

ENVIRONMENTAL SYNOPSIS

The Chairman's Corner

Rep. Scott E. Hutchinson, Chairman

Allow me take this time to wish all our readers a Happy New Year. I hope that everyone had a safe and joyous holiday.

Among new things we can expect to see in the new year is a statewide recreation plan for Pennsylvania.



The plan is under development by the Department of Conservation and Natural Resources (DCNR), in cooperation with the Pennsylvania Recreation and Parks Society (PRPS). It will serve as the Commonwealth's official policy document related to recreation, guide public investment in meeting recreational needs and provide a framework to protect our cultural and natural resources.

In order to determine what Pennsylvanians thought about recreation, DCNR commissioned two statewide surveys, one on recreational needs and one on recreational participation. The agency shared the results of the surveys with the committee at our November Environmental Issues Forum (EIF) and the responses brought to light some interesting trends and points of view.

The needs survey was mailed to more than 21,000 Pennsylvanians and some 5,000 responded. The participation survey was done by telephone and surveyors contacted 7,175 Commonwealth residents. Among the findings:

— Outdoor recreation is more important than indoor recreation to the majority of respondents (77 percent said they had engaged in some type of outdoor activity in the past year);

— Both state and local government should do more to increase awareness of recreation areas and programs; and

— The number one recreational funding priority by a greater than 3 to 1 margin should be to maintain existing parks (50 percent), with acquiring open space next at 16 percent.

In further questions on outdoor recreation and its importance, Pennsylvanians listed physical health as the greatest benefit of outdoor recreation by an overwhelming margin (69.7 percent). Mental health came in at 30.3 percent, relaxation and calming at 21 percent, and experiencing nature garnered 18.3 percent.

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NOTES FROM THE DIRECTOR



CRAIG D. BROOKS, DIRECTOR

It's sometimes referred to as the John Rich Project. Maybe you've heard of it. Maybe not. But for those that haven't, you soon will. Last year, the Assistant Secretary for Fossil Energy in the U.S. Department of Energy (DOE) announced the award of a \$100 million grant to Gilberton's Waste Management and Processors, Inc. (WMPI) to develop the nation's first project to convert coal wastes into clean, zero-sulfur transportation fuels. John Rich, WMPI's President, came to Harrisburg last month to share details about Clean Coal Technologies (CCT) and the project at the Committee's Environmental Issues Forum.

CCT is the product of more than 20 years of research and development that has resulted in lower cost, more efficient, environmentally friendly technologies for utilities, steel mills, cement plants, and other industries. CCT has helped make it possible for the nation to meet Clean Air Act requirements while continuing to use America's most abundant domestic energy resource - coal.

WMPI has assembled an engineering and technology team from around the world to design, engineer, construct and demonstrate an environmentally friendly clean coal power facility that uses waste coal to produce a gas consisting of hydrogen and carbon monoxide. As with similar processes, this system offers the potential for capturing CO₂. Electric power and steam will be produced and a portion of the gas will be converted to synthetic transportation fuels such as diesel, naphtha and jet fuel. Diesel-powered cars and trucks operating on this fuel will produce much lower levels of exhaust contaminants such as nitrogen oxides, and will be capable of complying with stricter environmental regulations.

The project will be built on a 20-acre site in the heart of the anthracite mining region of Northeastern Pennsylvania. A primary benefit of this project is that it applies clean coal technology to address the historic environmental reclamation problems

associated with mining and coal production. This project has the ability to convert 4,700 tons/day of coal waste materials (culm and gob) into electric power and more than 5,000 barrels a day of ultra clean transportation fuels. This project will process about 1 million tons of coal waste at the Gilberton site. DOE will cost-share the project through the preliminary engineering phase.

Key components of Clean Coal Technologies are clean fuel generation, land reclamation and job creation

The project will also create more than 1,000 construction jobs over a five-year period, an additional 150 permanent operating jobs and 600 secondary jobs in the support and service industries. The annual payroll will total more than \$22 million. Over 20 years, the permanent jobs are estimated to generate \$136 million in wages while the secondary jobs will engender \$410 million in wages.

