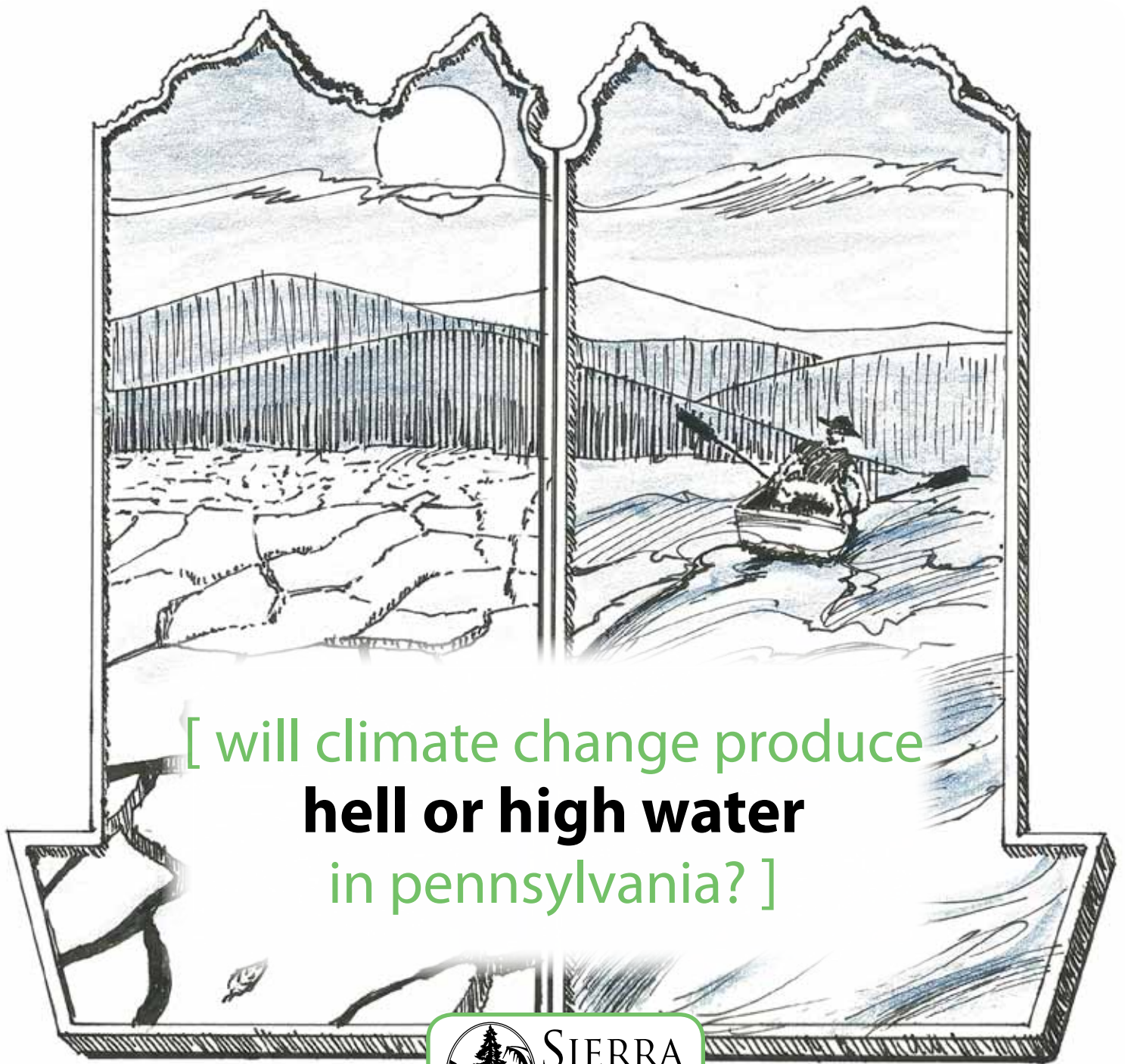


[the sylvanian]

summer 2014

Pennsylvania Chapter Sierra Club • pennsylvania.sierraclub.org



[will climate change produce
hell or high water
in pennsylvania?]



explore, enjoy and protect the planet.

[from the editors]

hell or high water

We live at the best of times. Never in the history of the world have so many lived so comfortably and enjoyed such good food and drink, splendid entertainment, and marvelous ability to communicate. Never have so many been so well educated and well informed. We live so well that we don't really like to consider the possibility that good times might be coming to an end.

Scientists around the world and American scientists charged by the administration with the publishing the latest comprehensive report agree that the climate is changing. And not for the better. They also agree that we have acted too slowly. The world is warming, and will continue to warm. Dramatic actions could slow the warming somewhat but not completely. Governments, businesses and all of us have failed to act and apparently will continue to do too little too late.

We know that polar ice is thinning. We know that storms and floods have hit regions far or near. But now we wonder what climate change will mean to Pennsylvania. We've invited some experts to look at the question. And we have done lots of reading ourselves. On the following pages we offer some suggestions. Read on. See if you agree.



Wendi Taylor



Phil Coleman

WENDI TAYLOR AND PHIL COLEMAN
Co-editors of *The Sylvania*

chapter directory

Due to space restrictions, the Chapter Directory was not included in this issue. To view the directory, go to http://pennsylvania.sierraclub.org/PA_Chapter_2008/chapter-directory.html



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This publication is dedicated to serving the Sierra Club Pennsylvania membership, and is a forum for internal policy discussion and debate among those truly concerned with protecting the environment. Opinions expressed herein are the personal opinions of their authors and may or may not reflect Sierra Club policy.

Contributor deadlines are September 15 (Fall issue), December 15 (Winter issue), and March 15 (Spring issue), June 15 (Summer issue). Anonymous contributions are not accepted.

SIERRA CLUB MISSION STATEMENT: To explore, enjoy and protect the wild places of the earth; To practice and promote the responsible use of the earth's ecosystems and resources; To educate and enlist humanity to protect and restore the quality of the natural and human environment; and To use all lawful means to carry out these objectives.

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[the sylvanian]

[hell or highwater]

special report

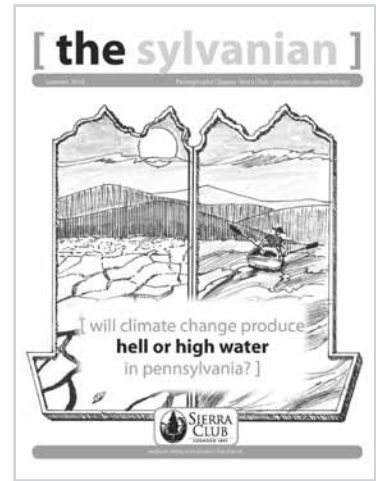
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[on the cover]

Michael LaMark looks at consequences of climate change and considers two likely outcomes for Pennsylvania. They seem to be contradictory outcomes, but floods on our many rivers and farm lands too dry to produce crops may both be in our future. Like Hell and Highwater..

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[the view from harrisburg]

by Joanne Kilgour



JOAN WILSON

FORESHADOWING THE 2014-2015 BUDGET: CORBETT ISSUES EXECUTIVE ORDER LIFTING MORATORIUM ON STATE FOREST LEASING, OPENING STATE PARKS TO DRILLING FOR THE FIRST TIME

When the Governor announced his proposed budget in early February, he included \$75 million in projected revenue from oil and gas leasing. Due to Executive Order 2010-05, no lands owned and managed by Department of Conservation and Natural Resources (DCNR) could be leased for oil and gas development, it was clear that Governor Corbett would take executive action to lift that moratorium. On May 23, 2014, the Friday before Memorial Day, the Corbett Administration issued Executive Order 2014-03.

This new executive order rescinds Executive Order 2010-05, and now permits oil and gas leasing in state forests and parks, so long as such leasing would not result in additional surface disturbance. DCNR

issued a factsheet to accompany Executive Order 2014-03, which defines the restriction on surface disturbance to be: “the long-term conversion of the forest to a non-forest use,” and further explains that such long-term conversion includes “creating or increasing the footprint of roads, pipelines, compressor stations and well pads on the newly-leased tracts.”

To be clear, this executive order is not a complete prohibition on the creation or expansion of roads, pipelines, compressor stations and well pads within state parks or forests, but only on those newly-leased tracts. This means that on previously leased tracts, we may now expect new or expanded roads, pipeline corridors, compressor stations, or well pads within BOTH state parks and state forests. So, while the language used by the Corbett Administration to promote Executive Order 2014-03 indicates that this order will protect state parks and forests, or limit drilling in state parks and forests, in fact it will open previously protected tracts to new leasing and expose previously leased tracts to additional development. This additional leasing and incremental development within state forests and parks comes at a time when we still do not have a sufficient understanding of the long-term impact of natural gas development on our state forest lands.

DCNR ISSUES SHALE-GAS MONITORING REPORT ON IMPACTS TO STATE FORESTS FROM NATURAL GAS DEVELOPMENT

According to Executive Order 2014-03, state forests and parks are important economic drivers for the Commonwealth as recreational areas in their natural state. Our state parks alone host 38 million visitors each year and contribute \$1.2 billion per year to the economy of the state, providing more than 13,000 quality jobs. One of the reasons that further leasing of oil and gas rights within state forest boundaries was halted in 2010 is that DCNR made a determination that no additional state forest acreage was suitable for natural gas development without compromising their natural character.

Also in 2010, acknowledging the serious potential impact of natural gas development, the Bureau of Forestry initiated a Shale-Gas Monitoring Program to track, detect, and report on the impacts of previously initiated shale-gas activity in the state forest system. In April 2014, DCNR released the first Shale-Gas Monitoring Report on the activity of the Bureau’s Shale-Gas Monitoring Program. This report provides some background information on known impacts to state forests from natural gas development, as well as potential impacts that are as yet unknown. While the report was released earlier this year, it only accounts for monitoring data collected through 2012 and does not include incremental impacts from natural gas development over the last 18 months.

