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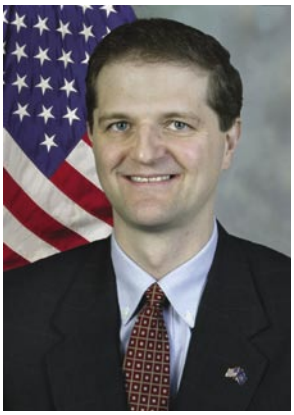
Environmental Synopsis

The Chairman's Corner

Rep. Scott E. Hutchinson, Chairman



With triple digit temperatures (or close to it) occurring in many parts of Pennsylvania, finding more ways to reduce the impacts of scorching heat is on everyone's mind.

Members of the Pennsylvania General Assembly and other individuals recently attended an interesting presentation about one way to do just that, and to bring about some other environmental and economic benefits as well. The Joint Legislative Air and Water Pollution Control and Conservation Committee hosted its most recent Environmental Issues Forum in June and the topic was green roofs. Given the current climatic conditions, the presentation was timely.

The guest presenter was Professor Robert D. Berghage, PhD. Dr. Berghage is an associate professor in the Horticulture Department at Penn State University, and is the director of The Penn State Center for Green Roof Research (Center). As such, his primary research focus is on the function and benefits of green roofs, as well as other systems such as rain gardens, bioswales, constructed wetlands and living walls.

Dr. Berghage pointed out a number of benefits of green roofs, just one of which is energy savings and heat demand reduction. According to the Center's research, a green roof functions as an evaporative cooler and can significantly lower the air conditioning demand in a building, reducing summer cooling by 10-30 percent. This results in peak energy demand reductions and lower summertime temperatures, particularly in more urban areas. The Center's research has shown that solar panels may also be more effective on a green roof because the roof is cooler. A green roof could also be a valuable component in planning to pursue green building or LEED-certified status.

According to Dr. Berghage, that is just one of the benefits of a green roof, however. Stormwater runoff reduction is another. The Center's research shows that in temperate North America a green roof can reduce runoff by 50-60 percent (or more with a thicker roof) over the course of a year. Not only that, a green roof delays the kind of out-of-control runoff you see on non-permeable surfaces, and in some cases improves the quality of water runoff. For example, a green roof can neutralize the acidity of runoff in areas where acid rain is an issue.

Because a green roof protects a roof's waterproofing from the sun's ultraviolet rays and moderates temperature-induced expansion and contraction, the Center's research shows

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Joint Legislative Air and Water Pollution Control and Conservation Committee

A Legislative Service Agency of the Pennsylvania General Assembly

Notes from the Director

CRAIG D. BROOKS, EXECUTIVE DIRECTOR

Americans would be more likely to support climate change legislation if it were seen as a means of strengthening energy independence and as a measure to create jobs, rather than to improve health and the environment, according to a recent poll.

The poll was conducted by Frank Luntz, an advisor to 21 companies in the U.S. Climate Action Partnership, a business group that advocates implementation of a cap-and-trade program for reducing greenhouse gas emissions.

Respondents were asked to choose the top two ideas that would make them most likely to support cap-and-trade legislation.

Survey says Americans put jobs and energy independence first when considering cap-and-trade climate change initiatives

Lessening energy dependence on the Middle East was the most popular, selected by 46 percent of the respondents, followed by using cap-and-trade to create "hundreds of thousands of new, permanent, good American jobs" to "lift America out of the recession", which was selected by 37 percent of the respondents.

By comparison, at the bottom of the list of reasons for supporting climate change legislation was protecting health and reducing carbon dioxide pollution. Only 26 percent of the respondents selected that choice.

The second-lowest scoring reason - "America can and should be the most advanced nation in terms of science and technology" - was selected by 27 percent of the respondents.

Asked to select the top two environmental and economic goals for the United States, 48 percent selected "ending energy dependence on foreign fuels" and 33 percent selected "halting pollution of our air and water."

The choices "preventing climate chaos" and "ending climate change" were selected by seven percent and five percent of the respondents, respectively.

"Ending global warming" was selected by only 14 percent of the respondents and "reducing greenhouse gases" and "reducing carbon emissions" were selected by eight percent and seven percent of the respondents, respectively.

For businesses, the poll showed that the focus of selling environmental policy to consumers should be on energy efficiency and the environment and not on carbon neutrality.

