

ENVIRONMENTAL SYNOPSIS

The Chairman's Corner

Rep. Scott E. Hutchinson, Chairman

There is perhaps no natural resource as intriguing and as mysterious as the ocean. While more than 1,500 people have now climbed Mount Everest, some 300 have flown into space and 12 have walked on the moon, only two have ever visited the deepest part of the ocean, according to the National Research Council.



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Pennsylvania, despite having no ocean coastline it can call its own, is a player when it comes to oceanic health. For starters, Pennsylvania is tied to the sea by its river systems. The Delaware, Susquehanna and the Schuylkill, as well as Pittsburgh's famed "three rivers" all eventually flow to the sea and have an impact on not only local water quality but also ocean water quality.

In addition, the Commonwealth has long been a member of the Chesapeake Bay Commission, and has taken an active role in efforts to improve the quality of water in the bay. Pennsylvania played a role in formulating the *Chesapeake 2000* goals to reduce nutrients and improve water quality in the bay. It is an issue in which the Joint Conservation Committee has taken part in the past as well.

Check out three new reports on the health of the Chesapeake Bay and the exploration of our oceans

Three reports have come out recently that speak to the importance of the health of the Chesapeake Bay and the exploration of our oceans. Of the most immediate import to Pennsylvania are two reports regarding the Chesapeake Bay.

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A Legislative Service Agency of the Pennsylvania General Assembly

NOTES FROM THE DIRECTOR



CRAIG D. BROOKS, DIRECTOR

If you follow the Joint Committee's activities, our Environmental Issues Forums and this monthly newsletter, then you probably know that we are very interested in promoting the use of conventional fuel sources as well as alternative fuel sources, and in particular, fuel cells. There's an exciting new plan underway to utilize fuel cell technology and Pennsylvania's rich natural gas to help educate the public about fuel cell technology and hopefully advance the use of fuel cells in the Commonwealth.

Several months ago, Penn State University's Energy Institute and the Pennsylvania Department of Conservation and Natural Resources (DCNR) organized a unique group of individuals, legislative agencies, environmental and business organizations to discuss the possibility of combining fuel cell technology with natural gas as a fuel source to power a demonstration project at Parker Dam State Park. The proposal is unique in that it partners the Commonwealth's natural resources with a promising new alternative fuel technology. Not only does this have the potential to advance the use of fuel cells, but it also may provide a cost savings to the state park system by reducing fuel oil and electricity use.

The Parker Dam State Park project is a unique marriage of Pennsylvania's natural resources with a promising new alternative fuel technology

Parker Dam State Park is a 968-acre park located in northern Clearfield County, Pennsylvania just off of Interstate 80. The park is visited by more than 140,000 people annually and has often been called the "gateway to the Moshannon State For-

est". It offers 16 rustic cabins that are rented all year long, and a number of seasonal activities including boating, swimming and organized group tenting. It is also just a short drive to one of Pennsylvania's largest Elk herds (State Game Lands 311) between Benezette and Grant, Pennsylvania. The park also offers a wide variety of year-round environmental education and interpretive programs that would be ideally suited for this fuel cell demonstration project.

The fuel cell proposal for Parker Dam State Park centers around generating enough electricity to actually power a full size home - about a 5 kilowatt solid oxide fuel cell - by using natural gas from Clearfield County's Moshannon State Forest. All the gas is owned by the Commonwealth. The fuel cell would convert natural gas into an efficient, on-site electricity generating system and heat source that could possibly be used to power rental cabins or other facilities at the state park. There are seven producing gas wells in the area and several of them would be excellent, long-term sources of fuel for the project. The working group agreed last week to install the natural gas fuel cell at Parker Dam.

The natural gas fuel cell operates on the same principle as others, using electrochemistry to consume fuel, create a chemical reaction, and generate electricity. Pennsylvania based Siemens-Westinghouse offered the first of several proposals that would involve installing a refrigerator-sized box at Parker Dam that would house the "broomstick" sized fuel cell. Energy Institute Director Harold Schobert estimates the total cost of the project at about \$1 million. Funding will be provided by federal, state and private sources.