Cleaner electric generation facilities will be important because electricity demand is expected to increase more than 53 percent over the next 25 years. Meeting this growth rate will require the construction of more than 1,200 new power generating plants of 300 megawatts each - the equivalent of 65 plants each year. Coal will still remain the largest single source of electricity, accounting for 51 percent of the power generation in 2025. CCT's such as the WMPI project will help meet these needs while facilitating the decline in SO₂ and NO_x emissions already underway.

In addition, the project will reclaim thousands of acres of currently unusable land and produce thousands of barrels of clean, useable liquid hydrocarbon transportation fuels daily, for a total of 1.5 million barrels annually.

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.

Report Recommends Maine Restrict Wastewater Discharges by Cruise Ships

— Tony M. Guerrieri, Research Analyst

The number of cruise ships visiting the state of Maine has grown in recent years (by about 20 percent annually) and is expected to continue to increase, especially after the city of Portland completes a new passenger ship terminal specifically intended to lure more of the travel boats. Maine's efforts to lure more cruise ships to the state will bring in more tourist dollars to the state's economy, but they will also bring more pollution to the Gulf of Maine as the waste stream continues to grow as well.

Maine should seek new restrictions to limit the discharge of wastewater by cruise ships traveling through the state's coastal waters, the Maine Department of Environmental Protection (DEP) recommended in a report to the Legislature. If the recommendations in the DEP report, *"Discharge from Vessels"*, are adopted, major harbor areas, particularly Casco Bay in southern Maine, would become a "no-discharge zone" for sewage and other cruise ship wastewater.

The report recommends that vessels carrying 50 or more passengers register with the state and pay a fee. The money would be used by the state to collect information on the ships' waste treatment systems and the amount of pollution they discharge.

The report also recommends new licensing restrictions on the so-called "graywater" from ships. Maine would become the first state in the nation to require larger ships to pay a licensing fee for dumping the waste in state waters.

The report contends cruise ships are floating cities that produce as much sewage, wastewater and other pollutants as municipalities, and that their discharges should be regulated in a similar way. A typical cruise ship carrying 3,000 passengers and crew can produce 15,000 to 30,000 gallons of sewage a day. Ships are required to use marine sanitation devices to treat raw effluent.

Ships also produce up to 255,000 gallons a day of contaminated "graywater" from onboard showers, sinks, laundries, and galleys. Tests have shown graywater can contain even more fecal bacteria than sewage, or "blackwater." It also contains high levels of nutrients and chemicals used in cleaning agents.

Federal law prohibits Maine from regulating blackwater discharges, although the state can apply to the U.S. Environmental Protection Agency (EPA) to create federal no-discharge zones. The report proposes that most of the state's major boating harbors be included in a first round of applications for no-discharge zones.

Outside of these areas, the report suggests following the lead of Alaska and building a case with the EPA that Maine should be given special permission to regulate blackwater discharges. Another option is to try to change federal law.

The report notes that for a 900-foot, 1,500-passenger vessel, Alaska charges a \$1,750 environmental registration fee per visit to Alaskan waters in addition to port fees. If the cruise ship visited Alaska water three times during the season, the fee would be \$5,250. Maine's registration fee, by contrast, would be assessed once a year even if the ship visits many times. Alaska has five times the ship traffic of Maine, the report says, and traffic has not slowed since the fee was imposed in 2001.

The new state graywater regulations described in the report would apply only to larger ships, those carrying at least 250 passengers. The ships would be required to pay an annual \$1,200 licensing fee if they want to discharge into Maine waters. That is in addition to the proposed annual registration fee, which would range from \$1,000 for smaller ships to \$3,100 for larger cruise ships.