When asked to select answers to the question, "If a company was genuinely interested in energy and environmental issues, which of the following do you MOST want them to focus on?", the poll showed that 47 percent chose "energy efficiency", 41 percent chose "a healthier environment" and 32 percent chose "a cleaner environment". Only 12 percent of the respondents chose "becoming carbon neutral."

The poll surveyed 1,007 registered voters in the United States.

More information on attitudes toward climate change policies and legislation is also available at: http://www.climatechangecommunication.org/images/files/ClimateBeliefsJune2010(1).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.

Could Reusable Grocery Bags Be Dangerous to Your Health?

-- Tony M. Guerrieri, Research Analyst

There is a new translation for the old acronym BYOB. It's "Bring Your Own Bag." The growth in the popularity of the reusable grocery bag adds a new dimension to the question at the checkout line, "Paper or plastic?" Grocery stores and supermarkets are jumping on the eco-friendly bandwagon, posting BYOB signs and hawking their own brands of reusable bags. For anywhere from 50 cents to $2.99 you can purchase a reusable, cloth grocery bag and use it time and time again.

Reusable bags have emerged as the only practical replacement for the estimated 380 billion plastic bags used each year in the United States. Historically, many single-use bags have ended up as litter, floating in waterways and clogging municipal landfills, leading to efforts to minimize their use.

However, there is a problem, according to a joint food safety report by researchers at the University of Arizona and Loma Linda (California) University. The report, *"Assessment of the Potential for Cross Contamination of Food Products by Reusable Shopping Bags"*, concludes that the growing popularity of reusable grocery bags could pose a health risk to consumers by increasing their exposure to dangerous bacteria.

Researchers surveyed reusable bag-toting shoppers entering grocery stores in Tucson, Los Angeles and San Francisco, asking about how often they washed their bags and their food safety shopping habits, and testing the bags for bacterial contamination.

The report found consumers were almost completely unaware of the need to regularly wash their bags. A full 97 percent of shoppers stated that they never washed or bleached their bags.

Additionally, their bad food safety habits extended to grocery shopping. Three-fourths acknowledged that they do not use separate bags for meats and produce. In fact, about a third of those surveyed did not separate food from other daily items and reported using their bags as totes for anything from carrying books or gym clothes to storing lunch.

The primary purpose of the report was to assess the potential for cross contamination of food products from reusable bags used to carry groceries. For example, a package of meat leaks juice in a bag. The bag is unpacked, than placed back in the hot car trunk until next week's shopping trip, when the bag is filled with vegetables. By then, according to the report, harmful bacteria may line the inside of the bag and transfer to the vegetables or your hands and spread elsewhere.

Researchers randomly tested 84 reusable grocery bags (most were made of woven polypropylene) and found that large numbers of bacteria were found in almost all bags. Coliform bacteria, suggesting raw meat or uncooked food contamination, was in half the bags. E. coli was found in 12 percent of the bags. E. coli can transfer between food items or from infected surfaces and cause severe symptoms of food poisoning. Also, a wide range of enteric bacteria, including several opportunistic pathogens were discovered as well.

While reusable grocery bags have benefits, researchers say 97 percent of shoppers risk disease because they never wash or bleach their bags

To create a model of how this transmission might occur, the researchers collected juices from raw chicken and beef in a beaker, and spiked it with the bacteria Salmonella typhimurium that was grown in an overnight culture. When meat juices were added to bags and stored in the trunks of cars for two hours the number of bacteria increased 10-fold. This is not unlike real practice, when bags are often left in the car, ready for the next time the owner needs to go back to the grocery store.

Geographic factors also play a role, according to the report. Contamination rates appeared to be higher in Los Angeles than in the two other locations, a phenomenon likely due to that region's weather being more conducive to the growth of bacteria.

The good news is that washing the reusable bag by hand or in a machine with soap reduced the number of bacteria the bags harbored by nearly 100 percent.

The report offers a number of policy recommendations for lawmakers, as well as tips for consumers who use reusable grocery bags. They include:

- States should consider requiring printed instructions on reusable bags indicating they need to be cleaned or bleached between uses.
- State and local governments should invest in public education campaigns to alert the public about the risks of bags being contaminated and how to prevent it.
- Consumers should avoid using reusable food bags for other purposes, such as carrying books or gym clothes.
- Do not leave perishable foods in car trunks, as higher temperatures promote bacteria growth in the bags.

