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Environmental Synopsis

The Chairman's Corner

Rep. Scott E. Hutchinson, Chairman

Want to have a little fun while learning more about trees, the value of your property and how you can increase its value? Read on.

The Joint Legislative Air and Water Pollution Control and Conservation Committee's involvement in promoting the virtues and benefits of sustainable forestry is well-known. Just recently, I came across an article that deals with trees in a different way. The article speaks to what could be called "landscape trees", or the trees you might find – or have planted - around your home or property to landscape your homestead. While not a commercial stand of forest, those trees have a set of intrinsic values as well, often providing value in ways you may not have realized.

I think we all know that trees can help lower a home's heating and cooling costs, help reduce air pollution and control storm water runoff, provide an effective habitat for birds and animals and are aesthetically pleasing. We may also have a general idea that having healthy, mature trees in our home's and neighborhood's landscapes may help increase property values.

To make use of the National Tree Benefits Calculator (details on p. 8), go to the website www.treebenefits.com/calculator and follow the simple instructions

We may not be as knowledgeable about studies that claim that trees perform societal tasks as well. For example, there are studies that have come to the conclusions that having trees in the landscape improves job performance and satisfaction, speeds hospital patient healing, reduces crime, and improves child development.

What we may not know is how to calculate a tree's value. What kinds of trees have the most impact on property value? Do size and where they are planted make a difference? What impact does the type of structure near the trees have on maximizing value? These would be good things to know if you are doing landscape planting or seeking to improve your property's value.

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In This Issue...

Joint Legislative Air and Water Pollution Control and Conservation Committee

Notes from the Director

CRAIG D. BROOKS, EXECUTIVE DIRECTOR

A recent energy forecast released by the oil industry suggests that electric generating facilities will increasingly depend on natural gas instead of coal over the next decade. However, oil and petroleum products will still dominate the transportation industry.

The annual forecast, *"The Outlook for Energy: A View to 2040"*, attributes the switch to natural gas to skyrocketing demands from developing countries, a preference for natural gas as a low-carbon fuel, significant gains in energy efficiency and a major expansion in hybrid vehicles – but not for plug-in electric vehicles.

Among the report's predictions: Natural gas will overtake coal as the world's second largest fuel source, and the global energy demand will continue to rise

The report predicts oil, natural gas and coal will continue to be the most widely used fuels, making up 80 percent of the total global energy consumption by 2040. However, natural gas will overtake coal as the second largest fuel source, largely because of the preference for natural gas over coal in electricity in order to meet stricter environmental standards.

The report predicts that global energy demand will rise 30 percent by 2040, as standards of living in developing countries rise and the world's population grows by two billion - or 25 percent - to nearly nine billion people.

The single biggest driver in the global energy demand will be the need for electricity, which is essential to economic growth. By 2040, electric generation will account for 41 percent of global energy consumption, far more than any other end-use sector.

According to the forecast, even though hybrid vehicles will move from the margin of transportation choices to the mainstream, the global transportation sector will still be 90 percent dependent on petroleum-based fuels in 2040, a decrease of only five percent from today's numbers.

The influx of hybrids in combination with greater fuel economy will result in flattening of fuel demand for personal transportation, even as the number of personal vehicles doubles to 1.6 billion vehicles. By 2040, according to the forecast, hybrid vehicles will make up 50 percent of all light-duty vehicles on the road, compared to one percent today.

By way of contrast, the demand for fuel for commercial transportation – trucks, airplanes, trains and ships – will continue to rise sharply, by 70 percent, driven by the strong economic growth and trade in developing nations.

By 2030, the forecast predicts that the world will use more fuel for trucks and other heavy-duty vehicles than for all light-duty and personal vehicles combined. This will lead to a shift in demand to diesel, which will rise by 85 percent through 2040, and a drop in demand for gasoline by about 10 percent.

The forecast predicts only modest growth in the renewable sector, including hydro, from three percent of the global demand today to approximately seven percent by 2040.

Nuclear power is projected to grow from five percent to eight percent of the total worldwide energy supply. Biomass/waste would remain at about eight percent.

The global energy forecast is available at: http://wwwexxonmobil.com/corporate/files/news_pub_eo2012.pdf.

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.

Please Note: The information and opinions expressed in the Research Brief articles do not necessarily represent the opinions or positions of the Joint Legislative Air and Water Pollution Control and Conservation Committee, nor those of the Pennsylvania General Assembly.