Most larger ships already have the ability to hold graywater and discharge it offshore. The new rules would clarify that the state has the authority to regulate the waste, and put the issue on the radar screen of smaller ships that could be regulated in the future.

The report is available on the DEP Internet site at www.maine.gov/dep/blwq/topic/vessels/report.htm.

Moving Toward Cleaner Energy Plants

—Jason H. Gross, Research Analyst

The U. S. Department of Energy's (DOE) Office of Fossil Energy has developed a program called Vision 21, which recently released a report entitled "*Clean Energy Plants for the 21st Century*." The goal is to provide a roadmap toward building and modifying energy plants to be more efficient. Vision 21 uses a new approach to producing energy that addresses pollution control as a part of high efficiency energy production for use in a theoretical "21st Century Energy Plant." Such a plant would be built or converted based on advanced technologies growing out of ongoing research and development programs, which will integrate energy production into a new type of facility that will facilitate pollution control.

According to the report, the U.S. electric power industry is undergoing a period of unprecedented change driven by electric utility restructuring, environmental regulation, concerns about global climate change, and the fluctuating price of natural gas. As the power industry deregulates, utilities that were protected against competition are forced to compete for market share and profits. In the new energy marketplace, power plant owners must be concerned about profitability as well as the ability to adapt to fuel supply issues and new environmental requirements. The 21st Century Energy Plant model is designed to provide the flexibility and environmental friendliness required in the future energy market.

Efficiency maximization is a key principle of the Vision 21 program

Plants under the Vision 21 program would be designed around the principle of efficiency maximization, intended to extract the maximum amount of energy out of the fuel material as possible. Efficiency maximization is accomplished by combining advanced technology in ways that meet the needs of a particular energy plant. For example, a plant using these principles could use the excess steam and heat that is generated by its energy production process for use in an industrial complex.

Most power plants today use only coal for producing only one type of output — energy in the form of electricity. The Vision 21 program has a constructed paradigm for an energy plant that will be fuel-flexible, meaning it would use one or more different feedstocks such as coal, natural gas, petroleum coke, biomass, or coal

gasification. Because of the mixed feedstock combustion, the plant would be able to produce various products beyond electric power such as clean fuel, chemicals or hydrogen.

The model for the 21st Century Energy Plant also places an emphasis on eliminating environmental issues associated with the utilization of fossil fuels. It does not attempt to stop the use of all fossil fuels, but rather seeks to reduce the impact of fossil fuels on air pollution. Under the model, emissions of air pollutants such as sulfur dioxide, nitrogen oxides, and mercury would be reduced to nearly zero levels, and emissions of carbon dioxide and other greenhouse gasses would be dramatically reduced due to increased plant efficiency. Plant design would also include the option for capturing and sequestering any carbon dioxide, which is produced in the combustion process.

There are several key technologies essential to implementing Vision 21 concepts. Coal gasification produces a gas stream that can be used for combustion in electric power as well as a source of hydrogen for fuel cells or chemical processes. Fuel cell turbines can be combined to increase the efficiency of traditional coal burning plants. Gas-separation technologies offer low-cost oxygen separation that can be developed to supplant present day expensive oxygen separation technology that consumes high amounts of energy. High-performance combustion is a concept that relies on advanced technologies such as pressurized fluidized bed combustion to improve the performance of normally inefficient combustion technologies. Combining these technologies into future power plant design and upgrades will ensure that energy plants will be environmentally friendly and independent of individual fuel price fluctuations.

For more information, please visit Vision 21 on the World Wide Web at: http://www.fossil.energy.gov/programs/powersystems/vision21/v21plan_2000.pdf.

News to Use in the Environmental Synopsis... share it with a friend

The *Environmental Synopsis* is issued monthly. The newsletter examines timely issues concerning environmental protection and natural resources.

If someone you know would like to receive a copy of the *Synopsis* each month, please contact the committee office at 717-787-7570.



