, lasts hundreds more years, resists corrosion and fire better, has higher tensile and compressive strength and reduces greenhouse gas emissions from its lifecycle by 90 percent.

U.S. Concrete uses fly ash to replace up to half of the Portland cement in its concrete, and also uses slag, a byproduct from smelting ore to purify metals. When combined with water, ground up slag becomes a cement-like material that can replace up to half of the Portland cement used to make concrete. Because slag strengthens over time, it results in a product that is less permeable and more durable.

source: Jonathan Bardelline, Environmental News Network, 11/12/2009



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# ECO FORUM

## NEWSLETTER OF THE SOUTH DAKOTA RESOURCES COALITION

ECO FORUM is the monthly newsletter of the South Dakota Resources Coalition: a statewide coalition of organizations and individuals concerned with the enhancement of South Dakota's environment and the wise use of its resources. The opinions expressed are not necessarily the opinions of SDRC or its member organizations. Articles and letters may be submitted for publication to ECO FORUM Editor, 928 4th St. #4, Brookings, SD, 57006-0066. We reserve the right to edit submissions and to delay their publication until there is space for them, if necessary.

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