RESEARCH BRIEFS

Each month, the committee's staff researches and prepares a number of "briefs" on several topics relevant to the Joint Conservation Committee's mission. Very often, these briefs include references to reports and further research on the topics so that readers may pursue issues on their own.

Renewable Energy Efforts Focused in a Handful of States

- Tony M. Guerrieri, Research Analyst

In the absence of federal leadership, states have acted to increase the nation's supply of wind, solar, and other renewable energy sources, according to a report by the Union of Concerned Scientists. The report, *"Plugging in Renewable Energy: Grading the States"*, assigns grades to all 50 states based on each state's commitment to renewable electricity through the projected results of renewable electricity standards for electric companies and dedicated renewable electricity funds. Current state renewable energy generation is also considered. Pennsylvania scored in the "D" to "D minus" range.

The report projects that the 19 states that have enacted renewable electricity standards or funds will increase total U.S. renewable energy capacity 113 percent by 2017. This increase will provide enough electricity for 10.4 million typical homes and eliminate as much carbon dioxide – the main heat-trapping gas causing global warming – as taking 7.4 million cars off the road.

Renewable electricity standards are state policies mandating that a state generate a certain minimum percentage of its electricity from renewable sources by a certain date. Thirteen states have adopted renewable electricity standards, which the report forecasts will lead to the development of 14,230 megawatts of new renewable energy by 2017 (a 105 percent increase from 1997 levels) and support 7,020 megawatts of existing facilities.

State standards vary considerably in the rate at which they require electricity providers to increase their use of renewable energy. The average annual ramp-up rates range from one percent or above per year in California, Nevada, and New Mexico to as little as 0.2 percent per year in Arizona, Texas, and Wisconsin. Pennsylvania included renewable standards in restructuring settlements with distribution companies. Ramp-up rates are important because they trigger renewable energy development in levels that achieve economy of scale and reduce renewable energy costs more effectively, ensuring gradual but steady market growth.

The 15 states that have already implemented renewable electricity funds are projected to collect nearly \$4.5 billion to promote clean, sustainable energy

between 1998 and 2017.

California leads the nation in total dollar commitment to renewable energy, accounting for nearly half of all state renewable electricity funding. Illinois, Massachusetts, Connecticut, New Jersey, Arizona, and Minnesota are also making significant commitments to their funds, each in excess of \$100 million.

The duration of renewable electricity funds varies among states, ranging from open-ended funds in Delaware, Massachusetts, and Minnesota to five-year funds in Montana and Pennsylvania. Several states, including California, New York, and Rhode Island, have extended the term of their funds.

Nine states (Arizona, California, Connecticut, Massachusetts, Minnesota, New Mexico, New Jersey, Pennsylvania and Wisconsin) have implemented both funds and renewable electricity standards.

Pennsylvania gets a "D" on its report card...and finishes 28th in the percentage of electricity that comes from renewable sources

According to the report, only a few states are using renewable energy sources to generate electricity at meaningful levels. Only one state – Maine – currently approaches 30 percent. Renewable energy provides roughly 10 percent in only three other states: Hawaii, California, and New Hampshire. Another three (Nevada, Alabama, and Vermont) get between five and 10 percent of their electricity from renewable sources.

Although Pennsylvania is one of only nine states to implement both funds and standards, it ranks 28th out of the 50 states in the percentage of its electricity that comes from renewable resources. Despite the potential for renewable energy, Pennsylvania managed a production of 0.8 percent from renewables in 2001.

Listed below are the grades given to the states by the report:

- States earning an "A": California, Nevada
- States earning a "B": New Mexico, Massachusetts, Minnesota
- States earning a "C": New Jersey, Alabama, Arizona, Connecticut, Hawaii, Iowa, Maine, New Hampshire, Texas, Vermont, Wisconsin
- States earning a "D": Arkansas, Delaware,

Florida, Georgia, Idaho, Illinois, Kansas, Louisiana, Michigan, Mississippi, Montana, New York, North Carolina, Oregon, Pennsylvania, Rhode Island, South Carolina, Tennessee, Virginia, Washington, Wyoming — States earning an "F": Alaska, Colorado, Indiana, Kentucky, Maryland, Missouri, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota, Utah, West Virginia.