The report may be found at: http://uanews.org/pdfs/GerbaWilliamsSinclair_BagContamination.pdf.

Report Says "Mail-Back" Program Kept Drugs out of Water Supply, Landfills

-- Craig D. Brooks, Executive Director

Nearly a ton of unused pharmaceuticals was prevented from entering water supplies and landfills under a pilot mail-back program started in Maine and funded by a grant from the U.S. Environmental Protection Agency (EPA). The program could serve as a model for future use nationally by other organizations and states, according to a report by the University of Maine Center on Aging.

The Safe Medicine Disposal for Maine Program was established and implemented in 2007 with a $150,000 grant from EPA's Aging Initiative. The legislature renewed the program in 2009 and appropriated another $150,000 in funding.

Pharmaceuticals are among the most prominent emerging contaminants in drinking water. The EPA is planning a survey of water utilities that will try to gauge the presence of drugs and other pollutants in drinking water. Initially 11 participating pharmacies in four Maine counties served as distribution points for envelopes for the return by mail of unused and unwanted prescription and over-the-counter medications from households. Over the first two years of the program, it was expanded to 150 pharmacies and health and human services agencies throughout the state, and the target population was expanded from those 65 and older to the entire population.

Law enforcement officials from the Maine Drug Enforcement Agency counted and collected returned mailers from post offices and disposed of the drugs through high-heat incineration, the same procedure used after illegal drug seizures.

Based on participant surveys and data from the Center on Aging, about 83 percent of the 2,373 pounds of drugs returned, or 1,970 pounds, would have been discarded in an unsafe manner. Nearly half of the surveyed participants (46 percent) said they would have flushed unwanted drugs down the toilet, while another 37 percent said they would have put them in the trash. A total of 9,400 envelopes was distributed and 3,926 (42 percent) were returned. The estimated average wholesale price of the medicine collected was $573,000. Most of the returns were in pill form, but 14 percent consisted of liquids, gels, ointments and patches. There were also small amounts of unused morphine pumps.

Without the mail-back campaign, it is estimated that about 83 percent – 1,970 pounds – of the drugs returned would have been discarded in an unsafe manner

According to the survey, protection of our groundwater and drinking water supplies is one of several goals of the pilot plan, which also seeks to curtail childhood drug overdoses, restrict drug theft, limit accumulation of drugs by the elderly, and eliminate waste in the health care system. But the overwhelming majority of those surveyed cited the environment as their reason for participating in the program.

The EPA has said that it generally supports these types of state take-back programs for unused medications because they not only provide information about the volumes and types of medications that can end up in the water, but they also engage the general public in helping to prevent water pollution.

In addition to the pilot program in Maine, EPA also awarded a grant to the Area Resources for Community and Human Services in St. Louis, Missouri for a take-back program for non-controlled, unused medicines at pharmacies. This pilot program, which involved the return of medications directly to pharmacies rather than a mail–in program, was completed in 2009. It resulted in the return of 244,708 over-the-counter and prescription drugs, according to a final report on the program.

Information on the Maine Safe Medicine Disposal Program is available at http://www.epa.gov/aging/RX-report-Exe-Sum/. Information on the St Louis program is available at http://www.epa.gov/aging/grants/winners/rx-meds-technical-report508.pdf.

USDA Releases Biofuels Roadmap To Get To 36 Billion Gallons By 2022

-- Tony M. Guerrieri, Research Analyst

More than 500 new biorefineries will be needed around the country to meet the nation's goal of tripling annual production of biofuels by 2022, according to a report by the U.S. Department of Agriculture (USDA).

The USDA report, *"A Regional Roadmap to Meeting the Biofuels Goals of the Renewable Fuels Standard by 2022"*, outlines both the current state of renewable transportation fuels efforts in the U.S. and a plan to develop regional strategies to increase the production, marketing and distribution of biofuels.

