

ENVIRONMENTAL SYNOPSIS

The Chairman's Corner

Rep. Scott E. Hutchinson, Chairman



Let me begin by wishing all of our readers a Happy New Year! I hope that the holiday season was a safe and joyous one for all.

I'd like to start the new year by reviewing some recent work done by the Joint Legislative Conservation Committee (Committee). More specifically, my topic will be the issuance of the Committee's most recent Forestry Task Force report. The report was completed and disseminated in December 2007 and is available on the Committee's website or by calling the Committee office.

For those of you who may not know, the Forestry Task Force and its Advisory Board are among the oldest traditions of the Committee. The first task force was formed pursuant to House Resolution 13 of 1999 and issued its report in 2001. In each legislative session since then, a resolution has been passed re-establishing the task force and designating the topics that the task force will take up in that session. Topics are selected with the input and advice of the advisory board, a 17-18 member body made up of the State Forester in the Department of Conservation and Natural Resources' (DCNR) Bureau of Forestry, other state agencies that deal with forestry issues, professional foresters, educators, members of the forest products industry and representatives of forestry related organizations. The Forestry Task Force itself is made up of 4 legislators – two from the House and two from the Senate. As chair of the Committee, I also sit with the task force, and it is staffed by the Committee's staff members. The goal of the task force is to offer advice and guidance to the Pennsylvania General Assembly on the management of Pennsylvania's forests.

The most recent report was issued pursuant to Senate Resolution 137 of 2005 and took up five specific topics for study. While the topics were diverse, they had a common theme. That theme is the long-term future of Pennsylvania's forests. The task force asked some pertinent questions, such as, what will our forests look like in the next 150 years? Can the forests withstand threats, both natural and manmade, that they are facing today? What impact will there be from private ownership and public ownership and how much of each should there be? These are just some of the questions the task force sought answers to and will continue to study in future years.

The five issues established as areas of study under Senate Resolution 137 were:

- the growing threat of forest pests and diseases;
- the impact of municipal ordinances on accessing private forests;
- review of the United States Forest Service's (USFS) survey of private forestland owners in Pennsylvania;
- prescribed burning as a forest regeneration management tool; and
- the impact of government's increasing acquisition of private forest land.

The task force conducted four meetings and heard from a wide variety of organizations and individuals with expertise in the above areas.

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NOTES FROM THE DIRECTOR

CRAIG D. BROOKS, EXECUTIVE DIRECTOR

Crude oil prices have been hovering around \$100 a barrel but actually reached this milestone for the first time in early 2008 amid an unshakeable view that global demand for oil and petroleum products will outstrip supplies. While prices at the gas pump reflect the increases, it seems fuel economy is once again becoming a priority.

Each year, the Environmental Protection Agency and the U.S. Department of Energy produce the Fuel Economy Guide to help car buyers choose the most fuel efficient vehicles that meet their needs. Beginning with 2008 models, EPA has revised its methods for estimating miles per gallon (mpg) to better represent current real world driving conditions. The new system takes into account actual driving conditions that can lower fuel economy, such as higher-speed driving, air conditioner use and cold weather operation. With the new method, fuel economy estimates are generally lower for all vehicles than they were in 2006.

As most of you know, each vehicle has two fuel economy estimates:

- A city estimate that represents urban driving in which a vehicle is started in the morning and driven in stop-and-go traffic.
- A highway estimate that represents a mixture of rural and interstate highway driving in a warmed-up vehicle, typical of longer trips in free-flowing traffic.

The estimates are based on the assumption that you travel 15,000 miles per year (55 percent city and 45 percent highway) and that fuel costs \$3.10 per gallon for regular and \$3.32 for premium gasoline.

So why consider fuel economy? Surprisingly, it could save you as much as \$1,500 a year by choosing the most fuel efficient vehicle in a particular class. For example, the Toyota Prius gasoline-electric hybrid car

led all other cars for the second year in a row in fuel economy ratings. Rated at 48 mpg in the city and 45 mpg on the highway, the Prius edged out the Honda Civic hybrid, which was rated at 40 mpg in the city and 45 mpg on the highway.

Other fuel economy leaders in 2007 include the Nissan Altima hybrid (35 mpg city/33mpg highway), Mazda Tribute hybrid (34mpg city/30 mpg highway), Mercury Mariner hybrid (34 mpg city/30 mpg highway), Toyota Camry hybrid (33 mpg city/34 mpg highway), and the Ford Escape hybrid (34 mpg city/30 mpg highway).

The least fuel efficient car rated by the EPA is the Lamborghini, a two-seater sports car that gets 8 miles per gallon in the city and 13 miles per gallon on the highway. Other fuel-inefficient cars are also in the sports car classification.