The report also showcases the opportunities for development of renewable sources in the states, and estimates the potential power that could be produced from these sources.

The Union of Concerned Scientists is a nonprofit environmental advocacy group. The report, *"Plugging in Renewable Energy: Grading the States"*, can be found on the web at <http://www.ucsusa.org/publications/report.cfm?publicationID=631>.

GAO investigates Oil and Gas Activities on Federal Lands

- Jason H. Gross, Research Analyst

The General Accounting Office (GAO) has recently released a report entitled *"National Wildlife Refuges, Opportunities to Improve the Management and Oversight of Oil and Gas Activities on Federal Lands"*. The report attempts to determine the exact extent of oil and gas activity underneath and on the wildlife refuges and identify the environmental impacts. The GAO was also tasked with assessing the Fish and Wildlife Service's management of the oil and gas activities taking place on the federal lands.

According to the report, the National Wildlife Refuge System contains federal lands amounting to 95 million acres. The lands are devoted to the conservation and management of fish, wildlife, and plant resources. While the federal government owns the surface lands in many cases, the sub-surface mineral rights have been severed, meaning other parties own the sub-surface mineral rights. Their owners have the legal authority to explore and extract the oil and gas from underneath the National Wildlife Refuge System lands.

According to the report, one quarter of the 575 refuges have been the site of past or present oil and gas activity, in some cases dating back as far as the 1920's. The various types of oil and gas activities done on federal refuges range from exploration activity, to drilling for production of gas and oil, and pipelines for transmitting gas over refuge lands. According to the report, 105 of the refuges contain a total of 4,406 oil and gas wells. Of the wells, 2,600 are inactive and approximately 1,806 remain active. The 1,806 active wells are located within 36 refuges, many near the Gulf Coast. Thirty-five other refuges contain only transport pipelines for moving gas. Revenue generated from oil and gas has amounted to \$880 million during the past 12-

month reporting period, which is approximately 1% of total domestic oil and gas production.

The report states that federal management and oversight of oil and gas activities does not have a standard set of best management practices (BMP). Some refuges take extensive measures to oversee and accumulate data on oil and gas activities within their boundaries. Many other refuges provide little control or enforcement, and demonstrate little or no understanding of what takes place within their protected lands. The GAO has determined that the variation in approach to oil and gas management in refuges occurs because of differences in the authority to oversee private mineral rights, and because refuge managers lack enough guidance, resources, and training to oversee all oil and gas activities. The report recommends that a greater attention to oil and gas management occur.

Lack of best management practices and inconsistent control lead to a recommendation for greater attention to oil and gas management

The report also recommends that the Fish and Wildlife Service should increase its understanding of the environmental effects associated with oil and gas activities in order to better protect the refuge resources. The report concludes there is a gap in Fish and Wildlife Service data in assessing the environmental effects of oil and gas activities, and the service has not yet done a report or assessment of the effects of oil and gas activities in refuges. The report notes the existence of only anecdotal information and GAO observations to show what the environmental effects of oil and gas mining are.

The GAO further reports that oil and gas activities vary widely in their effect on federal lands. Pipelines that are buried have a negligible effect on wildlife activities. Other oil and gas activities have substantial effects in the environment such as large oil spills or large-scale infrastructure needed to mine the oil and gas. Many of

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the detrimental effects of oil and gas activity have been effectively ameliorated through environmental laws and improved industry practices. Oil and gas operators have taken many voluntary steps in reversing damages caused to the environment from oil and gas activities.

The report makes several recommendations to enhance the Fish and Wildlife Service's management of the oil and gas activities taking place on federal lands. The GAO recommends collecting better data, improving training, increasing oversight, and strengthening permitting authority. The GAO also recommends that the service seek additional authority to regulate private mineral rights. The Department of the Interior's position is that it lacks additional authority to improve oversight in these matters. As a consequence of this lack of authority the GAO has asked Congress to consider the service's authority to regulate private mineral rights on the lands that it manages.