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Education and Smart Growth: Reversing School Sprawl

— Tony M. Guerrieri, Research Analyst

A familiar sight in communities across the country is that of a large educational facility with huge sports fields located far from town or center city, serviced by a fleet of buses or chauffeuring parents hauling school kids over miles of roads. The small neighborhood school that children could walk to is disappearing and is being replaced by mega-school sprawl.

A report by the U.S. Environmental Protection Agency (EPA) examines the relationship between school locations, the built environment around schools, how students get to school, and the impact on air emissions of those travel choices. The EPA report, "*Travel and Environmental Implications of School Siting*", provides information about the effect of school location on student transportation and shows that school siting and design can affect choices of walking, biking or driving. In turn, these travel choices can affect traffic congestion, air pollution, and school transportation budgets.

Since World War II, the number of U.S. schools has declined by more than 70 percent, while average school size has increased five-fold

The trend toward construction of big schools on large, remote sites is sometimes dictated by state and local regulations. School siting standards often require very large parcels of land for schools, which forces many districts to build at the edge of communities, rendering them inaccessible by foot or bicycle. These regulations often overlook the value of renovating existing schools or creating smaller, neighborhood based schools.

Since World War II, the number of schools in the United States has declined dramatically – over 70 percent - while the average school size has increased five-fold. These larger schools, often built in suburban areas, are too often sited without consideration of traffic congestion and air quality issues associated with emissions from cars and buses.

A recent National Household Travel Survey cited in the report states that less than 15 percent of students

between the ages of five and 15 walked between home and school in 2001, and only one percent biked the distance. That is down from 48 percent of students who walked or biked in 1969.

The drop means students make far more daily car and bus trips, often of very short distance. The traffic generated by auto travel to school exacerbates traffic congestion and contributes to the health impacts of auto emissions. For example, morning traffic in Santa Rosa, California during the school year jumps 30 percent over summer levels.

The EPA report suggests that schools built in neighborhoods with ample sidewalks and other pedestrian friendly infrastructure have on average a 13 percent increase in walking and biking and up to a 15 percent reduction in harmful air emissions.

A number of states and localities are taking steps to encourage neighborhood schools. South Carolina recently passed a law eliminating state mandated acreage requirements and allowing waivers for school building square footage, which make it easier for existing buildings to be renovated. In Milwaukee, Wisconsin officials opted to expand 19 existing schools and renovate 15 others, building only six entirely new schools. While adding 750,000 square feet of academic space, all schools remain in walkable neighborhoods.

The study also finds:

- School proximity matters. Students that are closer are more likely to walk or bike.
- The built environment influences travel choices. Students traveling through pedestrian friendly environments are more likely to walk or bike.
- Because of travel behavior differences, school location has an impact on air emissions. Centrally located schools that can be reached by walking and bicycling result in reduced air emissions from driving.
- Schools located closer to their students help improve public health by helping children stay active, and by reducing traffic and automobile emissions.

To request a written copy of the report, call the EPA's National Service Center for Environmental Publications at (513)-891-6561 and ask for publication number EPA 231-R-03-004. To access the report online: www.epa.gov/smartgrowth/pdf/school_travel.pdf.

Constructing Local Resilience to Global Climate Change

—Jason H. Gross, Research Analyst

The World Wildlife Foundation (WWF) recently released a report entitled *“Buying Time: A User’s Manual for Building Resistance and Resilience to Climate Change in Natural Systems.”* The report serves as a manual that combines assessments and potential initial adaptation strategies to set guidelines for implementation by natural area managers who wish to incorporate greater adaptability and climate change resistance into their natural areas.

According to the report, an increasing amount of scientific literature is raising awareness among conservation managers that local ecosystems are being affected by global climate change. The report attempts to give protected area managers ideas on how to respond to growing threats like invasive species, environmental contaminants, altered hydrology and habitat fragmentation.