If you purchase a qualifying hybrid or dedicated alternative fuel vehicle (AFV) in 2007-08, you

may be eligible for a federal income tax credit up to \$3,400 for hybrids and \$4,000 for an AFV such as a compressed natural gas vehicle. The credit amount varies depending on the vehicle purchased. The hybrid credit is expected to be phased out as sales growth continues.

By choosing a vehicle that achieves 25 miles per gallon rather than 20 miles per gallon, you can prevent the release of about 17 tons (260,000 cubic feet) of greenhouse gases over the lifetime of your vehicle. Vehicles with lower fuel economy burn more fuel, therefore creating more carbon dioxide. An average vehicle creates about 20 pounds of carbon dioxide (170 cubic feet) per gallon of gasoline it consumes.

The 2008 Fuel Economy Guide is available at: <http://www.fueleconomy.gov/feg?FEG2000.htm>.

Choosing the most fuel efficient vehicle in a particular class could save you a significant amount of money as well as reduce the release of greenhouse gases

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.

More Cities Offer Incentives to Build "Green"

– Tony M. Guerrieri, Research Analyst

Since 2003, the number of cities with green building programs has risen from 22 to 92, an increase of 418 percent. This is one of the key findings of a report by the American Institute of Architects (AIA) entitled *"Local Leaders in Sustainability: A Study of Green Building Programs in Our Nation's Communities"*. The report examines communities with populations of greater than 50,000 in order to spotlight the growth and effectiveness of green building policies as of 2007. The report presents results from a study of 661 communities' best practices, strategies and trends, and finds that American cities are going green at a rapidly increasing pace, and local leaders are charging ahead with innovative sustainability policies for the built environment. The report goes on to provide recommendations for cities that are looking to implement green building programs. The primary goal of the report is to provide a tool for communities and governments that want to design green building programs.

Over 42 million Americans now live in cities with green building programs. The vast majority are on the West Coast, and California leads the country with 35. Texas is ranked second, with seven such programs. Pennsylvania has only one city with a green building program: Philadelphia. Because buildings are the major consumers of energy in the U.S., these programs are aimed at constructing structures that are more energy efficient, conserve water, and use less toxic materials.

Some examples of the programs include:

-- Portland, Oregon offers income tax credits for green buildings and for energy conservation, recycling, renewable energy and cleaner fuels projects. The Oregon Department of Energy has awarded 13,000 tax credits of 35 percent of eligible project costs.

-- San Francisco established the Generation Solar program to streamline the process for solar permitting in residential applications. The program provides assistance with design and installation and has resulted in nearly 600 solar installations city wide.

-- Scottsdale, Arizona became the first U.S. city

to mandate Leadership in Energy and Environmental Design (LEED) Gold compliance in all municipal buildings. In 2005 one-third of all new single-family permits adhered to green building standards with 1,123 green single-family and 20 multi-family homes having been completed as of 2007.

-- Chicago has more LEED registered projects than any other U.S. city. Their Green Roof Program offers \$5,000 grants to help with the planning and installation of green roofs, and as of 2006 there were over 250 public and private green projects in place, being designed or under construction, amounting to approximately three million square feet.

-- Austin, Texas established the first green building program in the country. A climate protection plan will have city buildings running on 100 percent renewable energy by 2012 and completely carbon neutral by 2020.

-- Atlanta had the most LEED buildings per capita in the country in 2006. Their EarthCraft Communities program is a community guideline that emphasizes walkability, environmental site plan development, and an overall integrated planning approach.

According to the report, 36 cities are developing "advanced" green building programs that also promote other aspects of sustainable community development. Current efforts of note are in the Washington, D.C. - Boston corridor and California. These cities are going beyond standard concepts of green design by incorporating green requirements into all or nearly all buildings.

The AIA predicts that more than 130 of the 661 cities examined will have a green building program in place by the end of 2008.

Among the report's recommendations to communities developing green building programs are suggestions to include all professionals in the design and construction industry working in a collaborative manner. Also, investigating far-reaching sustainability initiatives including green purchasing programs, hybrid fleets and streamlining the solar permitting process is desirable.

The AIA report, *"Local Leaders in Sustainability: A Study of Green Building Programs in Our Nation's Communities"*, is available at: [http://www.aia.org/SiteObjects/files/LLinSustain\(full\)_final.pdf](http://www.aia.org/SiteObjects/files/LLinSustain(full)_final.pdf).