The Renewable Fuels Standard (RFS), contained in the 2007 Energy Independence and Security Act, requires the country's refineries to blend 36 billion gallons per year of renewable transportation fuels into the domestic fuel supply by 2022, and only 15 billion of them may come from ethanol made of corn starch. With the nation's biorefineries producing 10.7 billion gallons of ethanol, primarily as corn starch ethanol, in 2009 and an estimated 12 billion gallons in 2010, the report indicates that ethanol producers are already well on their way to achieving the conventional component of the RFS target.

If the nation is to triple its production of biofuels by 2022, more than 500 new biorefineries will be needed

By 2022, 21 billion gallons of biofuels are to come from sources other than corn (such as biomass-based diesel and cellulosic biofuels). According to the report, the U.S. is "on track" to reach a one billion gallon biodiesel target by 2022 (there are seven Pennsylvania companies that manufacture biodiesel fuel), leaving its focus on the 20 billion gallons of other biofuels needed. With an emphasis on non-food crops and waste residues, the report suggests 13.4 billion gallons a year would come from dedicated non-food energy crops like perennial grasses and sorghum, with 4.3 billion gallons from crop residues and 2.8 billion gallons from logging residues.

Assuming an average biorefinery size of 40 million gallons per year, the report estimates that meeting the RFS advanced biofuels goals will require building 527 biorefineries, at a cost of $168 billion. The USDA predicts the cost of new advanced biofuels plants to be equivalent to $8 per gallon, although as more and more plants are built the costs would come down. There are about 200 ethanol plants now in operation nationwide, including one in Pennsylvania.

The USDA wants to see the different regions of America putting plans into place to meet the 2022 renewable fuels targets. The report profiles five regions: Southeast, Northeast, Central East (including Pennsylvania), Northwest and West. Although corn ethanol production has been concentrated in the Midwest where the grain is grown, the USDA report estimates that much of the effort to meet the target will come from the Southeast (plus Hawaii) and Central East regions, 49.8 percent and 43.3 percent of the national supply of biofuels respectively. The Southeast will be the biggest producer of advanced biofuels because of its long growing season.

Along with support for new production infrastructure, the USDA report says a key concern is getting enough distribution and dispensing infrastructure in place for flexible fuels with higher blends of ethanol in gasoline.

There are between 8.0 and 8.5 million Flex Fuel Vehicles on the road today in the U.S., which can use any combination of ethanol-gasoline fuels up to E85. According to the report, costs of an E85 dispenser are around $23,000 compared to $14,000 for standard fuel pumps, but along with storage tanks the costs of a new E85 system can reach $122,000 per gas station. The USDA report said that expectations were that $12 billion would be needed to invest in ethanol distribution infrastructure under RFS.

Among the specific conclusions of the report are:

- A rapid build-up in production capabilities is needed to meet the RFS targets for cellulosic biofuels.
- The scope of the monetary investment for biorefineries is substantial.
- It is important to consider both sides of the market – the production/supply side and mandate/consumption side – and how they respond to the RFS mandate.
- There are current infrastructure needs, in the form of blender pumps and rail and trucking infrastructure, which are in varying stages of being addressed by the market. A careful assessment of barriers to their development is needed.
- The U.S. farm sector is capable of producing a diverse complement of feedstocks to make the biofuels industry a truly national effort.
- A process for identifying barriers related to locating biorefineries involving the federal government, Congress, states, the industry and stakeholders can help facilitate a national biorefinery system.

The 21-page USDA report is available at: http://www.usda.gov/documents/USDA_Biofuels_Report_6232010.pdf.

Defense Department Taking Steps to Reduce Energy Use, Report Says

-- Craig D. Brooks, Executive Director

The Department of Defense (DOD) has recognized the challenges associated with climate change and energy security and is taking steps to address them, according to a report by the Pew Project on National Security, Energy and Climate.

The report, *"Recognizing America's Defense: How the Armed Forces Are Stepping Forward to Combat Climate Change and Improve U.S. Posture"*, outlines existing and planned renewable energy and energy efficiency programs in the Army, Navy, Air Force and Marine Corps.

According to the report, each of the services has established institutional capabilities for developing plans and policies needed to reduce energy demand, increase supplies of alternative energy sources, and ensure that U.S. troops have the best technology to complete their missions.

Those plans and policies include the Army Energy Security Implementation Strategy, which aims to increase energy efficiency and renewable energy use, reduce negative environmental impacts of the Army's operations and ensure sufficient access to energy supplies through initiatives such as forming a fleet of 4,000 electric vehicles and powering bases with renewable energy.