The report states that global climate change is seemingly difficult to understand and plan for, but that planning is essential to future conservation efforts. New strategies, such as deep cuts in the production of gases that cause climate change (i.e., cutting carbon dioxide from the burning of fossil fuels), can buy some time for ecosystems to adapt to the changing environment. An example of the drastic local effects of climate change can be seen in the Monteverde Cloud Forest in Costa Rica. There, due to increasing ocean temperatures, the lifting cloud base has caused the disappearance of 20 species of frogs. If steps are not taken, many important ecosystems will not be able to adapt on their own in time to permit survival of important species, the report states.

The manual outlines the features of each biome, what threats affect that biome and the likely effects of climate change on the biome, and finally suggests strategies that might be implemented to increase resiliency in the biome.

Many of the individual chapters on the biomes center around three broad categories of resilience building measures:

- ✓ Ecosystems must be adequately protected and spaced to increase resiliency of that ecosystem to climate change.
- ✓ Ecosystems with high biodiversity and that maintain crucial structural components recover more easily from climatic disturbances.
- ✓ Traditional conservation methods such as creating protected areas will create more resilience to climate change over the following decades.

Increasing resiliency of natural systems is a standard goal of conservation. According to the report, intact ecosystems have more resources for withstanding stress than systems that have been compromised in part or in whole. Natural systems are already affected by an array of stresses including fragmentation, pollution, and invasive species.

The manual states that planners should look for climate refuge areas that experience less climate change than other areas so the effects of climate change on the biosphere are reduced. Planning reserves now will require an examination of potentially dramatic future changes to protected areas. Not only must current ecological considerations be examined, but also future configurations of habitats, communities, and ecosystems. Managers must be strategic, creative, and flexible in designing protection strategies to address traditional land uses, existing threats, and climate change stresses. Not only must space be protected, but functional groups, key species, climatic refuges, and microhabitats must also be accounted for to correctly protect any one ecological area.

Planning is essential to future conservation efforts...as is ongoing monitoring of management strategies

According to the manual, using active adaptive management of natural areas increases the ability to manage them around climate changes. The successes of various conservation approaches should be continually monitored and assessed so that they can be adapted to maintain effectiveness. In instances where impacts are clear, active intervention to increase the resiliency of the natural system is required. Intervention may include assisted migration, reintroduction of species, non-chemical control of pests, managing disease outbreaks, prescribed burning, controlling invasive species, and decreasing nutrient runoff into water ecosystems. Regardless of the management strategy, on-going monitoring is essential.

The manual states all non-climate stresses must be limited in order to increase resiliency in the natural systems, and goes on to say that research shows that there are interactions between climate and non-climate stresses. For example, as trout are exposed to pesticides over a range of temperatures, toxicity increases as temperature increases. Many stressors are more locally controllable than climate systems. In marine systems this may mean no fishing zones to reduce the pressure of fishing on habitat. In freshwater systems this may mean limiting the concentration of toxic substances or reducing highway runoff, which increases water temperatures.

For further information please go to http://www.panda.org/downloads/climate_change/Oforewordoverview_8kop.pdf for the overview. For the full report by each chapter please visit http://www.panda.org/news_facts/publications/search.cfm?uNC=25782484.

ON THE HORIZON . . .

A LOOK AT UPCOMING EVENTS

✓ **Tuesday, February 17, 12 noon, Hearing Room 1, Ground Floor, North Office Building, Capitol complex, Harrisburg, PA - Environmental Issues Forum.** Department of Conservation and Natural Resources (DCNR) Secretary Michael DiBerardinis will be the guest speaker. Details of his presentation to follow.

✓ **Thursday, April 8, 10 a.m., Conference Room 104, Penn Stater Conference Center, State College, PA - Legislative Forestry Task Force Meeting.**

Environmental Issues Forums are open to the public. Please call the committee office at (717) 787-7570 if you would like to attend. Also, check out the committee website at <http://jcc.legis.state.pa.us> for upcoming forums as they are scheduled.

COMMITTEE CHRONICLES . . .