Advancements in Nuclear and Renewable Energy Would Nearly Halve Emissions by 2030

– Craig D. Brooks, Executive Director

Development of advanced nuclear reactors, clean coal power and other technologies could allow the United States to meet increasing power demands while cutting the electricity sector's carbon dioxide emissions 45 percent by 2030, according to a recent report.

The report, *"The Power to Reduce CO2 Emissions – The Full Portfolio"*, suggests that a 45 percent target for cutting such emissions is aggressive but attainable if technology advances are accompanied by reduced demand for electricity over the next several decades. Demand for electricity, which the U.S. Energy Information Administration (EIA) predicts will grow 1.5 percent each year through 2030, could be held to a growth rate of 1.1 percent annually, largely through improved efficiency efforts.

According to the report, the aggressive implementation of advanced technologies provides a significant shift in the electricity generation mix compared to projections of the past. In this mix, coal still remains a critical part of the U.S. electricity supply, albeit with CO2 capture. Meanwhile, nuclear energy and renewable energy sources expand their share, and natural gas-fired generation declines.

It would take a significant shift in the electricity generation mix, but a 45 percent reduction in CO2 emissions is possible by 2030, report states

The technology advancements envisioned in the report include a total of 70 gigawatts of renewable power by 2030, compared with the 30 gigawatts of new renewable power previously predicted. Additional energy from nuclear power generators would have to be increased nearly fivefold, to approximately 64 gigawatts. According to the report, nuclear power's contribution to CO2 emissions reductions hinges on the continued safe and economic performance of the current nuclear fleet, which currently accounts for 73 percent of the emissions-free generation in the United States.

Nuclear power is currently the only technologically mature, non-emitting generation technology that is proven and already deployed on a large scale. Many of the existing or cancelled nuclear sites were originally

licensed to accommodate multiple nuclear units, so a substantial siting resource already exists for fleet expansion.

Coal currently accounts for more than half of the electricity generated in the United States and is projected by most analyses to remain the backbone of the U.S. electricity supply through 2050 and beyond. Advancements in coal-fired power plants, including more efficient plants and deployment systems for capturing and storing carbon dioxide emissions, would also have to be developed. The report suggests that carbon capture and storage systems would have to be widely deployed after 2020 to significantly cut emissions at coal powered plants.

Based on the presence of renewable portfolio standards (RPS) in nearly half of the states, the report predicts that the capacity additions by existing RPS would be realized. This capacity was predicted to be about 50 gigawatts (excluding hydroelectric power) by 2020, a date which encompasses just about all of the existing RPS.

EIA has projected that U.S. energy-related emissions of carbon dioxide, the most prevalent global greenhouse gas, will increase from 5,945 million metric tons in 2005 to 7,950 million metric tons in 2030. The projections assumed a continued reliance on coal to meet increasing energy demands over the coming decades and suggested overall U.S. energy demands will continue to be met largely by fossil fuels in the coming decades, absent significant regulatory changes.

The report, *"The Power to Reduce CO2 Emissions – The Full Portfolio"*, is available at <http://www.epri.com>.



Electricity from Space Based Solar Power Satellites

– Tony M. Guerrieri, Research Analyst

Imagine placing satellites in space to collect sunlight, convert it to electricity, and beam the energy to Earth using microwaves to a very large antenna where it is converted back into electricity. In theory, a space-based solar power (SBSP) satellite could provide an essentially inexhaustible supply of clean energy.

It may sound like science fiction but a report by the Pentagon's National Security Space Office (NSSO) suggests that the idea is not only technologically feasible but would require no fundamental scientific breakthroughs or new physics to become a reality. The NSSO report, "*Space-Based Solar Power As an Opportunity for Strategic Security*", recommends that the government spend \$10 billion over the next ten years to build a SBSP satellite capable of beaming 10 megawatts of electric energy down to Earth.

Sunlight's energy in space, where it is not diluted by the atmosphere, is enormous. The report estimates a single kilometer-wide band around the Earth receives enough solar energy in one year to rival the energy locked in the world's oil reserves today. This far exceeds the projected annual demand in mid-century.

Unlike solar collectors based on the ground, the advantage of placing SBSP satellites in space is the unobstructed view of the Sun, unaffected by the day/night cycle, weather or seasons.

Imagine your favorite outer space science fiction movie come to life, involving spacecraft, antennas and microwave beams

The report explains that there are several ways the SBSP system could work. The solar collectors could be placed in one of three Earth orbits (geostationary, medium-Earth, or low-Earth) or could even be placed on the moon. These collectors could capture solar energy either by photovoltaic or solar dynamic methods. Finally, the microwaves would be directed down to an Earth-based receiver antenna (or rectenna) as a beam of radiation about one-sixth as intense as the noon-day sun.