DCNR identified changes to state forest infrastructure in the shale-gas region, including a conversion of 1,486 acres to a non-forest use. This conversion represents 161 miles of new or expanded roads, 191 pads (including well pads, compressor stations, and freshwater impoundments), and 104 miles of pipeline corridors. In addition, road surveys show that roadways have changed from native road bed to limestone-based road surfacing. Further, DCNR admits that while physical changes to infrastructure can be catalogued, the resulting impact on visual changes and changes to visitor experience are more difficult to account for. No gas infrastructure sites on state forest lands have been fully reclaimed.

Shale-gas development is negatively affecting the wild character of the state forest system, with a loss of 9,341 acres in the primitive, semi-primitive non-motorized and semi-primitive acreage categories, those acres converting to a developed or semi-developed character. In core gas forest districts, forest fragmentation has resulted in 4,355 acres converted edge forest districts, opening those areas to threats from invasive species and reducing interior forest habitat required for many animal species. Shale-gas development is also decreasing timber harvest revenue as a result of bonding costs from heavy hauling associated with natural gas development. Impacts to water resources are largely unknown, as the monitoring that has been conducted was for the purpose of establishing a baseline. To

date, pipeline crossings and groundwater have not been studied.

There have also been significant violations and incidents on state forest land as a result of natural gas development. From 2008 to 2012 - not even considering the last two years - more than 300 notices of violation were issued by the Department of Environmental Protection (DEP) to operators on state forest land alone, for incidents such as brine spills and residual waste discharges. In addition, DCNR's own incident reporting system related to its law enforcement function uncovered 264 incidents from the second half of 2009 through 2012. These incidents are directly linked to oil and gas activity on state forest land, and spanned 50 categories, such as theft, vandalism, and criminal mischief.

It is important to note that the incidents analyzed in the Shale-Gas Monitoring Report do not represent all violations or incidents that are occurring, or have occurred, on state forest land. For example, violations documented by DEP but not included in the DCNR Shale-Gas Monitoring Report include at least six wells showing evidence of methane leakage on state forest land. These include wells operated by Seneca Resources, Anadarko, and XTO. It is possible that additional wells on state forest land also show evidence of methane leakage, but inspection reports are not publicly available for 26.2 percent of wells in state forests, and are not available for 59.3 percent of wells within the Loyalsock State Forest specifically. Despite this information, DCNR's Shale-Gas Monitoring Report does not include data on methane leakage from wells within our state forests, and the monitoring report for air does not include plans to study methane emissions or methane leakage or to address existing leaking wells.

Though the Corbett Administration is counting on natural gas as a driver of greenhouse gas emissions reductions generated by the Commonwealth, methane leakage is not being considered. Methane is the second most prevalent greenhouse gas and is roughly 30 times more potent than carbon dioxide as a heat-trapping gas. It is a serious failure of the administration not to factor methane into its climate change action planning, or into its analysis of statewide air quality. It is also a failure of the Corbett Administration to expose additional state forest land and, for the first time, state park land to unconventional gas drilling for the purpose of plugging a hole in a state budget, which the Governor failed to adequately manage.

2014-2015 BUDGET STALLS, CORBETT REFUSES TO SIGN VERSION PASSED BY HOUSE AND SENATE, SAYS IS REVIEWING "LINE BY LINE"

Disclaimer: the budget process was still ongoing at the time this article was submitted, so this information is accurate as of July 2, 2014.

The Pennsylvania General Assembly passed a budget by the June 30, 2014 deadline, but Governor Corbett refused to sign it, requir-

ing legislators to continue deliberations into July. The Republican-controlled Senate increased revenue estimates to fill the budget gap and sent a \$29.1 billion spending plan back to the House where it was passed on concurrence. Democrats sought to include Medicaid expansion and funding for education, as well as funding for the arts and economic development, but their efforts were defeated by the majority. Though early on there was much speculation about a severance tax on the natural gas industry, no such tax made it into the budget as passed by the legislature.

The Pennsylvania Budget and Policy Center aptly dubbed this "the year of magical thinking," highlighting the General Assembly's reliance on "lapsed funding" in the amount of \$426 million, with no clear accounting for the origin of these funds. Apparently, it was also magical thinking to imagine that the Governor would sign a budget passed by both the Senate and the House without getting exactly what he wanted - pension reform. The line in the sand Corbett carved on the pension reform issue resulted in a protracted fight for Philadelphia school funding through a local \$2 a pack Cigarette Tax. House members stayed long into the night as they stymied the Philadelphia delegation's effort to secure education funding, waiting for the Administration's pension reform in exchange. By holding the budget process hostage and creating a stalemate, Corbett set the stage for a high-tension, extended session during high-temperature early July.

Funding for the Department of Conservation and Natural Resources (DCNR) has been reduced to unconscionably low levels, making the agency even more dependent on revenue from oil and gas leases on state lands such as our parks and forests. General Fund monies allocated to DCNR were reduced to around \$15 million, nearly a 90 percent cut since 2006. The remainder of DCNR's budget will be largely made up from Oil and Gas Lease Fund transfers, making the state agency charged with conservation of public lands dependent on gas drilling and timber cutting for even its most basic administrative function. Similarly, funding for the Delaware River Basin Commission (DRBC) was reduced by 53.5 percent, from \$934,000 to \$434,000.

As a companion to the budget bill itself, the Senate passed a Fiscal Code bill to implement the budget (but at the time this was written, the House had not yet passed this bill). This year's Fiscal Code changes are included in HB 278, and contain several provisions that concern environmentalists. First, this is the bill that authorizes the use of revenue from new oil and gas leases on state park and forest land for the General Fund, permitting a transfer of \$95 million from the Oil and Gas Lease Fund to the General Fund exclusively from these new leases. This is a \$20 million increase from the same proposal in the Governor's budget - an increase that came with the General Assembly's plan of "magical thinking" and reliance on one-time revenue sources.

The language regarding new leases on state lands in the Fiscal Code

continued on page 23

[coleman's lantern]



grass

by Phil Coleman

A child said what is the grass? Fetching it to me with full hands;

How could I answer the child? I do not know what it is any more than he.

I guess it must be the flag of my disposition, out of hopeful green stuff woven.

-- Walt Whitman 's *Leaves of Grass*

Walt Whitman, one of my favorite poets, used grass to suggest all that is good about life. Unfortunately, I am allergic to grass. More precisely, I am allergic to whatever it is that is released into the air when grass is mowed. I have never told a doctor that I am allergic. If one asked me, I would deny it. I don't want a treatment.

However, for all my adult years when I mowed the yard I would be congested for hours afterward. I would hack and sneeze and blow my nose time after time.

Now, in what I will call my old age, I no longer have to mow the grass. I live in a

condominium, which contracts with a lawn care service to care for the lawn and mow regularly once a week. Sometimes when I walk out as the grass is being mowed, I will smell that strong, sharp smell and know that if I tarry I will feel the results.

I used to suspect that my allergy was to the chore, not the mown grass itself. But now that I am free of the chore I know that there really is something in the air that bothers me.

Strangely, I have never avoided grass and I have never felt a problem if I walk on or sit on or lie down on grass covered ground. But there is something mowing releases -- even propels into the air and into my nose.

I love the outdoors. I hike, stroll, lollygag with the best of them. But I am happy to leave mowing to others.

When I visited Moscow in 1958, I was surprised to see the grass in parks to be uncut. It seemed that Russians (and some other Europeans as well) did not hold an evenly trimmed lawn in the esteem we Americans did (and do). Why do we hold an untrimmed lawn in contempt? Why

do condominiums -- all of them -- go to some expense to be sure the grass is lush but evenly trimmed? They pump it with steroids to make it grow and then mow it religiously.

I love Walt Whitman. I like to believe (and insist) that his grass was lush and uncut. Although the first lawn mower was invented in 1830, in England, mowing of lawns didn't get started until the 1880's. The original mowers were used to mow athletic fields. In Whitman's day, grass was there for grazing by sheep, goats, cattle, deer and elk. Or if it grew without being grazed, someone would take a scythe to it once or twice a summer.

Strangely, we place lawn neatness next to Godliness. And I have to accept the fact that if lawns are mowed in Heaven, I'm going to Hell.

Whitman says, the grass "seems to me the beautiful uncut hair of graves."

There you have it! When grass is wild and free, I love it. But as long as I am around, don't attack it with your infernal machine.

[meetings and outings]

Meetings and Outings

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the evidence is compelling

by Phil Coleman

SEA LEVEL

Global sea level rose about six and a half inches in the last century. The rate nearly doubled in the last ten years.

TEMPERATURE

The temperature has warmed over the last century, with the 20 warmest years having occurred since 1981 and with all 10 of the warmest years occurring in the past 12 years. Even though the 2000s witnessed a solar output decline, surface temperatures continue to increase.

OCEANS

The oceans have absorbed much of this increased heat, with the top 700 meters (about 2,300 feet) of ocean showing warming of 0.302 degrees Fahrenheit since 1969.

SHRINKING ICE SHEETS

The Greenland and Antarctic ice sheets have decreased in mass. Data from NASA's Gravity Recovery and Climate Experiment show Greenland lost 150 to 250 cubic kilometers (36 to 60 cubic miles) of ice per year between 2002 and 2006, while Antarctica lost about 152 cubic kilometers (36 cubic miles) of ice between 2002 and 2005. The thickness of Arctic sea ice has declined rapidly over the last several decades.

GLACIAL RETREAT

Glaciers are retreating almost everywhere around the world — including in the Alps, Himalayas, Andes, Rockies, Alaska and Africa.