For more information and copies of the full report please go to www.gao.gov/cgi-bin/getrpt?GAO-03-517.

Survey Measures Public Opinions on Drinking Water

- Tony M. Guerrieri, Research Analyst

Most U.S. residents believe their drinking water is of good quality, but almost three out of four buy bottled water, according to a survey conducted by the Gallup Organization and commissioned by the U.S. Environmental Protection Agency (EPA).

The survey, *"Analysis and Findings of The Gallup Organization's Drinking Water Customer Survey"*, was commissioned by the EPA to measure public opinion on drinking water. It examines four areas: general drinking water consumer knowledge, water use behavior, public confidence with information sources, and the importance of right to know information.

Findings from the polling showed U.S. residents are generally knowledgeable about their drinking water, the majority of them drink their tap water, and that they value being kept informed of important events concerning their water.

Ninety-four percent, or about 264 million individuals, were able to identify whether they were on a community water system or private well. Nineteen percent (53 million) stated they owned private wells.

Seventy-five percent (210 million) of those surveyed stated they obtained their water from a public water system. Of those, three-fourths were able to name their water system provider and 71 percent were able to identify their source of water (lake, well, etc.)

Eighty-two percent of those surveyed, which equates to 231 million persons nationwide, responded that they drink tap water, however, only 56 percent (157 million) stated they drink it straight from the tap.

Thirty-seven percent (104 million) reported using a filtering or treatment device, 74 percent (208 million) responded that they drink bottled water at least occasionally, and 20 percent (56 million) stated they drink bottled water exclusively.

How much do you know about your water and where it comes from?

When asked why they treat their water or purchase bottled water, the most frequent responses were for health-related issues (33 percent), taste (28 percent), and convenience (17 percent). Responses to the same question in 1998 showed 69 percent treated or used bottled water because of concerns of the tap water's taste, odor, or color; 49 percent because of concern about pollution; and 41 percent for convenience.

National marketing data indicates a growing use of bottled water, with an increase of greater than 10 percent each year in the last five years. The average cost of bottled water is \$0.89 per gallon, \$2.25 if delivered. The average cost for tap water is less than a penny a gallon, indicating that cost for what is perceived as better quality water is not a factor in consumer choices.

With one in five respondents choosing to use bottled water exclusively, the survey concluded that greater work is needed to increase consumer's trust in public water systems. This is in spite of the fact that Americans have one of the cleanest drinking water supplies in the world.

The survey showed that most Americans, 71 percent, are confident or very confident in the quality and safety of their tap water. The majority, 66 percent, receives some or all of their information on tap water from the media, 39 percent from their water company, and 35 percent from environmental groups. A near unanimous 94 percent felt that receiving information on possible contaminants, health effects, and source water protection was important, and that 71 percent were satisfied overall with the information they have received. Sixty-four percent listed their water company as a source of information they could trust.

Annual consumer confidence reports (CCR) are now a critical part of the Safe Drinking Water Act's right to know provisions. Thirty-seven percent of those polled remember seeing their CCR and, of those, over three-fourths read them. Of those who read them, seven percent changed their tap water usage behavior while 93 percent did not. The EPA concluded that the CCRs may not be reaching a larger audience because of poor publicity efforts rather than a lack of interest on the part of consumers.

The survey findings were based on telephone interviews conducted in August and September 2002 among 1,000 people.

The EPA is using the polling data to promote CCR and source water assessments, and plans to repeat the survey every three years. A copy of the survey can be obtained at http://www.epa.gov/safewater/consumer/pdf/survey_gallup_customersatisfaction2003.pdf.