Microwave leakage at the edge of the rectenna would be no more than that of a microwave oven. The receiving stations would convert the radiation back into electricity for distribution via conventional grids.

In the vicinity of Earth, every square meter of space receives 1,366 kilowatts of solar radiation, but by the time it reaches the ground, it has been reduced by atmospheric adsorption and scattering to less than an average of 250 watts per square meter. Space-based solar power offers a way to provide continuous and predictable power to any location on Earth. The goal, according to the report, is to provide 10 percent of the United States' base-load power supply by 2050.

One of the biggest challenges for the SBSP concept is the currently immense cost of space launches. A SBSP satellite would have a mass of about 3,000 tons – more than ten times that of the international space station. Such a feat, according to the report, would require the development of lower-cost space launches. Today the United States initiates fewer than 15 launches per year. Construction of a single SBSP satellite alone would require in excess of 120 such launches.

The report concludes SBSP has the potential to help stave off climate change and avoid future conflicts over oil

Over the past three decades, the National Aeronautics and Space Administration and the Department of Energy have collectively spent \$80 million in sporadic efforts studying the concept of SBSP. (By comparison, the report notes that the U.S. government has spent approximately \$21 billion over the last 50 years continuously pursuing nuclear fusion).

The report also addressed the impact on Earth of beaming that energy down. The report explains that microwave receiving rectennas allow more than 90 percent of ambient light to pass through their thin wire frame, but absorb almost all of the beamed energy. This means that the method generates less waste heat than terrestrial solar systems because of greater coupling efficiency, and also that the area underneath the rectenna can continue to be used for agricultural or pastoral purposes.

The report concludes that SBSP has the potential to help the United States stave off climate change and avoid future conflicts over oil by harnessing the Sun's energy.

The 75-page NSSO report, "*Space-Based Solar Power As an Opportunity for Strategic Security*", is available at: <http://www.nss.org/settlement/ssp/library/final-sbsp-interim-assessment-release-01.pdf>.

Report Backs Public's Right-to-Know About Overflows From Sewers

– Craig D. Brooks, Executive Director

Public notification must be the first line of defense to protect people from sewer system breakdowns, but not all states notify the public when raw sewage spills into lakes, rivers and streams, according to a recent report. Currently federal notification or right-to-know requirements for sewage spills are weak and state requirements, where they exist, are highly variable.

The report, *“What’s in Your Water? The State of Public Notification in 11 States”*, provides an overview of federal public notification requirements and assesses regulation in 11 states to provide a snapshot of sewage right-to-know requirements.

The report found that most states fall between two extremes: states that have successfully implemented public notification guidelines such as Maryland, and states where there is no concept of public notification such as Virginia. According to the report, in many states the effectiveness of public notification is greatly reduced because of poor implementation and lack of enforcement actions against treatment plants that fail to report spills. The report estimates that 850 billion gallons of raw sewage from combined sewer systems and between 23,000 and 75,000 sanitary sewers overflow into U.S. waterways every year.

An estimated 850 billion gallons of raw sewage overflow into U.S. waterways every year

According to the report, sanitary sewer and combined sewer operators do not have direct public notification requirements for sewage overflows in their National Pollutant Discharge Elimination System permits. The report supports the premise that community awareness not only increases public health protection but also motivates utilities to invest in maintaining infrastructure upstream of rivers, lakes and beaches.

Over the past several years, the EPA has provided guidance to its regions and state regulators to improve recordkeeping, reporting and public notification. A national agreement that was signed by EPA and the utilities to implement asset management may lead to greater sustainability and environmental protection by reducing leaks, spills and overflows.

Although the report suggests that a federal notification law is needed, each state must ultimately craft its own program of guidelines and regulations. According to the report, such a program should include:

- improved monitoring of sewage systems for spills;
- public notification in a timely manner to the broadest audience;
- notifications to downstream drinking water intakes and recreation areas;
- reporting to state environmental agencies no later than 12 hours after a spill occurs;
- involvement of public health officials and agencies in assessing public health threats;
- cumulative annual reports and audits by the states; and
- consistent enforcement.

The report, *“What’s in Your Water? The State of Public Notification in 11 States”*, is available at <http://www.americanrivers.org/righttoknowreport>.

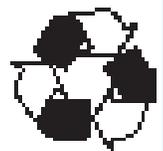


News to Use in the Environmental Synopsis... share it with a friend

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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ON THE HORIZON...

A LOOK AT UPCOMING EVENTS

✓ Thursday, February 21, 9 a.m. – Electronics Recycling System Simulation, Penn Stater Conference Center, State College PA

COMMITTEE CHRONICLES...