EXTREME EVENTS

The number of record high temperature events in the U.S. has been increasing, while the number of record low temperature events has been decreasing, since 1950.

OCEAN ACIDIFICATION

Since the beginning of the Industrial Revolution, the acidity of surface ocean waters

has increased by about 30 percent. This increase is the result of humans emitting more carbon dioxide into the atmosphere and hence more being absorbed into the oceans. The amount of carbon dioxide absorbed by the upper layer of the oceans is increasing by about 2 billion tons per year.

THE CLIMATE IS CHANGING

It won't happen all at once, but will happen! In fact, it is happening even now. The Obama administration Triennial Report on Climate Change details the inevitable problems. Some changes will occur gradually over decades. Some will hit suddenly and in unexpected ways.

River flooding will occur more often. People who live in the 100 year flood plain will discover that floods occur more often.

Some land now suitable for agriculture will no longer be suitable. Pennsylvania farmers may find that because of changes in growing season and/or rainfall, some crops that now thrive will no longer do well.

Forests will lose some tree species and find new species taking over. Infestations of new pests will affect some species.

Some migratory birds will find their traditional patterns of time and place drastically altered.

Produce that is now shipped from California or Central America may disappear from the market or become much more expensive.

Rising sea level will not affect much of Pennsylvania directly, but when present day ports are flooded, movement of goods will be changed, delayed, made more expensive.

We have waited too long. We cannot stop climate change. However, we can act to reduce the changes that are underway. The EPA rules to limit CO2 from existing and new power plants is a small step in the right direction. But it is just a small step, and Governor Corbett is trying to resist most aspects of it.

[hellorhighwater]

will we join the governor in ignoring climate change?

by John Rossi

In October the Corbett Administration quietly released one of its more remarkable documents—Pennsylvania Climate Impacts Assessment Update. The report, which was required by law and 18 months late, points out, to the apparent discomfort of the Governor and his staff, that temperatures in the state are indeed rising and this rise is caused by our and our fellow citizens' activities, such as burning coal, oil, and natural gas, which release greenhouse gases. It concludes that "while significant economic impacts could occur within certain climate sensitive sectors, Pennsylvania's overall economy would be little affected by projected climate change."

In light of events such as Superstorm Sandy — the massive 2012 hurricane off the U.S.'s Atlantic Coast, which killed 159 people, flooded New York City, and caused \$66 billion in damages — one wonders how the group which produced Pennsylvania Climate Impacts could make such a claim?

For one, the report's authors completely ignore Pennsylvania's saltwater-impacted east coast. As the climate has warmed and glaciers have melted, sea levels are rising. The Intergovernmental Panel on Climate Change (IPCC) points out in its recently released report (Climate Change 2013: The Physical Science Basis—Fifth Assessment) that between 1971 and 2010 the sea level has risen 2.54 inches. Further, the rate of rise per year has nearly doubled, increasing from 0.067 inches for 1971-2010 to 0.126 for the years 1993-2010. IPCC climatologist Qin Dahe observes: "As the ocean warms, and glaciers and ice sheets reduce, global mean sea level will continue to rise, but at a faster rate than we have experienced over the past 40 years." Depending on the rate of temperature increase and glacier melting, we could see the sea level rise as much as a foot in the next 50 years.

A warmer ocean, the IPCC points out, also stores more energy. This means that storms generated over the Atlantic will have more power and thus be more severe. With higher sea levels and more power, storms that sweep in from the Delaware Bay will be devastating to the cities, towns, and developed properties on the lower Delaware River. Chester and Philadelphia will be subject to more frequent floods, which will inundate much more property. The cost in direct damage and lost economic activity of such climate change-generated weather disasters will run in the billions of dollars.

A warmer atmosphere for coastal regions typically means a wetter climate because warmer air holds more moisture. It also means more severe storms and flooding. Pennsylvania is the most flood-prone state in the country.

According to the National Oceanic and Atmospheric Administration's (NOAA) list of historical floods on the Susquehanna River, Harrisburg has suffered eight floods in the last decade. 2011 was a record-setting year with three floods hitting Harrisburg, the first time ever in its history the city has experienced that number of floods in one year. The worst was the September 2011 flood caused by Tropical Storm Lee. The Susquehanna River Basin Commission reports that it forced the evacuation of over 100,000 people and caused an estimated \$1 billion in damage.

Unfortunately, extreme weather caused by global warming does not just include hurricanes, tropical storms, and subsequent deluges. One of the other major effects is drought. NOAA reports that one of the most damaging severe weather events of the last decade was the 2012 drought. It affected half the country and caused \$30 billion in damages due to widespread crop failures. It was also responsible for 123 heat-related fatalities.

As the world heats up, Pennsylvania can expect to receive its share of drought as well as floods.

It is clear from the facts above that global warming and the extreme weather it produces, are going to impose significant costs on Pennsylvania and Pennsylvanians. More property will be destroyed, more peoples' lives will be disrupted, and more people will die than would have if the world's temperature was not increasing.

The great challenge of our time is: do we ignore the basic realities and impacts of global warming as the Governor and the authors of Pennsylvania Climate Impacts appear to want to do, or do we take action — personal and political — to dramatically cut greenhouse gas emissions and change the course of global warming?

John Rossi is the Co-Chair of the Pennsylvania Chapter of the Sierra Club's Climate Disruption Committee

building for resiliency

by Wendi Taylor

Building on the old foundations might have been wise in Nehemiah's day when he wanted to build a sense of community and hope in Israel. However, with the onset of climate change and more frequent severe storms threatening, it might be the Biblical equivalent of building upon sand, instead of rock.

Since Hurricane Sandy swept up the east coast leaving a path of destruction and misery, some state and local officials are looking at new ways to build resiliency into their communities to reduce the cost and misery of future storms.

Sandy revealed that many cities were paralyzed for weeks after the storm subsided. Some communities were cut off because of flooding that left people without power, shelter, water and food. Cities and states are looking for ways to go beyond replacement of infrastructure but actually make improvements that will make them better able to recover after a major storm.

In June, President Obama announced that he is setting aside \$1 billion to fund grants to city and states that come up with new ways to speed up and improve the nation's response to hurricanes, floods, droughts, tornadoes, wildfires, mudslides and other natural disasters. Grants will be awarded based on the most innovative plans for rebuilding in a way that protects against future disasters. The money would come from existing federal recovery funds, with \$180 million of the total reserved for states hard hit by Hurricane Sandy.

Projects that had always been thought of as too expensive are now getting a second look. Experts

are trying to engineer highways, bridges, railroads, airports and ports to withstand the same storm without the same damage. Others are trying to find ways to harden their water and sewer systems so that they are not overwhelmed and contaminated during severe storms.

New York City, for example, is embarking on a \$17 billion project to storm proof some of its basic systems that keep New York City able to operate. \$5 billion will be used to upgrade the subway system to withstand extreme weather. They want to be able to seal the hundreds of stairways and entrances to the subway to prevent them from being inundated with water and increase the size of pumps. They plan to rebuild six tunnels that accommodate more than a million people a day so that they can be sealed off during floods.

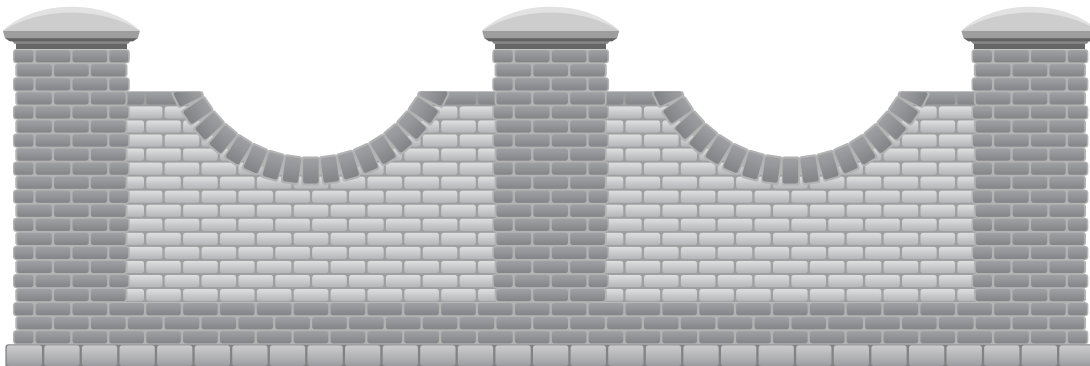
To that end, governments are entertaining ideas for projects that will protect infrastructure and people in the wake of threatening weather events. In the past, most officials relied on managing the emergency and doing the best they could to clean up afterwards. They relied on state and federal Emergency Management Agencies to help with both emergency aid and funds to rebuild. That approach might be sufficient when the damage is localized but when the damage is widespread and involves millions of people, not even the federal government has enough resources to manage the crisis. How many hurricanes like Sandy can we afford at \$50 billion a pop?

Many of the ideas to building in resiliency are modeled after the way that nature protected the land with barrier islands and wetlands. For instance, one project proposed for New York City would build a series of man-made barriers and parklands around New York City area to form a "U". This would create recreation areas for people to use during calm weather and help protect the shoreline in high seas when the storms roll in.

Another idea is to build artificial barriers, charge and seed them to attract the organisms that will build new coral reefs. This would employ a new technology for rebuilding coral reefs through methods of electrofluorescence and cathode accretion. Once built, the reefs would provide new habitats for sea life and naturally protect the coast.