The Army, Navy, Air Force and Marines have established plans to reduce energy demand and use more alternative fuels while ensuring U.S. troops have the technology they need

The Navy has committed to launching a fleet of ships that will be powered by biofuels by 2016 and alternative energy sources such as wind, solar or biofuels for at least 50 percent of its energy consumption by 2020, the report says.

The Air Force, the DOD's largest consumer of energy, seeks to reduce its reliance on fossil fuels through a number of initiatives. These include reducing energy demand by reconfiguring flights, substituting flight simulations for actual flights in training where possible, providing 25 percent of base energy needs from renewable resources by 2025, and using biofuel blends for 50 percent of aviation fuel needs by 2016.

The Marine Corps goals include reducing the corps' energy intensity by 30 percent from a 2003 baseline by 2015, reducing water consumption by 16 percent from a 2007 baseline by 2015, and using renewable energy for 25 percent of its energy needs by 2025.

In Iraq, according to the report, the Marine Corps has joined the Army in pioneering tests of energy efficient foams that can be applied to temporary structures to reduce energy consumption by 50 to 75 percent.

The Marine Corps also conducted the first energy audit of an expeditionary force in a combat zone, deploying experts to Afghanistan in August 2009. Drawing on the experience of the audit, the corps is constructing an "Experimental Forward Operating Base" which is a demonstration project that will test expeditionary energy and water efficiency products and systems for accelerated deployment in-theater.

The Marine Corps also plans to retrofit its tactical vehicles with smart electric power generators, reducing the need for stand-alone generators.

According to the report, the services have recognized the strategic and operational benefits of using some forms of alternative energy systems at both facility and operational levels.

Each service has also established institutional capabilities for developing plans to increase energy supplies to U.S. troops through the use of alternatives, particularly for facility and transportation purposes.

For more information, a copy of the report is available at http://pewclimatesec-cdn-remembers.s3.amazonaws.com/172e73107e0952fd86378269bdeb62f6.pdf.

Check Out Our Website

Visit Us at http://jcc.legis.state.pa.us

The Committee's recently redesigned website is up and running. Please visit the website at http://jcc.legis.state.pa.us.

We are hopeful that you will find it easier to navigate the site and make use of it, and that you will find the new look more attractive.

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On the Horizon . . .

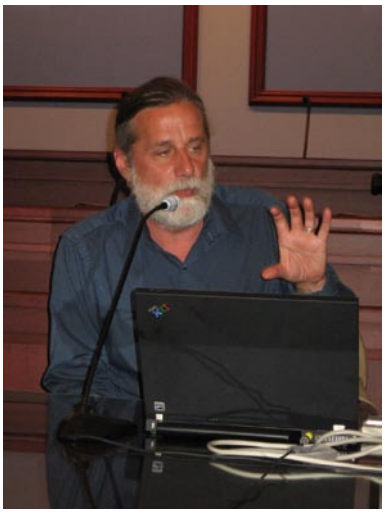
A LOOK AT UPCOMING EVENTS

No events are scheduled at this time.

Check the Committee website at http://jcc.legis.state.pa.us for events that may be added to the schedule.

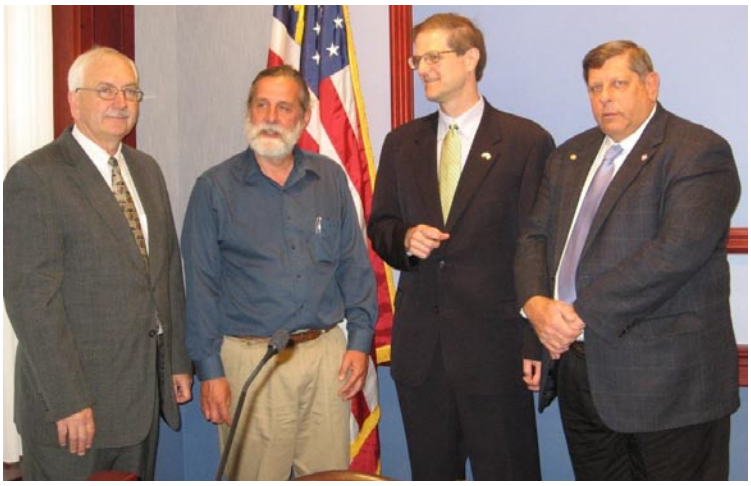
A REVIEW OF SOME MEMORABLE COMMITTEE EVENTS

Committee Chronicles . . .