PA's Results Mixed in Measuring Performance of Transportation Dollars

- Tony M. Guerrieri, Research Analyst

As Pennsylvania struggles to find ways to finance its transportation needs, a report says the Keystone State shows "mixed results" when it comes to having the essential tools – goals, performance measures and data – to help policymakers prioritize transportation spending.

The report, *"Measuring Transportation Investments: The Road to Results"*, was issued by the Pew Center on the States and the Rockefeller Foundation, and it examines how each of the 50 states (and the District of Columbia) account for billions of dollars spent annually on transportation. What it found is that most states are not tracking how their investments are performing.

Over 800 performance, planning and budget documents were reviewed to see how the states were keeping track of what worked and what did not in areas considered vital to economic growth and quality of life. The report listed six key goals for state transportation policies and investments:

1) safety;
2) jobs and commerce;
3) mobility;
4) access;
5) environmental stewardship; and
6) infrastructure preservation.

The states were rated on one of three levels – "leading the way", having "mixed results" or "trailing behind" – for each of the six goals. Each state also was given an overall rating.

Every state and the District of Columbia scored well on safety information, mostly because the federal government requires collection of data on fatalities. But states fared dramatically worse in their collection of information on environmental stewardship and job creation.

Just 13 states – California, Connecticut, Florida, Georgia, Maryland, Minnesota, Missouri, Montana, Oregon, Texas, Utah, Virginia and Washington – were found to be "leading the way" by adopting goals and performance measures to help them prioritize and spend more wisely on transportation.

Pennsylvania was one of 19 states that were in the "mixed results" category when it came to keeping data needed to make the best transportation policy and funding decisions. According to the report, Pennsylvania, along with Colorado and Michigan, just missed earning the report's top distinction.

The other states in the "mixed results" category were Delaware, Idaho, Illinois, Iowa, Kansas, Maine, Massachusetts, New Jersey, New York, North Carolina, North Dakota, Ohio, Rhode Island, Vermont and Wisconsin, as well as the District of Columbia. All other states were "trailing behind."

Here is where Pennsylvania stands in the key goal areas:

-- Safety – The ability of the transportation system to allow people and goods to move freely without harm. PA "leads the way."

-- Jobs and Commerce – How well the transportation system facilitates or supports business development and employment. PA "leads the way."

-- Mobility – The efficient movement of people between destinations by automobile, pedestrian, bicycle and transit modes. PA "leads the way."

-- Access – The ability of the transportation system to connect people to desired goods, services, activities and destinations for both work and leisure, and to meet the transportation needs of different populations. PA "leads the way."

-- Environmental Stewardship – The effect of the transportation system on energy use and the natural environment. PA "trails behind."

-- Infrastructure Preservation – The condition of the transportation system's assets. PA "leads the way."

It should be noted that the report did not evaluate whether states actually achieved the goals of their projects. It only determined whether states had the essential tools in place to make those determinations.

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The report describes policies and practices policymakers can adopt to collect and use information that can improve the taxpayers' return on investment in states' transportation systems. Among them are:

- **Enact or improve performance legislation.** At both the federal and state levels, legislation can seek to mandate or incentivize states to go beyond simply collecting information and actually use it to make important transportation policy and funding choices. For instance, in some cases, budget requests are tied to submission of performance data.
- **Develop an appropriations process that makes better use of data.** States need to develop more comprehensive systems to ensure that policymakers are asking for and using solid information in their deliberations about transportation spending.
- **Increase the use of cost-benefit and other types of economic analyses in making transportation decisions.** Economic analysis can be valuable in assessing the cost effectiveness or economic impact of a proposed transportation project.

The report and state fact sheets are available at www.pewcenteronthestates.org/transportation.

U.S. Renewable Energy Supply to Drop in 2012, Report Says

-- Craig D. Brooks, Executive Director

The country's renewable energy supply is expected to decline 2.3 percent in 2012, according to a report released by the Energy Information Administration (EIA) in January 2012. The projected decline, which comes after an increase of 12 percent in 2011, is "led" by a 13 percent drop in hydropower that is expected to offset growth in other renewable energy supplies.

The EIA's *"Short-Term Energy Outlook"* made energy forecasts through 2013.

According to the report, renewable energy supply, which equaled 8.22 billion quadrillion British Thermal Units (quads) in 2011, is expected to decrease to 8.05 quads in 2012. The EIA projected an increase of 2.1 percent in renewable energy supply in 2013 to 8.23 quads.