Perhaps one of the most promising ideas came from Mark Jacobson, a professor of civil and environmental engineering at Stanford University. Using three computer models, he determined that installing offshore wind farms along coast lines could make hurricanes less destructive. Using simulations of Katrina, Isaac and Sandy, Jacobson determined that wind turbines would not fail during these storms and actually disrupt peak winds of the storms, reducing the damage from wind and storm surges. Further, the turbines may actually increase the central pressure of the hurricane, making them dissipate faster. Jacobson believes that installing massive offshore wind farms could help protect communi-

ties from hurricanes while producing clean, renewable power, which addresses both one cause and one effect of global warming.



[hellorhighwater]

the natural world knows the planet is warming

by Ed Perry

Although some are still in denial about global warming, there are no deniers in the natural world. Every species of plant, insect, or wildlife that can move north or to higher elevations is already doing so.

What is most surprising is that a global temperature increase of only 1.5°F in the last 100 years has caused these dramatic changes.

For example, the middle portion of the Susquehanna River, from Sunbury to York Haven, has long been considered one of the premier smallmouth bass fisheries in the eastern United States. But in 2005, water temperatures in the middle Susky exceeded 91°F, and the bass started dying. Hot water holds less dissolved oxygen, so as the water heats up, the bass become stressed and susceptible to infection from a common soil and water bacteria called *Columaris*. The fishery is in such dire straights that the Fish and Boat Commission has asked the Department of Environmental Protection to declare 100 miles as impaired. Every conceivable type of pollution is being blamed for the die-off. But is it a mere coincidence the fish started dying in the hottest year, in the hottest decade on record, and reoccurs whenever the lethal combination of low flows and high water temperatures coincide?

But global warming also benefits some species. Unfortunately, they are noxious insect pests like ticks, and the hemlock woolly adelgid that is attacking our state tree, the hemlock.

Adelgids are small insects closely related to aphids that suck the sap from young branches causing the needles to drop and branches to dieback. At present, its intolerance of cold weather has prevented its spread north of Massachusetts, but that's likely to change. Studies conducted by the University of Massachusetts predict that the entire northeast will be infested by this

century's end. The Fish and Wildlife Service's high altitude refuge at Canaan Valley does not have an infestation – yet. But biologists report that outside the refuge at lower elevations “If you drive anywhere in West Virginia other than Canaan, there are hardly any living hemlocks around. It's tragic.” Here in Pennsylvania, DCNR is fighting to keep the adelgid from decimating the old growth stands of hemlock in Cooks State Forest, but right now, their future looks grim.

Our state fish, the brook trout, is also in trouble. Development and siltation have already eliminated a third of Pennsylvania's brook trout habitat. Brook trout need clean, cold water to thrive. Above that, they become thermally stressed and vulnerable to pathogens. Hemlocks are an integral part of brook trout habitat. In fact, the two are so closely aligned that brook trout were once called hemlock trout. Studies have shown that brook trout are three times as likely to be found in streams surrounded by hemlocks because of the shade hemlocks provide during the heat of summer. Scientific literature suggests they can briefly tolerate temperatures above 71°F, but their optimal temperature is 66°F. Scientists forecast temperatures to increase by another 7 - 11° F by the end of this century unless we take strong action to reduce global warming pollution. If so, it's sayonara to our only native trout and state fish.

Our state bird, the ruffed grouse, is also on its way out of Pennsylvania. Grouse are only abundant in early successional stage habitat. That is, forests that are 5 – 15 years old, which is precisely the habitat type deer prefer. Global warming is picking a winner here. The warmer winters and diminished snow pack favor deer survival, and they heavily browse young forests.

Global warming is also altering rainfall patterns. Studies have shown there is less



Editor Phil Coleman with his favorite hemlock. Let's hope climate change doesn't do it in.

winter precipitation in the form of snow and more in the form of ice and freezing rain, reduced snowpack, and more severe storm events. Due to these changing climatic conditions, grouse fledglings are subjected to torrential downpours and freezing temperatures at a critical phase of their life cycle. As a result, Pennsylvania's grouse population continues to decline. Due to all these changes, Pennsylvania has lost over 28,000 breeding males since 1980.

All these impacts are occurring with just a 1.5°F temperature increase in the last 100 years. Just imagine our world if the temperatures increase the 7-11°F. that scientist forecast.

The Obama Administration's Environmental Protection Agency is doing all it can to reduce global warming pollution by requir-

continued on page 21

climate change and pennsylvania's forests

by Marc McDill

Climate change is happening, and it's likely to accelerate in the coming decades. Since the 1950s, the average temperature in Pennsylvania has increased by about 1°C (1.8°F). Over the past century, the increase has been about 1.3°C (2.4°F). Under the Intergovernmental Panel on Climate Change's (IPCC) 2007 A2 emissions scenario, nine different regional climate models predict temperature increases of 2.1-2.6°C (3.8-4.7°F) in Pennsylvania by 2050. The A2 emissions scenario is one of the more pessimistic scenarios considered in the assessment, but global emissions are currently more-or-less tracking this scenario.

Overall, precipitation is projected to increase in the state, but mostly in the winter and spring. Summer precipitation is projected to decrease. Furthermore, intense precipitation events are projected to increase, with longer periods in between events. Warmer temperatures, less summer rainfall, and longer periods with no precipitation would result in lower average soil moisture and more intense droughts. On the positive side, the length of the growing season will increase.

So how is climate change likely to affect Pennsylvania's forests? A lot of research has been done to answer this question and, while no one has a perfect crystal ball, we can make some fairly informed projections.

Most significantly, suitable habitat for tree species will shift to the north. Pennsylvania's climate will become less hospitable for species that are currently at the southern extent of their range in the state. These include sugar maple, beech, aspen, birch, and black cherry. At the same time, the state's climate will become increasingly favorable for species for which Pennsylvania is currently on the northern edge of their range, such as oaks, hickories, and southern pines.

In the past, species have evolved and their ranges have shifted across the continent as the climate has changed. However, it's unlikely that such natural adaptations can occur rapidly enough to keep up with the projected rate of climate change in the coming decades. As a result, large populations of trees will likely be growing in climates for which they are not well adapted. As the climate warms and soil conditions become drier, these trees will become stressed. As trees become stressed, they will become more susceptible to insect and disease outbreaks. Mortality rates will increase and regeneration success will decline, resulting in declining populations of those species.

There is some good news, however. The hardwood forests of eastern North America are diverse and resilient. This is evidenced by the relatively good condition they are in after a century and a half of assaults from invasive plants and pests, overabundant deer populations, unsustainable harvesting practices, fragmentation and parcelization. Longer growing seasons, warmer temperatures, possibly higher rainfall, and increased CO₂ concentrations in the atmosphere could also boost forest growth rates. Furthermore, forests help mitigate climate change by sequestering carbon. While it would be hard to substantially increase the overall growth rates of Pennsylvania hardwoods, the best opportunities lie in preventing forest loss, maintaining forest health, and rehabilitating understocked stands. Ultimately, having well-managed, diverse forest ecosystems is the best way to protect them from climate change – and to moderate climate change as well.

Marc McDill is the Associate Professor of Forest Management, Penn State University Department of Ecosystem Science and Management

DO YOU
HAVE
SOME-
THING
ON YOUR
MIND?



Consider this your invitation to say it on our blog. Yes, the Sierra Club Chapter has a blog that allows our members to share their thoughts, ideas and peevs with the rest of us on Sierra Keystone Conversations.

THE PROCESS IS SIMPLE.

Submit your blog to:
wendi.taylor@verizon.net

Or, of course, you can just be a regular reader. Find it at:
<http://sierraclubpa.blogspot.com/>

[hellorhighwater]

top ten things you should know about the clean water rule

by Barbara Benson

The Clean Water Act is broken and needs to be fixed to protect the waters of the United States. Since the Bush administration, lots of streams and wetlands have gone unprotected because of two confusing Supreme Court decisions. The Environmental Protection Agency has proposed a new rule that would fix the Clean Water Act and it needs your support!

1. **What does it do?** This rule clarifies what waters the Clean Water Act protects.
2. **Why do we need this rule?** Over the last decade, lawsuits have muddied the waters over what wetlands and waterways the Clean Water Act covers. This has drastically increased the cost—for the Army Corps, developers and environmentalists—of determining on a case-by-case basis whether the Clean Water Act even applies to some small streams and wetlands.
3. **Does the rule broaden the scope of the Clean Water Act?** No. It lists the types of waters that science shows should always be covered under the Clean Water Act and makes a small subset of waters covered on a case-by-case basis. It does not cover waters that were never covered under the Clean Water Act to begin with.
4. **How many waters were covered by the Clean Water Act on a case-by-case basis and are now definitely covered?** The rule clarifies and restores clear protections for more than two million miles of streams, millions of acres of wetlands and the drinking water for 117 million Americans. In Pennsylvania, 58 percent of our streams are at risk and 8.2 million people get their drinking water from surface waterways, 98 percent of which are threatened.
5. **Does the rule provide better protection to wetlands?** Yes. The rule says wetlands adjacent to rivers, streams, and larger water bodies are protected.
6. **Why should we protect wetlands?** Wetlands help reduce flooding, filter pollution, provide wildlife habitat, support hunting and fishing, and recharge groundwater.
7. **Why are farmers objecting?** The rule incorporates exemptions farmers have received as a matter of policy for years. They have no reason to object.
8. **Why is the rule important to Pennsylvania's watersheds?** It provides clarity and reduces red tape, saving time and money, which will help environmental groups, municipalities and regulatory agencies protect water quality.
9. **When does the comment period end?** October 20th.
10. **Does my voice matter?** YES! The environmental community is trying to get 500,000 comments in support of the rule. Every voice counts.