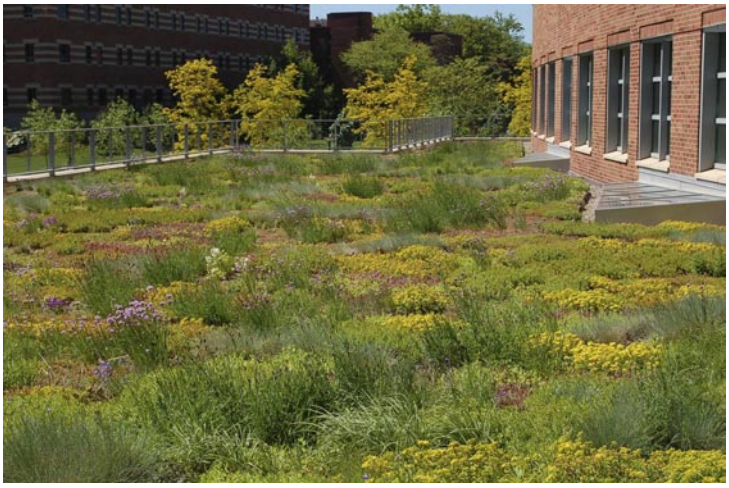


The topic of the Joint Legislative Air and Water Pollution Control and Conservation Committee's (Committee) most recent Environmental Issues Forum was green roofs. The guest speaker was Dr. Robert Berghage (photo at left), the director of The Penn State Center for Green Roof Research, and an associate professor at Penn State's School of Horticulture.

Dr. Berghage spoke of the benefits of green roof technology, including stormwater remediation, energy savings, heat reduction, improvement of biodiversity and habitat and aesthetics (see Chairman's Corner article on page one).



In the photo above, Dr. Berghage (2nd from left) took some time after the formal presentation to discuss green roofs informally with Committee member Rep. Ron Miller (left), Committee Chairman Rep. Scott Hutchinson (2nd from right) and forum attendee Rep. Randy Vulakovich (far right).



The photo at left shows a completed green roof at Penn State University.

that a green roof can increase the life of a roof by two to three times.

Still other benefits occur in the areas of biodiversity, habitat and aesthetics. Green roofs are simply more attractive than the typical flat, black rubber roof on many buildings. Depending on the mix of plants used on the roof, pollinators such as bees and birds can find attractive habitats that did not exist before. Honey production on large roofs is a potential cottage industry in the Center's estimation. The Center also reported that green views provided by green roofs have been credited with improved patient outcomes in hospitals and improving employee morale in commercial buildings.

There are some design necessities to put in a green roof. The building and roof deck must be able to support the additional weight of a green roof, for example. And, waterproofing must be root resistant. Some type of drainage is needed to allow excess rainwater to flow off the roof.

There are also a number of design options to consider. One must be careful to select the appropriate media (lightweight aggregate or gravel, etc.) and plants for the roof, depending on a number of factors including weight, stability, water holding capacity, climate, irrigation and maintenance requirements to name a few.

To learn more about green roofs, visit
The Penn State Center for Green Roof Research website at
http://web.me.com/rdberghage/Centerforgreenroof/Home.html

According to Dr. Berghage, sedums are among popular choices for green roof plants at the moment. Sedums are cactus-like groundcovers with shallow roots and moisture-retaining fleshy stems and leaves that thrive in harsh conditions. They are just one of a larger-than-expected variety of plants that can be used, however, depending on design specifications and desired outcomes for the green roof.

Generally speaking, says the Center, the thicker the roof, the more effective the stormwater management and the greater diversity of plant choices, but also the more maintenance that will be needed. There is irrigation to consider as well.

While green roof technology has been common in parts of Europe, particularly Germany, for years, it is still in its infancy in America and Pennsylvania. In Germany for example, it is estimated that 10 times the green roof square footage that now exists in the U.S. is installed every year. There is real potential for growth, however, and a corresponding creation of jobs in the industry as more property owners seek greater energy efficiency and strive to make buildings greener. Pennsylvania could easily be part of such growth.

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