REVIEW OF SOME MEMORABLE COMMITTEE EVENTS

The issue of electronic waste recycling is one that has been occupying the attention of the Joint Legislative Conservation Committee (Committee) recently.

In October, the Committee held a public hearing into that issue to learn more about how other states are handling e-waste recycling, in order to formulate a legislative direction for Pennsylvania.

At right, Committee Chairman Rep. Scott Hutchinson asks a question of one of the eight witnesses at the hearing.

At bottom, committee members and staff listen to testimony. They are (l. to r.) Committee Executive Director Craig Brooks, Rep. Hutchinson, Committee Vice-chair Sen. Ray Musto and Committee member Sen. Roger Madigan.

Among those testifying were (at left) Meggan Ehret, senior counsel for Thomson, Inc., a member of the Electronic Manufacturers Coalition for Responsible Recycling, and (at



right) Joseph Nardone, Environmental Health and Safety Director for Amandi Services, Inc., in the e-recycling business.

Also testifying were E-World Recyclers of California, the PA Department of Environmental Protection, the Consumer Electronics Association, the Council of State Governments, the PA Recycling Markets Center and PA Rep. Chris Ross, who is developing e-recycling legislation.



Among those to present information to the task force were the Allegheny National Forest, Natural Lands Trust, The Nature Conservancy, DCNR's Bureau of Forestry, the PA Forest Products Association, Penn State University's School of Forest Resources, the USDA Forest Service and Weaber, Inc.

A Bureau of Forestry survey of public and private forest lands in Pennsylvania found 32 insects and five pathogens (disease agents) in our state, with other new species (i.e. the Emerald Ash Borer) just making their way into the commonwealth. In 2005, 452,000 acres of forest were destroyed by pests and weather-related events. The task force recommended consistent and adequate federal and state funding for pest, disease and invasive species programs and staffing. In addition, there should be a state policy to deal with emergency situations related to invasive species incursions and an emergency funding source to allow rapid response and conduct outreach programs for incursion awareness and prevention. The task force also recommended research into forest recovery and restoration processes after an incursion.

The task force found a number of disparities in municipal ordinances governing forestry under the Municipalities Planning Code (MPC). It recommended better education by the Bureau of Forestry, PA Department of Agriculture, Penn State and stakeholders to help local governments put appropriate ordinances in place, as well as money and technical assistance to further cooperative efforts and planning knowledge. There should be changes to the MPC and Clean Streams Law to prohibit redundant municipal reviews, and reasonable limits on fees charged for plan reviews.

To access the Forestry Task Force report, visit the Committee's website at <http://jcc.legis.state.pa.us> and go to the "Reports" page. To obtain a copy, call the Committee office at 717-787-7570.

Did you know that about 70 percent of Pennsylvania's forested land – about 12 million acres - is privately owned? That's according to the USFS survey of private forest land owners. The survey also showed that private owners are generally well educated, the majority are between the ages of 55 and 74 and 49 percent are retirees. The high percentage of older land owners has serious implications for the future as lands are transferred. The survey also found that very few private land owners actively manage their land with the primary goal of timber production, and almost 70 percent of owners have no future plans for their holdings. It is of concern that private forest holdings are becoming increasingly fragmented (physically isolated) and parcelized (smaller parcels with more owners). The task force recommended increased education about forest management and sustainability, and tracking and analysis of real estate conversion trends.

Prescribed burning can be a safe and effective tool for forest management. The task force reviewed the practice, and legislation is being developed to regulate prescribed burning practices and limit liability if procedures established by the Bureau of Forestry are followed. The task force also supports development of a PA Prescribed Fire Council to develop standards and protocols and conduct outreach on the benefits of prescribed fire.

Finally, the task force reviewed public land acquisition policies and programs, such as the Bureau of Forestry's strategy entitled "Conserving Special Places", as well as funding available under Growing Greener II, DCNR's Keystone Recreation, Park and Conservation Fund and the PA Game Commission's land acquisition program. The task force also examined acquisition practices of conservation organizations. The task force recommended that future acquisitions target opportunities that meet a clearly identified purpose, recognizing that quality is just as important as quantity. Further recommendations are that future management and stewardship costs be a part of any acquisition strategy, and that the state's acquisition plan be periodically evaluated to be sure priorities are updated to address needs. One part of the criteria should be the potential economic return from industrial management and recreational uses.

The Forestry Task Force will continue its studies because new challenges to forestry's future constantly continue to arise. New issues will come forth, previous recommendations will need to be tracked and perhaps revised, and new evaluations done as conditions change. Forests are living things and constantly changing, but one thing that does not change is their

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