Report Examines the Effects of Forest Fires

- Jason H. Gross, Research Analyst

The US Department of Agriculture's Forest Service has recently released a highly technical report entitled *"Assessing Values of Air Quality and Visibility at Risk From Wildland Fires"*. The report details the information gathered through the Ventilation Climate Information System (VCIS), which maps the effects of forest fires. In the past, fire and resource managers have learned about the relationships between wildland fuels, fire effects and ecosystems through personal experience at an anecdotal level as well as a very limited number of scientific studies. The VCIS is an attempt by the Forest Service to add to the scientific data available to planners, officials, and risk assessment professionals in predicting the effects and issues surrounding forest fires. The issue is currently made more acute due to the forest fires that are taking place in the Pacific Southwest as well as studies and data that show a future of increasing fire severity.

The United States is seeing an increased amount of accidental forest fire as well as exploring prescribed fire as a way of managing wildlife areas. Predicting the potential impacts and assessing the risks of forest fire are both becoming more important. The effect of smoke on air quality and visibility is of great concern to both scientists and the general population. Many people are sensitive to slight amounts of smoke, especially people with acute respiratory problems like emphysema or asthma. Smoke can also severely degrade visibility when combined with other pollutants or moisture, resulting in unwanted effects as diverse as detracting from scenic vistas in recreation areas to causing severe traffic accidents.

According to the report, consistent and timely emission inventories from biomass burning are difficult to obtain and analyze for purposes of a national risk assessment. Data is not routinely kept which incorporates information regarding the timing and release rate of emissions that can determine whether smoke will be lofted into the atmosphere or stay close to the ground. Among the unknowns previously was the probability of poor ventilation on any given day at any selected spot in the geography and how that poor ventilation would combine with the effects of a forest fire. A long-term series of high resolution spatial data such as that now being collected for the VCIS can help determine when and where air quality would be most adversely affected

by smoke pollution resulting from forest fires.

To assess values of air quality and visibility at risk from wildland fire in the United States, the Forest Service generated a 40-year database that includes twice-daily values of wind, mixing height, and a ventilation index that is the product of wind speed and mixing height. The VCIS database provides the first nationally consistent map of surface wind and ventilation. In addition, it is the longest climate record of mixing height in the country. The Forest Service built the database into an interactive ventilation climate information system that allows users to assess risk based on frequency patterns of poor, marginal, fair, and good ventilation conditions.

The VCIS can be used as a management tool for monitoring, tracking and predicting smoke and other pollutants arising from forest fires. By providing this information VCIS allows users to assess risks to air quality and visibility. The potential for future risks and risk prediction is determined from analyzing the historical patterns of ventilation conditions the VCIS has collected. The VCIS maps are available at: <http://www.fs.fed.us/pnw/fera/vent/> for use by local, regional and national planners. The web access system allows users to view local and national patterns of ventilation potential. The system overlays sensitive areas such as hospitals, schools, roads and airports with the predictive model so as to give an assessment of the possible risk in poorly ventilated conditions.

The Ventilation Climate Information System (VCIS) is a new tool to assess the effects on air quality from forest fires and their smoke

VCIS can be used in several different ways. Local, state and federal managers can use the ventilation index to gauge the amount of smoke particulates that are in the atmosphere as opposed to other pollutants. This enables scientists and officials to determine if poor air conditions are due to the temporary causes of a fire or due to a more long-term problem of air pollution. The maps and graphs of historical conditions can be included in fire or smoke management plans in order to be able to predict where dangerous air conditions may occur in the event of a fire. Public officials can also use the maps and graphics in the VCIS in order to communicate and illustrate concerns at public meetings. The data can be used to develop plans for avoiding smoke impacts and optimizing the use of prescribed fire at specific places or times in order to minimize diminishing overall air quality.

For more information or a copy of the full report please visit this link on the World Wide Web: <http://www.srs.fs.usda.gov/pubs/viewpub.jsp?index=5374>.

ON THE HORIZON . . .

A LOOK AT UPCOMING EVENTS

✓ **Thursday, December 4, 10 a.m., Penn State Conference Center, State College, PA – Forestry Task Force Meeting.** Task force members planning to attend should call the committee office at 717-787-7570 in advance.