A group of national organizations including the Sierra Club has put together an internal password-protected website that can serve as a clearinghouse for information related to the proposed Clean Water Rule on the scope of the Clean Water Act. Please feel free to use and share these resources (fact sheets, talking points, etc.). Although the website is password protected, anyone who has the log-in information will be able to access the site.

www.cleanwaterrule.wordpress.com

username: cleanwater2014

password: cleanwaterrule2014!

climate change, storm water, and stream protection

by Barbara Benson

Climate changes occurring worldwide include alteration of weather patterns and extremes in weather. Increases in the frequency and intensity of major storm and flooding events are well-documented. Managing storm water in urban zones has become an ever greater problem with these changes in weather patterns. Especially notable to us in the Northeastern United States, along with those in the Upper Midwest, is that we are experiencing more rain and flooding than other parts of the United States.

Pennsylvania communities are required by the Pennsylvania Department of Environmental Protection (DEP) to manage their storm water runoff and protect their streams from pollution and they are facing a giant task of dealing with increasing storm water run-off laden with sediments and other pollutants. About a thousand Pennsylvania municipalities with Municipal Separate Storm Sewer systems (MS4's) are required by the Clean Water Act to develop and implement their Storm Water Management (SWM) plans. Part of the process requires the selection and execution of Best Management Practices (BMPs) that are designed to adequately protect the stream(s). Incorporation of forested stream buffers along stream edges is one of the BMPs recommended, and is the single most effective way to protect streams from pollution. Stream buffers are vegetated strips/zones that run along the stream and must remain intact and unaffected by building, farming, and other land uses.

Best management practices include many more options than stream side buffers. Examples are green roofs, rain gardens, native landscaping, rain barrels, pervious pavement, and bioretention and in-

filtration techniques. All these reduce the flooding effects of heavy rain by allowing rain water to seep into the ground. Low Impact Development (LID) is a very powerful concept that aims to keep storm water on the property long enough for it to sink in. Mimicking the natural hydrology helps to keep the water from running off. Nevertheless, the first and smartest thing to do to deal with storm water problems is to protect the streams with forested buffers.

Scientific research has found that forested buffers with a minimum of 100 feet on each side are necessary for maintaining stream health and water quality. Buffers provide many benefits in addition to reducing storm water run-off. The buffers trap and filter out sediment, nutrients, and other pollutants. The need for building and maintaining storm water sewers is reduced. The effects of drought on stream flow are lessened. Property values go up as a result of the attractive views that streams provide and healthier economies and growing ecotourism result. Vegetated buffers cool the water, absorb greenhouse gases, reduce erosion, and preserve habitat for fish and other aquatic organisms. Stream buffers are far more valuable than the costs to retain or maintain them, a real bargain.

Climate change presents challenging problems. MS4 municipalities are not required by DEP to select stream side buffers for one of their BMPs. However, any municipality can pass an ordinance that would require buffers in all new development. A buffer ordinance is the best tool to deal with the increasing storm water problems that are expected to worsen with climate change. Buffers provide value to communities locally as well as globally.



[hellorhighwater]

keeping the lights on

by Wendi Taylor

As Americans become more technology dependent, we are becoming more vulnerable during widespread power outages. We can't pump gas, charge our phones, get money from our ATM, cook our food, or even get vital information about the emergency that caused the power outage.

Sierra Club members may fare better than most because they may have camping equipment to help them cook their food, stay warm and even charge their phones. Yet, most Americans – even Sierra Club members -- are ill-prepared to live without electricity for weeks at a time

As the effects of global warming lead to more frequent and intense storms, a number of states are studying ways to reduce power outages. Distribution systems are particularly susceptible to conditions that bring down tree limbs during ice storms, wet snow events and lightning storms. In anticipation of more stormy weather, a number of states and cities (Maryland, North Carolina, Hawaii, Virginia, Florida, Oklahoma, Washington, D.C., San Antonio, TX.) which have experienced long-term and wide-spread power outages, have conducted their own studies about ways to strengthen their electric delivery systems. Studies showed that in all cases burying power lines reduces the number of power outages. Even so, none recommended the “undergrounding” of power lines because of the cost, which the industry says is ten times the cost of overhead power lines. Most non-industry studies place the cost at five times as much. Cost is still the No. 1 reason for not recommending wholesale burying of power lines.

Yet, some areas are requiring developers of new areas to put their lines underground. When large-scale repairs are made to streets and water and sewer systems, power companies may be required to move their overhead lines underground. In other instances, states are requiring each power company to move their 10 most troublesome power lines underground. In flood-prone areas, power companies have been required to elevate their substations and switching stations so they don't flood during high water.

Anaheim, California added a 4-percent surcharge to electric bills to pay for undergrounding its power over the next 50 years. In Germany, where most power lines are underground, outages are very rare. Further, buried power lines cause less of a threat to the public and repair workers.

Undergrounding is not the answer to all power outages. Underground lines are susceptible to breakage from ground shifting and digging activity on the surface. Further, some information suggests that underground wires may not last as long. And when they do break, repairs take 60 percent longer.

Delaware and some other states are making improvements to create

a “smarter” grid. Nearly the entire power grid in Delaware has been upgraded and the utilities have now been better able to respond to power outages. Implementing a smart grid will cost the average homeowner \$200.

WHAT COMPANIES ARE DOING NOW

Power companies are supposed to maintain their rights-of-way by mowing and trimming brush and trimming trees along power distribution lines. They must conduct inspections and replace lines and equipment that show wear, as well as expand service to those who request it. When power outages occur, companies are required to restore service in an order that gives priority to public safety. The cost of restoring service is passed along to consumers.

Here in Pennsylvania, spokespeople for electric utilities say that their companies generally follow the aforementioned plan. A spokesperson for Duquesne Light says it invests heavily in infrastructure to ensure high-tech, modern equipment, which performs well in severe weather. This equipment speeds up the restoration and installation processes. If they know in advance that a storm is coming, they take steps to be prepared.

Likewise, a PECO spokesman said the company invests in infrastructure, constantly updating equipment and systems. It prides itself on being able to maintain reliable service when others cannot. Typically outages are a series of events, like a damaged substation, that impacts 4000 people, a tree coming down, impacting 1000 to 4000 customers, then a damaged transformer impacting 100 to 1000 customers, then a damaged fuse impacting another 10 or more. Repair work eventually comes down to individual issues.

PECO conducts two trainings a year on emergency preparedness, one before winter and another one before summer. Because one-third of all power outages are caused by lines damaged by trees, the company has a comprehensive vegetation management plan that cycles every 5 years at a cost of about \$35 million annually.

Aqua America of PA operates a system of solar power pumping plants and focuses on pipes, rather than lines. In frigid weather its priority is to ensure the pipes don't freeze. During emergency weather its staff remains at the facility to ensure reliability. A spokesperson reports that the company expects more frequent and severe weather patterns in the future and therefore is constantly modifying its plan for emergencies, snow storms and floods. Only 400 of their 500,000 customers lost power during Hurricane Sandy.

Sierra Club intern Seth Caplan also contributed to this article.

impacts on wildlife

by Phil Coleman

Although we can agree on what some of the broad impacts of climate change will be, there are still changes caused by those impacts that are more difficult to project. For instance, scientists agree that if we fail to make any adjustments to our carbon dioxide emission rates, we will inevitably have more storms, periods of drought, and periods of extreme flooding. In addition, Penn State University forestry expert Marc McDill, who worked on the State of Pennsylvania Climate report, said the evidence is “very, very strong” that Pennsylvania’s climate is going to change significantly. He said that “by 2050 the state’s climate will be more like Virginia’s and by 2100 it will be similar to what Georgia’s is now.”

Assessments such as this tell an important part of the story, viewing climate in a static way, but climate will also have effects on weather. Periodicity of floods and drought won’t necessarily follow patterns of present day Virginia and Georgia.

On many streams, 100 year flood plains will become five year flood plains, inundated with sufficient frequency to make living in normal homes and towns difficult to impossible. Even with flooding, there will also be periods of extended drought, making traditional agricultural methods less productive and putting stress on traditional water sources.

But when we attempt to project further about consequences, our predictions become less certain. A change in climate will bring about a change in the mix of tree species in our forests. It would appear that

the black cherry tree, which dominates northern Pennsylvania forests, will become less dominant and be replaced by other hardwoods. Since the black cherry is the principal timber species in Pennsylvania, the timber industry may suffer. Or, to some extent, the industry may follow black cherry dominance northward, to New York and/or Canada. We cannot predict exactly what will happen.



Climate Change may well help pest species thrive and wreak havoc on our forests, but we cannot predict just how such things will play out.

“For forests, the biggest danger is from insects and invasive species. There’s a lot of evidence that warmer climate will make insect problems more severe,” predicts Marc McDill.

It seems almost certain that warmer weather, especially if it is accompanied by reduced shade, will impact trout and other cold water aquatic species.

Climate Change will impact bird life and the species mix we find in Pennsylvania today. Presently, we enjoy over 120 bird species spending some time in our forests. But we will undoubtedly find the mix changing as weather changes and forests change. Union of Concerned Scientists has predicted that we will find declines of Ruffed Grouse (our state bird), white throated sparrows, warblers and song birds. “As many as half of the 120 bird species modeled in Pennsylvania could see at least 25-percent reductions in their suitable habitat because of changes in climate and vegetation this century, with the greatest potential losses occurring in habitat for migratory birds.”

How will climate change affect terrestrial species? We cannot say with certainty, but we can say that if there is more fragmentation of forests, movement of larger species will be impacted to a greater extent than it already is. Over long periods of time, inability to mix the gene pool can create weaknesses that can threaten extinction. We can also observe that species presently enjoying northern forests may tend to move north and may be replaced by species that thrive in warmer climates.

[hellorhighwater]

pennsylvania forecast: 100 percent chance of floods

by Wendi Taylor

Forecast: Warmer temperatures with extreme downpours followed by periods of drought; heavy snows near Lake Erie.

which can be used to water plants during periods of drought. Some horticulturalists and gardeners are encouraging homeowners to replace their grass with gardens of natural plants, which do a better job of absorbing water than lawns of grass, which some refer to as “green asphalt.”