REVIEW OF SOME MEMORABLE COMMITTEE EVENTS

As described in *The Chairman's Corner* on page one, the committee's November Environmental Issues forum focused on development of a statewide Recreation Plan for the Commonwealth, and two surveys conducted for the plan.

Pictured here are some scenes from the forum.

Franklin and Marshall's Berwood Yost provides details on the recreational participation survey.



Joint Conservation Committee chairman Rep. Scott Hutchinson (far left) welcomes the forum's guest speakers and organizers. From left to right: Dr. Bruce Lord of Penn State's School of Forest Resources; Vanyla Tierney, chief of DCNR's Bureau of Recreation and Conservation Planning and Technical Assistance Section; Berwood Yost, director of the Floyd Institute Center for Opinion Research at Franklin and Marshall College; Carolyn Hanel, president of the Pennsylvania Recreation and Parks Society (PRPS); Richard Sprenkle, DCNR deputy secretary for Conservation and Engineering Services; and William Forrey, PRPS board member and chair of its Governmental Affairs Committee.



Dr. Bruce Lord of Penn State describes the findings of the recreational needs survey conducted by the university's School of Forest Resources.

Following up on the need for parks, public parks and greenways were important to Pennsylvanians. Sixty-two percent stated they benefit from public parks in Pennsylvania. By more than three to one, respondents favored greenways connecting neighborhoods and other community elements, and felt even more strongly that greenways should connect municipalities and regional parks.

The survey also found that the typical Pennsylvanian engaged in either light or heavy physical activity 6.4 times a week for a total of 3.3 hours. Of those who reported barriers to engaging in recreational activities, half said that a lack of time was the culprit. Twenty-five percent reported a lack of information as a barrier. For lower income households it was a lack of money, and for the elderly it was health problems. The survey also showed that as income increased, so did participation in outdoor recreation.

Local municipal recreational facilities are important. Forty-one percent said they used such facilities when engaging in recreation. Private facilities were preferred by 29 percent and a healthy 23 percent utilized state facilities. Most – a 3 to 1 margin – were satisfied with county and municipal recreation areas and the satisfaction level was even higher for state and federal facilities.

When asked what kinds of recreational opportunities should be increased, there was an interesting mix of old and new. Leading the way was the time-honored activity of sledding (59 percent), with ice skating close behind (54 percent). Also garnering significant totals were indoor pools (52 percent) and the relatively new skateboarding and rollerblading (51 percent).

The statewide recreation plan seeks to answer the question “What is our vision for the future?”

Sledding by the way, was judged to be the least expensive activity over a 12 month period, with respondents estimating expenditures of approximately \$62 (\$12 on equipment and \$50 on non-equipment). Pennsylvania residents indicated a willingness to spend money on outdoor activities, up to an estimated \$3,425 for hunting/sport shooting (the most expensive activity), \$2,900 on off-road motor sports and nearly \$2,800 on horseback riding.

Favorite free-time activities were:

- individual sports (24.8 percent) with walking leading the list of such activities;
- outdoor activities (22.5 percent) with fishing leading the way;
- trail, road or street activities (14.5 percent) led by bicycling/mountain biking;
- team sports (7.0 percent) with basketball most popular; and
- viewing and learning activities (2.3 percent) topped by visiting natural/wilderness areas.

In response to what should be improved, there was a fairly even split again among playgrounds (19 percent) and lake and stream swimming, bicycle paths and heritage parks and historical sites – each at 17 percent. The committee, of course, conducted its own survey in 2001 concerning the state’s Heritage Park system, and found that additional funding to create a higher level of awareness about the program and its sites and to carry out additional improvement projects was sorely needed. Copies of that survey are available by calling the committee office at 717-787-7570.

Pennsylvania is blessed with a diversity of land, communities and resources that enable a wide variety of recreational opportunities. We look forward to the final recreation plan to help us maximize these opportunities for the future.



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