✓ **Tuesday, December 9, 8:30 a.m., Hearing Room 1, Ground Floor, North Office Building, Capitol complex, Harrisburg, PA - Environmental Issues Forum.** John Rich, Jr. of Waste Management and Processors, Inc. (WMPI) of Gilberton, PA will tell the story of his firm's cutting edge technology project to produce clean-burning diesel fuel from coal wastes. The federal and state government have helped "fuel" this unique project, in which WMPI is working with Sasol, a South African firm, and other national/international firms to develop this new fuel source.

Environmental Issues Forums are open to the public. Please call the committee office at (717) 787-7570 if you would like to attend.

COMMITTEE CHRONICLES . . .

REVIEW OF SOME MEMORABLE COMMITTEE EVENTS

The committee's most recent Environmental Issues Forum featured guest speaker Robert B. McKinstry, Jr., the Maurice K. Goddard Professor of Forestry and Environmental Resources Conservation at Penn State University, more familiarly known as the "Goddard Chair".

Professor McKinstry discussed the report he and a 25-member committee prepared which offers recommendations to the Rendell Administration on environ-



mental and natural resources priorities for the Commonwealth.

You can receive an electronic copy of the report via e-mail by contacting the committee's Geoff MacLaughlin at gmaclaughlin@jcc.legis.state.pa.us.

Pictured here are some scenes from Mr. McKinstry's appearance at the October Forum.



One, *Chesapeake Futures: Choices for the 21st Century*, takes a big picture look at the Chesapeake and seeks to answer the question of what the future holds for it. A group of scientists makes its best estimates of what the bay will look like in the year 2030.

The committee of independent scientists, known as the Scientific and Technical Advisory Committee (STAC), examined three scenarios. One they called "recent trends" would maintain the status quo. A second is called "current objectives", which would largely fulfill current bay agreements, and the third "feasible alternatives", assumes implementation of a range of progressive technologies and programs. The outcomes varied dramatically depending on which scenario was followed. The report also acknowledges that nature's unpredictability (i.e., changes from last year's drought to this year's heavy precipitation) can drive short-term changes that overwhelm well-intentioned control efforts.

The report is available on the website of the Chesapeake Research Consortium at www.chesapeake.org/stac.

The Chesapeake Bay Foundation also issued a report at the end of October regarding sewage treatment plants (STPs) and their effect on the bay's health. The report notes that STPs are the second largest source of nitrogen pollution in the Chesapeake watershed. The report offers information on technologies to reduce nitrogen pollution, and provides a state-by-state breakdown of nitrogen pollution from STPs. The report can be accessed on the foundation's website at www.cbf.org.

At the time of printing the Chesapeake Bay Foundation also issued its sixth annual "*State of the Bay*" report. You can find it on the Internet at www.cbf.org/site/PageServer?pagename=sotb_2003_index.

Directly regarding our oceans, the National Research Council, an arm of the National Academy of Sciences, recommends new research into the world's oceans and their resource potential in areas as diverse as foods, useful chemicals and drugs, and energy. Its report, "*Exploration of the Seas: Voyage Into the Unknown*" calls for a major U.S.-led international ocean research and exploration program, noting that vast portions of the ocean have never been examined for geochemical and biological resources, especially in the southern hemisphere.

Even without such an expanded research program, it points out that interesting discoveries continue to be made, such as the recent find of a previously unknown organism which consumes methane seeping through the sea floor and converts it into energy, leaving hydrogen, a potential energy source, as a by-product. The report's supporters feel that the ocean, which is arguably the Earth's last great unexplored frontier, could be the source of many more exciting and perhaps unanticipated discoveries.

The report's text is available on the Internet at www.nap.edu/books/0309089271/html.

In addition to its work with the Chesapeake Bay Commission, Pennsylvania continues to do some interesting and innovative things within our watersheds, seeking ways to improve water quality, preserve water, and improve the understanding about what watersheds are and the roles they play. Because watersheds and oceans are linked in a cause and effect relationship, it makes the study of the oceans all the more interesting and relevant to our everyday lives.



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