So what does the climate forecast mean for the future of Pennsylvania? As home to three major rivers – the Ohio, Susquehanna and Delaware – Pennsylvania is the most flood-prone state in the nation. Only 186 municipalities out of 2,385 are high enough in elevation to be out of flooding danger. Our mountains create valleys where the rivers flow and people live. According to one source, Pennsylvania has more miles of waterways than state highways.

To be ready for our new climate, every municipality should have a storm water management plan to find ways to control the water run off when the heavy rains come. Managing the water will help protect that municipality and those downstream from flooding, as long as management does not consist of levees alone. Some local governments have enacted setback requirements to limit development near streams. They have planted trees and vegetation around streams to protect the banks from erosion and set aside property as wildlife habitat. Others have created rain gardens by road ways that collect storm water and slow it on its way to storm sewers.

While Pennsylvania has spent hundreds of millions of dollars and the federal government has spent billions on flood control projects over decades, many areas still flood, and in the future flooding will become more frequent. Local governments need to have emergency plans ready. However, that is not enough. Residents need to be educated about simple ways to limit the storm water that runs off from their properties.

Some communities encourage the use of rain barrels to capture the water from roofs,

LAKE EFFECT SNOW

Those living near Lake Erie in the Snowbelt may experience an additional problem: more frequent snowfalls. The snow is the result of the lake effect. When cold air interacts with a warmer body of water, some lake water evaporates and that moisture creates snow. Once Lake Erie freezes, the lake effect subsides. With a warm climate, Lake Erie may take longer to freeze, or never freeze, which will mean longer periods of heavy, lake effect snow.

HEALTH EFFECTS

With frequent flooding comes another problem: mosquitoes. Standing water is a breeding ground for mosquitoes, some of which carry the West Nile virus. In May 2014, the first mosquito carrying West Nile virus in Pennsylvania was found one month earlier than normal. Warmer weather may breed more ticks that carry Lyme disease. Each year about 4,000 new cases of Lyme disease are reported.

There are other health effects from warming temperatures. Climate change is aggravating those with asthma and allergies. Older people and poor people with chronic illnesses are particularly susceptible to the health effects of climate change. As extreme weather events become more common more and more people will be at risk. Floods kill people and heat waves with sustained high temperatures can be deadly. In 2012, Pennsylvanians reported 17 heat-related deaths. The heat wave that hit France in 2003 left 10,000 dead.

ECONOMIC IMPACT

And finally, there is an economic cost. Farmers, who have always been at the mercy of the weather, may find new challenges in trying to raise crops and livestock. Dairy herds' milk production suffers when cows are under stress. Farmers may have to shelter their cows from the heat during the day and install new ventilation systems to keep their barns cool. Heavy rains can wash away seeds and seedlings, and lack of rain can wither cash crops.

Emergencies from floods and storms often disrupt business activities. When businesses cannot open because of floods or power outages, people cannot work. For hourly workers this represents lost family income that may never be recuperated.

LOSSES FROM FLOODING

Most Pennsylvanians do not have flood insurance. According to Federal Emergency Management Agency (FEMA), only 86,250 households in Pennsylvania have federal flood insurance. In the last year Pennsylvanians received \$1.1 billion in payouts, the most of any state without a coastline. Under the new requirements passed after Super Storm Sandy, those with federal flood insurance will see their premiums rise about 18 percent a year, until FEMA's flood insurance becomes more sustainable. This year, some private insurance companies began offering flood insurance in 15 states, including Pennsylvania. Whether private or government run, the cost of flood insurance will rise as the incidents of floods rise.

Emergency work after a storm is inevitably expensive. Because the cost to restore power lines is rolled into the cost of electricity, consumers may see their utility bills increase. Other costs not covered by insurance are inevitably paid for by tax payers.

Doing nothing about global warming will mean higher costs. The longer the nation waits to address the problem, the higher the cost will be.

reflections on lake erie offshore wind and the environmental movement in the “rust belt”

By John Rossi

Given the recent U.S. government and Intergovernmental Panel on Climate Change (IPCC) reports on climate change and its devastating impacts, Pennsylvania’s environmentalists need to develop both long and short-term solutions to global warming. These solutions need to include an aggressive program of developing truly renewable energy production and energy conservation.

The larger problem we confront is why, despite the science, is the political environment in Pennsylvania (and in the United States) currently unfavorable to serious legislative action that curtails greenhouse gas emissions and invests in renewable energy and energy conservation.

There are many reasons for this, but one of the key reasons for most of western Pennsylvania is economics. It is the “Rust Belt.” Much of the region’s industry has closed, moving offshore or to anti-union, low regulation and low tax states in the South. With it has gone the jobs for that provided working Americans with a middle class standard of living. The region struggles with unemployment, under-employment, and a declining standard of living. Erie, for example, has in the last twenty years become Pennsylvania’s poorest large city.

In this environment, it is all too easy for the anti-environmentalists to make their case that limiting greenhouse gas emissions and energy from burning fossil fuels will cost jobs and block economic growth.

Unfortunately, environmentalists’ actions appear to the public to play into this argument, by often being in opposition to existing or new business operations and the jobs they provide.

The only way that the Sierra Club and other environmental organizations are going to win in western Pennsylvania (and most of the rest of the “Rust Belt”) is by providing a systematic counter-program of green economic development with a compelling counter-narrative. To date, the green jobs and sustainable growth programs pursued by Pennsylvania environmentalists are just not enough in terms of numbers and public perception.

To change this, we need to develop more and more aggressive policy initiatives and public information campaigns in support of clean energy, conservation and the jobs and other economic and public health benefits that they create. We need to push legislators to see that every bill that uses Pennsylvania public funds, public lands, or government-granted tax benefits for clean energy development has

to hire Pennsylvanians and purchase Pennsylvania produced materials provisions. We also need to develop and push legislation that provides for retraining unemployed workers when environment laws clearly are the cause of their layoff, such as in the case of coal power plant closures.

These are some short terms objectives. We also need to set long term goals for the state on renewable energy, conservation, and greenhouse gas emissions, something like Allyson Schwartz’s plan of 30 percent of the Pennsylvania’s electricity generated from renewable sources by 2030 and reducing Pennsylvania’s greenhouse gas emissions to 2005 levels as President Obama proposed for the U.S.

Such longer term goals require that energy generated by fossil fuels bear more of their real costs—the damages that greenhouse gases, airborne and waterborne pollutants, and extraction of coal, oil and natural gas, inflict on the environment, on wildlife, and on the public health. When this happens, all renewable energy will become much more cost competitive to fossil fuel, including offshore wind.

This leads us to wind on Lake Erie. The Lake Erie Group has been working on legislation to allow leasing of Lake Erie bottom lands for the development of offshore wind power. We’ve been working with national Club representatives, Chapter leaders and committees, and with other local and statewide environmental groups. Our objective is to both facilitate the development of offshore wind and to make sure that any legislation designed for this purpose is environmentally sound.

To achieve major reductions in greenhouse gas emissions and increase renewable energy significantly in Pennsylvania, offshore wind has to play role. The best place to put wind turbines to generate electricity in the state is Lake Erie, where the wind blows the most, measured in hours per day and days per year.

More importantly from a political and public perception perspective, large scale development of offshore wind will be economically transformative, particularly if we have state-based minimum purchase and employment requirements. Pennsylvania has in abundance the industries and labor — both of which are currently under-employed — necessary to build the components and materials required by wind power. The development of wind power on Lake Erie has the potential to repeat the experience of German wind power on the Baltic—revitalize moribund industry, ports and labor, and create a strong green economy.

The emphasis here is on environmentally responsible economic development. Our chapter has embraced the principle of scientific

[hellorhighwater]

reflections *continued from page 17*

study and zoning of wind power on Lake Erie so that when wind turbines go up, they will be placed where few birds and bats go, or shut down during migrations; their operations will be monitored; and if damage to wildlife occurs, it will be mitigated.

This is the kind of renewable energy and green economic transformation that would shift politics in the Rust Belt away from the current “environmentalists cost jobs” equation to one where “clean energy creates jobs and a better future.” It is also necessary to stop global warming protect the environment, and preserve wildlife.

Some say the club should not take any action on Lake Erie offshore wind. They say: 1) We really shouldn't bother with offshore wind and related legislation because the technology is too expensive and it cannot compete with coal, natural gas, or onshore wind. 2) We can't pass legislation on offshore wind with this legislature and governor. 3) Pushing offshore wind will detract from our other items on our alternative energy agenda. 4) Offshore wind will be too damaging to wildlife.

However, we cannot ignore this issue because there is an existing bill, HB 568, in committee, which would enable the development of offshore wind in Pennsylvania's part of Lake Erie with virtually no environmental protections. We need to be at the table in case the industry takes off and this bill becomes law. We don't want to find ourselves in the all too typical position of being reactive and negative, opposing bad legislation and having no good alternative to it.

John Rossi is the Lake Erie Group Conservation Chair and Co-Chair of the Chapter's Climate Disruption Committee. If you are interested in discussing these issues or helping fight global warming, please contact him at: jpr2@psu.edu

HELP MAKE HISTORY ON THURSDAY, JULY 31 IN PITTSBURGH!

The U.S. Environmental Protection Agency has proposed the first ever, national plan to cut carbon pollution from power plants. Now the EPA is holding public hearings in just four cities around the country and Pittsburgh is one of them.

You can help make sure Pennsylvania, and the whole country, gets a strong plan to clean our air, protect our climate and expand the clean energy economy by joining the rally, attending the hearing and recruiting other Pennsylvanians to turn out to show support for the EPA's new carbon standards.