In addition to the overall decline in renewable energy supply, growth for several renewables is expected to slow in certain cases, the report states. For example, biomass from wood and wood waste, which is second only to hydropower in terms of total energy supplied by renewable sources, is projected to slow in 2012 and 2013, but still increase, if only by 1.7 percent and 2.2 percent respectively. Biodiesel, which currently averages 56,000 barrels per day, is also projected to increase only slightly to 62,000 barrels per day in 2012 and 75,000 barrels per day in 2013.

The report also suggests that wind energy, which increased by 24 percent between 2010 and 2011, is projected to slow "relative to recent rates". The report did project wind energy growth of 9.4 percent in 2012 and 11.3 in 2013, however.

Solar energy supply is expected to grow by 6.7 percent in 2012 and 8.5 percent in 2013. About 80 percent of the near-term growth in solar energy from photovoltaics and solar thermal is from projects being developed in the Southwest, the report says. The total amount of solar energy supply is expected to total 0.13 quads in 2013.

Slower growth rates and a decline in hydropower are among the main factors in a predicted decline in the U. S. renewable energy supply

Ethanol fuel production is expected to increase from an average of 907,000 barrels per day in 2011 to 929,000 barrels per day in 2012 and 934,000 barrels per day in 2013.

The agency's projections come at a time when grants for renewable energy projects that could be taken in lieu of a tax credit expired at the end of 2011, and a production tax credit for wind projects would expire at the end of 2012. The extension of the production tax credit and reinstatement of the grant program, known as the 1603 Treasury Grant Program, have been called into question due to recent failings of renewable energy companies, but still remain among the highest priorities for the renewable energy industry. According to the report, the expiration and the failings will make the production investment and tax credit programs more competitive.

In addition, according to the report, an extension of the production tax credit would not likely have a major impact over the next several years. This is because the market for new generating capacity is at something of a saturation point, as energy demand, manufacturing and production services react to the recession.

The report predicts that as time goes on and demand starts to rebound, the tax credits will start to make a difference again. Eventually, says the report, they will support additional capacity and generation, but over the next five years or so "...the model is having difficulty seeing markets generating capacity of any sort."

This comes on the heels of a federal requirement by the Environmental Protection Agency (EPA) that will require that the total volume of fuel sold in the United States in 2012 contains 15.2 billion gallons of renewable fuels. The final rule established volume standards for biomass-based diesel, advanced biofuels and cellulosic biofuels for 2012.

EPA postponed finalizing biomass requirements for 2013 which had been included in the 2012 proposed rule.

For 2012, EPA will require one billion gallons of biomass-based diesel fuels, or 0.91 percent of all fuel consumed. EPA proposed requiring 1.28 billion gallons of biomass-based diesel for 2013, but postponed finalizing that portion of the rule. Additionally, the final rule requires two billion gallons of advanced biofuels, equal to 1.21 percent of all fuels.

For cellulosic biofuels, EPA is requiring 8.865 million gallons of fuel, well below the 500 million gallon requirement for 2012 established in the Energy Independence and Security Act of 2007.

In total, renewable fuels would represent 9.23 percent of all fuel used in the United States.

EPA required 13.95 billion gallons of biofuels in 2011. The final rule will be published in the Federal Register in July 2012.

The Energy Independence and Security Act requires EPA to issue volume standards for biomass-based diesel no less than 14 months before the start of the calendar year. EPA says it is still reviewing comments on the proposed volume requirement. The act requires a minimum of one billion gallons of renewable diesel fuel in 2013.

The EIA report is available at: http://www.eia.gov/environment/emissions/state/analysis/pdf/stateanalysis.pdf.

EPA's proposed rule is available at: http://www.epa.gov/otaq/fuels/renewablefuels/regulations.htm.

Massachusetts Wind Turbines: Is There a Health Hazard?

-- Tony M. Guerrieri, Research Analyst

Wind energy is an important segment of renewable energy development for the United States. As a key area of energy and economic development, wind energy has positive contributions to offer the local communities that host and are served by wind energy projects. However, some residents living near wind farms complain of symptoms like headaches, vertigo and nausea.

According to a report commissioned by Massachusetts public health and environmental agencies, an independent panel of experts found that there is little to no evidence that wind turbines pose a risk to the health of nearby homeowners.

In the report, *"Wind Turbine Health Impact Study"*, the state-appointed panel concluded that there is no conclusive evidence that exposure to wind turbines or their flickering light and vibrations produce dizziness, nausea, depression, or anxiety – a set of symptoms that have been referred to as "wind turbine syndrome."

However, the report acknowledged that it is possible – though not proven – that noise from some spinning wind turbines could cause annoyance and sleep disruption.