Visit sc.org/pittsburghhearing or email randy.francisco@sierraclub.org to find out more.

[bookreview]



Cold, Hungry, and in the Dark: Exploding the Natural Gas Supply Myth

by Bill Powers *Published by New Society Publishers, 2013*

I met John Rawlins in 1968. He was a physicist looking for a job. I was a dean looking for a physicist. For the next few years John and I found we had two common interests -- whitewater canoeing and the Sierra Club.

John was outings chair. He led a few hikes (though I only remember one) and turned our whitewater trips into group outings. We were members of the Southwestern Pennsylvania Group, long since defunct. John took a job at Hanford Nuclear Site. He worked for years trying to make nuclear energy safe but then decided it wasn't possible. John and I kept in touch. When the Internet came along, we found it easy to email.

Five years ago, we had one last whitewater trip together, with several friends from our earlier whitewater days, on the Salmon and Snake rivers. Since then most of our communication has been about John's chief concern, the end of fossil energy. While he does not discount Climate Change as a major environmental problem, he argues that running out of fuel without being prepared will be a major and more sudden disaster.

In a recent exchange, he referred me to a blog by Kurt Kobb, What climate activists should learn from the Monterey Shale downgrade. That blog led me in turn to a book by Bill Powers, *Cold, Hungry, and in the Dark*.

This book examines in detail the past, present and future of natural gas. It is a compelling read. It presents overwhelming evidence that the amount of gas, especially shale gas, has been absurdly over-estimated. There is one-tenth the technically recoverable shale gas that is projected by the Energy Information Agency (EIA). The EIA uses antiquated means of collecting data when more accurate and faster means are available, and it relies on industry interpretation of the data it collects. Powers proves that the projections are inflated. He plods through a detailed study of American gas production. He gives an overview of world gas production. He argues that develop-

ing liquid natural gas (LNG) export facilities is a mistake at a time when we are still importing LNG and will in the not too distant future find that we don't have enough domestic gas to do the things we are presently doing, much less undertake efforts to make a transition to natural gas fired vehicles. In view of the massive amount of evidence Powers has compiled, it is very difficult, if not impossible to disagree with him.

We will not find 100 years of gas in our future. Gas will not even serve very well as a "transition fuel." Powers does not belabor the environmental damage done by fracking; he just touches on it in passing. It is enough for him to say that if we don't do some creative thinking about energy very soon, we are going to find ourselves and our children cold, hungry and in the dark.

This book is available in paperback and Kindle. I urge those readers who are concerned about Marcellus shale gas in Pennsylvania to give it a read. Meanwhile, since I live on the Gulf Coast, I have other things to worry about.

Bill Powers is the editor of Powers Energy Investor and sits on the board of directors of Calgary-based Arsenal Energy. He has devoted the last fifteen years to studying and analyzing the energy sector.

Did You Know?

When you see one of these icons in an email or post, you can easily click on them to post to your own account. A great way to spread the word to your network.



[exploreenjoypennsylvania]

hickory creek wilderness

by Gary Thornbloom

*I am glad I shall never
be young without wild
places to be young in. Of
what avail are forty free-
doms without a blank
spot on the map?*

- Aldo Leopold

Hickory Creek Trail is a 12 mile loop at the center of the Hickory Creek Wilderness - a blank spot, relatively speaking, on the map, a full day hike, or, more leisurely, a two day backpacking adventure.

The trailhead is in Warren County, 15 miles southeast of Warren along SR 2002. Maps are available at the trailhead, on the Allegheny National Forest website, or from the Bradford Ranger District. The Allegheny Group of the Sierra Club publishes a book, Allegheny National Forest Hiking Guide, that includes a description and topographic map of the trail; it can be ordered from their website.

Hickory Creek Wilderness is one of only two wilderness areas in Pennsylvania and comprises less than 2 percent of the Allegheny National Forest. Here you can escape the oil, gas, and timber industrialization that scars much of the ANF. The charm of this area lies in its remoteness, and that it is protected as a designated wilderness area. This is the 50th anniversary of the Wilderness Act which established the National Wilderness Preservation System. In the eastern United States many wilderness areas are landscapes now left to heal from past impacts, such as the logging that occurred all across Pennsylvania.

Motors are not allowed in wilderness areas. That means no chainsaws. Note the ax marks used to cut through trees that fall across the trail. No motors, no horses, no bikes - on foot is the only way to traverse this wilderness.

Recently I backpacked the loop clockwise, walking the south section first. In general it is a rolling trail with steeper climbs in



The author enjoyed a day of backpacking the 12-mile loop around Hickory Creek Wilderness area with his friend Constant.

PHOTO BY GARY THORNBLOOM

this section. Along the entrance trail to the loop and the first section of the loop you are looking into the drainage areas that include East Hickory Creek and then Middle Hickory Creek. Unmaintained trails follow 100 year old log-

ging railroad grades through those drainages. We stayed on the Hickory Creek Trail.

The first campsites we noticed were along Coon Run. More campsites were along Jacks Run. Shortly before the trail crosses Jacks Run we camped at a site nestled in towering hemlocks. The campsite just after the stream crossing is another nice spot. Both streams are small, with fallen trees forming pools and protected areas that provide excellent fish and insect habitat.

Hemlock giants and hemlock groves hint at what large areas of Pennsylvania's forests once were. The trail threads through numerous groves.

After Jacks Run the trail turns east and winds through some impressive large moss covered boulders. Here, the trail parallels hollows that lead into the East Hickory Creek watershed.



Songbirds sang constantly throughout our two days on the trail and in camp. Rose breasted grosbeaks stunning in their black and white plumage with a startling rose shield on their breasts were beautiful to both eye and ear. Wood thrushes sang through the evening and early morning, their flute like riffs echoing in

the woods. Pileated woodpeckers drummed and laughed wildly.

continued on next page

the lake erie group really cleaned up!



For 11 years the Lake Erie Group has partnered with the PA Game Commission to help clean up the roadways and parking lots around the Game Lands in Waterford, PA. This cleanup was part of the United Way Day of Caring. Pictured from (left to right) are Sierra Club members: Chuck Benson, Bob Benson, Karen and Paul Carpenedo.

hickory creek

continued from previous page

Wilderness provides the space to hear only natural sounds - wind through hemlocks, birds calling, streams running free.

Wilderness slows us to a peace that heals the hectic pace we usually subject our lives to.

It was a native Pennsylvanian, Howard Zahniser, who authored much of the Wilderness Act. Zahniser believed that there is an essential human need for wilderness. "The true wilderness experience is one, not of escaping, but of finding one's self by seeking the wilderness." — Howard Zahniser

Celebrate Pennsylvania's wilderness by exploring and enjoying the Hickory Creek Wilderness. Backpack it, on or off the trail. For a less strenuous adventure, explore and enjoy the southwest corner with a short walk up East Hickory Creek. Hickory Creek Wilderness is accessible, and it is there for all of us.

natural world

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But the biggest piece is EPA's new rule that was published on June 2, 2014, that requires Pennsylvania to reduce carbon pollution from existing power plants 32% below 2005 levels by the year 2030. As you might expect, the fossil fuel industry and its allies are forecasting gloom and doom, claiming that electric bills will sky rocket and brownouts will become common.

We've all heard that before. This is the same scare tactic they use whenever any sort of pollution control is proposed. It's way past time that pollution controls and protecting public health, and the health of the natural world, should be part of the basic services power plants provide, not something extra they use to gouge us.

So the question is: Will we have the president's back?

A recent poll by the League of Conservation Voters found that over 62 percent of Pennsylvanians want action on global warming, and this includes the coalfields of Pennsylvania. The president has done all he can do through administrative actions because he can't get congress to act. Now, he needs us to pressure our elected representatives to support EPA's new rule. As one republican representative told me, "I believe global warming is real, now get my constituents on board and force me to act."

So the final question is this: What are you prepared to do?

a call for at-large delegates whom do you want to represent you?

The Nominating Committee wants to know who you think is qualified to represent you on the PA Chapter Executive Committee. Each year the statewide membership of the Sierra Club elects three members as delegates to the Chapter Executive Committee for two-year terms. These delegates, along with representatives from each group, comprise the governing body of the Pennsylvania Chapter. Nominations are now being sought for these three important At-Large Delegate positions. Members are encouraged to submit the names of people (including yourself) to the Nominating Committee, which they believe to have a broad interest and knowledge of the activities of the Club throughout the state. Submit the names and contact information of people you want to be considered by the Nominating Committee as nominees no later than August 15, 2014. In addition, members who are not officially nominated by the Nominating Committee can be added to the

election ballot for At-large Delegates through a simple, written petition process.

A valid petition consists of the name, address and membership number of the petition candidate, along with a statement that the candidate has given approval for the petition and intends to serve if elected. A telephone number and e-mail address of the candidate are also requested. Members signing petitions must include their printed membership name and address, the date and a legible signature. The telephone number, e-mail address and membership number of members signing the petition are also requested in order to verify current membership. Both members of a joint membership may sign. A minimum of fifteen (15) valid signatures is required on a petition. Because some signers may have unknowingly let their membership lapse, a greater number of signatures is recommended. Petition

candidate statements and completed petitions must be received by the Nominating Committee no later than August 31, 2014, whose address is listed below.

Ballot candidates for At-Large Delegates should prepare a written statement highlighting their qualifications to serve as delegates, which will appear in the fall edition of *The Sylvania*. Statements are limited to 200 words and should be emailed to the Nominating Committee by September 5, 2014. Petitions and petitioners' statements should be mailed to the Nominating Committee by the U.S. Postal Service or a commercial overnight delivery service at the following address:

Chapter Nominating Committee Jack Miller 130 Delong Road Middleburg PA 17842-8182 Further, the Nominating Committee will gladly accept recommendations for various posts and volunteer positions. Please contact Jack Miller at: jmiller1018@yahoo.com

answers to crossword puzzle

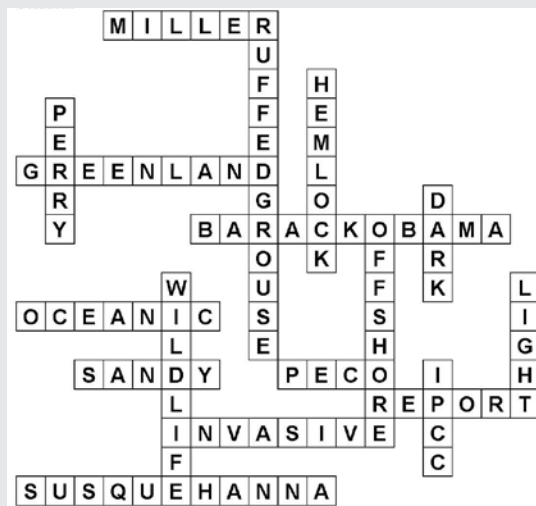
(from page 24)

Across

1. MILLER
5. GREENLAND
7. BARACK OBAMA
11. OCEANIC
12. SANDY
13. PECO
15. REPORT
16. INVASIVE
17. SUSQUEHANNA

Down

2. RUFFED GROUSE
3. HEMLOCK
4. PERRY
6. DARK
8. OFFSHORE
9. WILDLIFE
10. LIGHT
14. IPCC



view from harrisburg

continued from page 5

bill is also concerning, and appears to have been crafted with the intent to influence ongoing litigation on the proper use of Oil and Gas Lease Funds. One such clause is the statement that this new leasing is necessary for the 2014-2015 budget, which is inaccurate as many reasonable alternative ways to raise revenue were taken off the table by the Corbett Administration. Another such clause is the assertion that the Oil and Gas Lease Fund is not a Constitutional Trust, which could impact legal interpretations regarding the permissive allocation of Oil and Gas Lease Fund monies for non-conservation purposes.

In addition, jammed into this bill is a requirement that the Environmental Quality Board promulgate distinct regulations for conventional oil and gas wells and unconventional oil and gas wells. Earlier this year mirror bills were introduced in the House and the Senate (HB 2350 and SB 1378) that would have required the same separation of regulations for conventional and unconventional drillers. These bills did not pass. The legislature attempted to circumvent the full legislative process by inappropriately inserting this language into the Fiscal Code bill.

PA LEGISLATURE VS. CLIMATE CHANGE: ATTACKS ON THE CLEAN POWER PLAN, EPA'S PROPOSED REGULATIONS ON CARBON DIOXIDE EMISSIONS

With material from Tom Schuster, Beyond Coal Campaign Representative

In early June, immediately following the Environmental Protection Agency's announcement of its Clean Power Plan to regulate carbon dioxide emissions from existing power plants, the House Environmental Resources and Energy Committee met to address HR 815, a resolution urging the United States EPA to leave the task of determining carbon pollution limits to the states. While the states have an integral role in implementing EPA regulations,

leaving emissions limit determinations to the states alone would be an abdication of EPA authority, and would likely not result in meaningful reductions nationally. The effect of the policy articulated in HR 815 would be to continue the status quo, in which some states take on the responsibility to limit the pollution that affects all states, while others do nothing.

In addition, HR 815 states that limits on carbon pollution should be based on what is achievable at fossil fuel power plants, implying "within the fence line" improvements. This represents an approximate reduction of 6 percent in carbon pollution, much smaller than reductions that would be realized by the proposed standard. Further, the resolution suggests that maximum flexibility should be granted in meeting the standard, implying that system-wide compliance measures should be allowed. Since these system-wide measures represent much larger pollution reduction potential, the resolution would require virtually no further actions to reduce carbon pollution beyond existing policy. If targets are based on specific improvements at the power plants, those improvements should be the only way to meet the standard. If flexibility is granted (as it has been) the targeted reductions should be commensurately ambitious.

The resolution also asks EPA to grant states the authority to set "less stringent performance standards or longer compliance schedules." Put another way, the resolution seeks to make the standards optional. In fact, the draft standards as issued by the EPA already grant the states a huge degree of flexibility in how they design plans to meet their state-specific carbon budgets. This gives each state the ability to meet the standards in the most economically efficient way possible. For those concerned about the economic impact of the standards, it is abundantly clear that taking insufficient action to prevent climate disruption will lead to the most economically damaging outcomes. Watering down the standards is

not in the best interest of the environment, human health, or the economy; the targets and goals proposed by EPA are achievable and the EPA provides a flexible framework for Pennsylvania to achieve these emissions reductions.

HB 2354: LEGISLATION TO IMPEDE THE ABILITY OF THE COMMONWEALTH TO ADDRESS CLIMATE CHANGE

As you know, tackling climate change is one of the most profound challenges facing the Commonwealth. Yet, on July 1, 2014, the Pennsylvania House of Representatives passed HB 2354, which would require additional General Assembly approval of any plan to limit carbon pollution under the EPA's proposed Clean Power Plan. HB 2354 would empower the legislature to reject a carefully crafted plan at the eleventh hour, forcing the EPA to write their own plan for the state, which will not be as sensitive to Pennsylvania's unique economic and social needs.

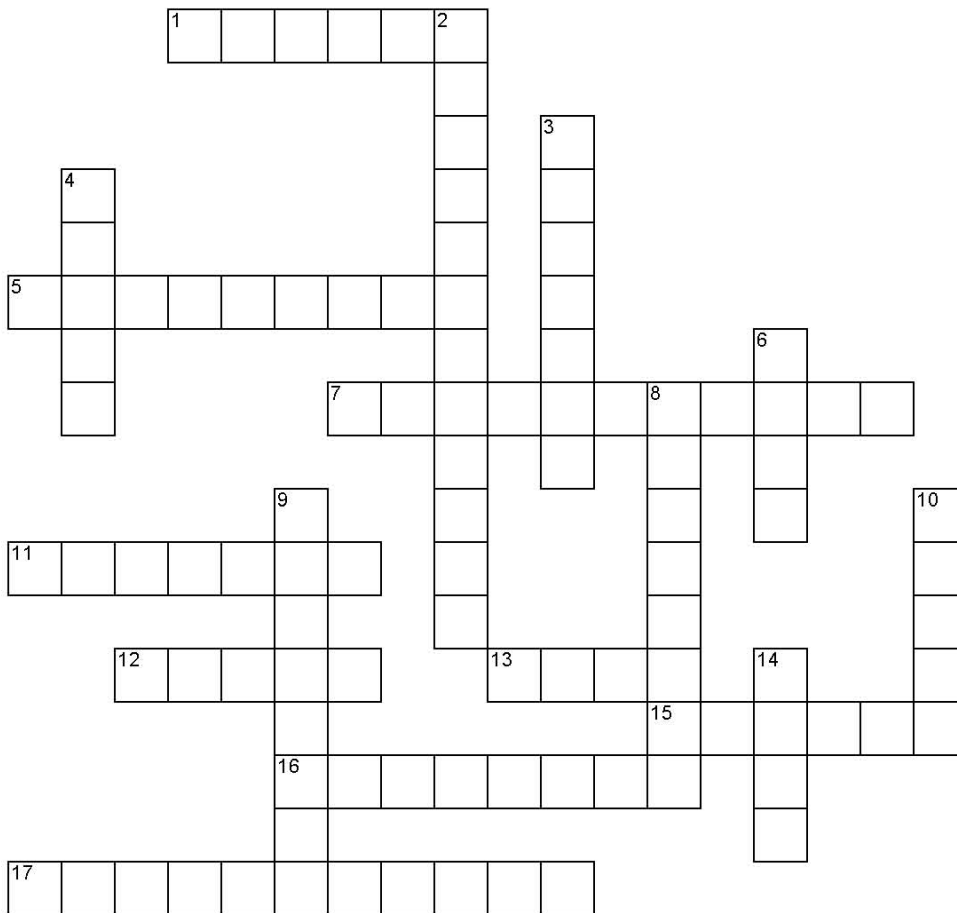
This bill is a hasty and misguided attack on the Clean Power Plan that could have the unintended consequences of both making it harder to limit dangerous carbon pollution and harming our economy by ceding our ability to write our own plan. The General Assembly should have a role in crafting our Commonwealth's compliance plan, along with a broad range of stakeholders including labor, businesses and public health advocates. Fortunately, many of those processes already exist. Additional bureaucratic hurdles like this bill will only slow our progress and risk Pennsylvania falling behind as other states seize the opportunity to build a clean energy economy.

The Senate has not yet considered the bill. But the Senate Environmental Resources and Energy Committee held a hearing on the Clean Power Plan, and plans to hold another in August 2014.



explore, enjoy and protect the planet.

[summer crossword]



www.CrosswordWeaver.com

Across

- 1 Nominating Committee Chair, Jack _____
- 5 Lost over 36 cubic miles of ice per year
- 7 Announced \$1 Billion in grants for disaster funding
- 11 National _____ and Atmospheric Administration
- 12 Super Storm _____
- 13 Power Company in SE Pennsylvania
- 15 Triennial _____ on Climate Change
- 16 _____ species
- 17 A small mouth bass fishery

Down

- 2 Pennsylvania State Bird
- 3 Pennsylvania State Tree
- 4 Ed _____, NWF Spokesman
- 6 Cold, Hungry and in the _____
- 8 _____ wind power sponsored by Lake Erie Group
- 9 National _____ Federation (NWF)
- 10 Duquesne _____ isn't heavy
- 14 Intergovernmental Panel on Climate Change

answers on page 22