The seven-member panel was convened in June 2011 by the Massachusetts departments of Environmental Protection and Public Health in response to concerns raised by those opposed to locating large turbines near residential neighborhoods.

The panel's charge did not include investigating or addressing reported problems at any particular turbine installation, though the panel did receive extensive public comment, including from residents who live near wind turbines.

Instead, the panel was tasked with reviewing extensive existing information within their areas of expertise to determine the potential for health effects. Panel members looked at both peer-reviewed and non-peer-reviewed studies.

The Massachusetts report concluded there was little to no evidence that wind turbines pose a health risk to nearby homeowners

The report indicates that the available scientific literature on the health effects of wind power remains limited, and that the studies that have been done had shortcomings, including that people self-reported their symptoms and that researchers were unable to adequately control other possible factors that could have affected the health of people living near turbines.

The report found no evidence that low-frequency sound and vibration generated by turbines affects the inner ear and balance, or the vestibular system.

It also said the "weight of evidence" did not point to any links between turbines and such diseases as diabetes, high blood pressure and migraines.

The report noted that limited evidence showed that a "...very loud wind turbine could cause disrupted sleep, particularly in vulnerable populations, at a certain distance, while a very quiet wind turbine would not likely disrupt even the lightest of sleepers at the same distance."

Also, unlike many background sounds, wind turbine noise does not decrease predictably at night. This can disrupt the sleep of those living nearby.

The report added there is not enough evidence to provide particular sound-pressure thresholds at which wind turbines cause sleep disruption.

It also found no evidence that "shadow flicker" – the shadows cast by the passage of wind turbine blades in front of the sun – poses a risk for eliciting epileptic seizures. The panel admitted that there is limited scientific evidence of an association between annoyance from prolonged shadow flicker (exceeding 30 minutes per day) and potential transitory cognitive and physical health effects.

At least one area where the report finds a potential danger is if ice is flung into the air after accumulating on a turbine's blades. There is sufficient evidence that falling ice is physically harmful and measures should be taken to ensure that the public is not likely to encounter such ice, according to the report.

The panel urged more research on the impact of "very loud turbines", and recommended that Massachusetts adopt noise limits for wind turbines similar to guidelines in place in Germany and Denmark. The panel also suggested that the public be engaged through such strategies as education, incentives for community-owned wind developments, compensation to those experiencing loss of property values, comprehensive setback guidelines, and public information related to renewable energy.

As part of a 60-day comment period, three public meetings are slated for February in Massachusetts. Comments received will be considered prior to the report's use or adoption by any state agencies.

The panel was composed of physicians and scientists with broad expertise in areas including acoustical noise/infrasound, public health, sleep disturbance, mechanical engineering, epidemiology, and neuroscience. The 164 page report is available at: http://www.mass.gov/dep/energy/wind/turbine_impact_study.pdf.

Competitive Leasing Proposed for Public Land, Rights of Way for Power Lines

-- Craig D. Brooks, Executive Director

The United States Interior Department has granted approval for rights-of-way for electricity transmission lines on public lands for two separate renewable energy projects. The department approved projects in California and Oregon, the 26th and 27th renewable energy projects the department has advanced in the last two years.

According to the department, these projects underwent extensive environmental review that included habitat mitigation and requirements to minimize visual and audio impacts to the surrounding areas. The projects would generate 275 megawatts of solar energy and 104 megawatts of wind energy for the area and create jobs, strengthen local economies and provide reliable power.

The Interior Department said it is considering competitive bidding for public land leased to solar and wind energy developers to obtain market value for the land and to ensure a fairer selection process. The department's Bureau of Land Management (BLM) would designate solar and wind energy public development areas and have the authority to offer right-of-way leases through a nomination and competitive bid process instead of the application process currently used.

Under the Federal Land Policy and Management Act, the United States is required to receive fair market value for the use of the public lands and their resources. This competitive process would enhance the BLM's ability to capture fair market value for the use of the public lands and to ensure fair access to leasing opportunities for renewable energy development.

Among the Interior Department's considerations in having competitive bidding for public lands leased to solar and wind energy developers: obtaining fair market value and a fairer selection process

The nomination process would begin with a call for nominations to solicit interest within designated solar or wind energy areas, followed by a review of those nominations that would include a National Environmental Policy Act review.

Following those reviews, BLM would publish a notice of competitive offer that would require the successful bidder to submit a plan for development before moving forward with sealed bids, oral auctions and ascending bids. A right-of-way lease would then be offered to the successful bidder. This process would only apply to lands within the designated solar and wind areas.

Currently, the Interior Department has proposed 17 swaths of land in the Western states as solar energy zones and wind energy development areas. BLM is soliciting public comment and suggestions that will be used in preparing the proposed rule within 60 days of the publication in the Federal Register.

The department's notice of proposed rulemaking is available at: http://op.bna.com/env.nsf/r?Open=smiy-8pyqq4.

Fact sheets for the right-of way projects are available at: http://www.doi.gov/news/pressreleases/loader.cfm?csModule=security/getfile&pageid=273505.

On the Horizon . . .

A LOOK AT UPCOMING EVENTS

✓ **Monday, March 26, 2012, 12 noon, Room G-50, K. Leroy Irvis Building, Capitol complex, Harrisburg, PA – Environmental Issues Forum.**
The March 2012 forum will feature a presentation by PA Department of Conservation and Natural Resources (DCNR) Secretary Richard J. Allan on DCNR's operation and programs.

Please e-mail Geoff MacLaughlin in the committee office at gmaclaughlin@jcc.legis.state.pa.us or call Geoff at 717-787-7570 if you plan to attend the Environmental Issues Forum.

And, check the committee website at http://jcc.legis.state.pa.us for events that may be added to the schedule.

Committee Chronicles . . .

A REVIEW OF SOME MEMORABLE COMMITTEE EVENTS

The Joint Legislative Air and Water Pollution Control and Conservation Committee's (Committee) January 2012 Environmental Issues Forum featured a presentation on the Pennsylvania Sustainable Forestry Initiative (SFI) conducted by SFI Program Manager Nate Fice (pictured at lower left).

Fice spoke about the PA SFI program's history, current projects, benefits for Pennsylvania and its relationship to the national SFI program.

As pictured at lower right, after the presentation, Fice and Committee Chairman Rep. Scott Hutchinson chatted about the importance of the sustainability of the state's forests and the forest products industry.

To help figure out these varying values, Casey Trees and the Davey Tree Expert Company have come up with the "National Tree Benefit Calculator." The calculator allows anyone to estimate the benefits of individual trees one might find on one's property or street-side in one's community.

Before delving into the calculator, Casey Trees is a Washington, D.C.-based non-profit organization committed to monitoring, restoring, enhancing and protecting the tree canopy in the nation's capital. Casey plants trees, engages volunteers in tree planting and care, provides continuing education courses, and works with government, developers and community groups to care for and encourage the planting of trees.

The Davey Tree Expert Co. is an Ohio-based, employee-owned company that provides tree, shrub and lawn care, grounds and vegetation management, large tree moving, and consultant services throughout North America. The company has more than 7,000 employees, according to its website.

The National Tree Benefit Calculator is based on i-Tree's street tree assessment tool called STREETS. What is i-Tree? It's a "state-of-the-art, peer-reviewed" software program from the USDA Forest Service that provides "…urban forestry analysis and benefits assessment tools." It is intended to help communities strengthen their urban forest management and advocacy efforts by quantifying environmental services provided by trees. The software was first released in 2006, and contains a number of analysis tools in addition to the calculator. It has been used not only by communities, but also by individuals, non-profits, consultants, volunteers and students.

To learn more about i-Tree, visit its website at *www.itreetools.org*

To use the National Tree Benefit Calculator, one enters one's zip code so that value estimates will be relevant to the appropriate climate zone. Next one enters the species of tree from a drop-down list, enters the tree's diameter (the calculator tells one where to measure), and enters what land use type the tree is nearest. Examples of the land use types are single-family residential, multi-family residential, large and small commercial or industrial, and park or other vacant land. Then one simply clicks "Calculate" and one receives the value estimate.

The estimate includes an annual benefits figure, and projects what future estimates might be if the tree is allowed to continue to grow. The calculator also breaks down benefits into specific areas such as property value, stormwater value, CO2 value, air quality value and others. This might help a homeowner or business owner decide what type and size of tree to plant to achieve the value or values most important to him or her.

The Joyce Kilmer poem states, "I think that I shall never see a poem lovely as a tree." Trees are not only lovely, but they are valuable as well, and this simple calculator can be a starting point to help show just how valuable they can be. Try it for fun – but also to learn.

How to Contact The Joint Conservation Committee

Phone:
717-787-7570

Fax:
717-772-3836

Location:
Rm. 408, Finance Bldg.

Internet Website:
http://jcc.legis.state.pa.us

Mail:
Joint Conservation Committee
PA House of Representatives
P.O. Box 202254
Harrisburg, PA 17120-2254

Joint Legislative Air and Water Pollution Control and Conservation Committee