



Exploring Green Infrastructure and the Role of Federal Policy

Congressional Field Hearing

May 18, 2009

Academy of Natural Sciences, Philadelphia, PA

A Northeast-Midwest Congressional Coalition Event

CONTENTS

Contents.....	- 2 -
Vibrant Communities, Healthy Waters, and Job Opportunities.....	- 3 -
Agenda.....	- 4 -
The Honorable Michael Nutter	- 5 -
Remarks of Mayor Michael Nutter	- 6 -
Philadelphia Congressional Delegation.....	- 8 -
Representative Robert Brady	- 8 -
Statement from Representative Robert Brady.....	- 9 -
Representative Chaka Fattah.....	- 10 -
Representative Allyson Schwartz	- 12 -
Short Biographies of Experts Providing Testimony	- 14 -
Howard Neukrug	- 14 -
Testimony of Howard M. Neukrug, P.E.	- 14 -
J. Blaine Bonham Jr.	- 19 -
Testimony of J. Blaine Bonham, Jr.....	- 20 -
Susan Wachter.....	- 25 -
Testimony of Dr. Susan Wachter	- 25 -
Liz Garland.....	- 29 -
Testimony of Liz Garland	- 29 -
Liz Robinson	- 44 -
Testimony of Liz Robinson	- 44 -
Paul Bonney.....	- 45 -
Testimony of Paul Bonney	- 46 -
The Northeast-Midwest Institute and the Northeast-Midwest Congressional and Senate Coalitions	- 50 -
Revitalizing Older Cities Congressional Task Force.....	- 50 -
Partnering Organizations.....	- 51 -

VIBRANT COMMUNITIES, HEALTHY WATERS, AND JOB OPPORTUNITIES

Exploring Green Infrastructure and the Role of Federal Policy

On May 18, 2009 Representative Allyson Schwartz (PA-13) convened a Congressional field hearing to consider the role of federal policy in advancing green infrastructure as a means of improving water and air quality, enhancing the livability of dense urban areas, and creating green collar job opportunities. Representative Schwartz was joined by Representative Chaka Fattah (PA-2). Representative Robert Brady (PA-1) was unable to attend the hearing but provided a statement expressing that he is “absolutely committed to continuing to use federal policy as a means to green Philadelphia and its economy.”

The City of Philadelphia was an ideal backdrop for a Congressional event designed to explore greening initiatives. The City is fully engaged in urban greening projects that help control storm water and reduce urban heat island effects. Experts at the hearing demonstrated how greener, more natural infrastructure can significantly improve the economic standing and overall livability of communities. The hearing drew attention to *HR 2222 The Green Communities Act*, introduced by Representative Allyson Schwartz on April 30, 2009, and discussed other potential opportunities for Congress to bolster the greening successes of Philadelphia and replicate similar strategies in other cities and towns.

The following pages contain the biographies and written testimony of the experts asked to present to the Congressional delegation. In addition, this document contains biographical information on the three Members of Congress with districts representing Philadelphia and background information on the Northeast-Midwest Congressional Coalition, the Revitalizing Older Cities Congressional Task Force, and the Northeast-Midwest Institute.

Assistance in organizing this hearing was provided by the Northeast-Midwest Congressional Coalition in coordination with the Northeast-Midwest Institute as part of an ongoing initiative to revitalize the economic prosperity of older cities and towns—especially those burdened by severe population loss and declines in traditional employment opportunities.

This event was made possible through the generous support of the William Penn Foundation. The Academy of Natural Sciences and the Pennsylvania Horticultural Society partnered with the Northeast-Midwest Institute to provide the venue and essential on-the-ground assistance.

AGENDA

May 18, 2009 The Academy of Natural Sciences, Philadelphia

9:00- 9:15

Morning refreshments in Academy Auditorium Atrium

9:15-9:30

Welcome to The Academy of Natural Sciences

Roland Wall, Director, Center for Environmental Policy, The Academy of Natural Sciences

9:30-9:40

The Honorable Michael Nutter, Mayor of Philadelphia

Greening Strategies of Philadelphia

9:40-10:10

Introduction of Members of Congress and Opening Remarks

Mary Cronin, Legislative Director, Northeast-Midwest Congressional Coalition

Testimony from Panel 1: Exploring Green Infrastructure in Urban Areas

- **Howard Neukrug**, Director, Philadelphia Office of Watersheds: Using green infrastructure in Philadelphia and policy needs for further implementation
- **Blaine Bonham**, Executive Vice President, Pennsylvania Horticultural Society: Greening strategies at work in Philadelphia and The Green Communities Act
- **Dr. Susan Wachter**, Professor of Real Estate and Finance, The Wharton School: Economic and real property value benefits of greening projects in cities

10:10-10:30

Questions from Members for Panel 1

10:30-11:00

Testimony from Panel 2: Using Green to Create Job Opportunities

- **Elizabeth Garland**, Associate Director, American Rivers: Green infrastructure supports water quality and green collar jobs
- **Liz Robinson**, Executive Director, Energy Coordinating Agency: Green collar jobs created by weatherization and “green” rehabilitation of urban areas
- **Paul Bonney**, Vice President and Chief Counsel for PECO: Corporate America embraces green opportunities

11:00-11:20

Questions from Members for Panel 2

11:20

Thank you and closing remarks

Mary Cronin, Legislative Director, Northeast-Midwest Congressional Coalition

THE HONORABLE MICHAEL NUTTER

Mayor of Philadelphia

Michael A. Nutter was sworn-in as the 98th Mayor of Philadelphia on January 7th, 2008.

Mayor Nutter is a native Philadelphian with an accomplished career in public service, business and financial administration. He served as a Philadelphia City Councilman for nearly 15 years representing the city's Fourth District encompassing the communities of Wynnefield, Overbrook, Roxborough, Manayunk, East Falls, Mt. Airy, and parts of North and West Philadelphia.

During his time in Council, Michael Nutter engineered groundbreaking ethics reform legislation and led successful efforts to pass a citywide smoking ban. He worked to lower taxes for Philadelphians and to reform the city's tax structure, to increase the number of Philadelphia police officers patrolling the streets and to create a Police Advisory Board to provide a forum for discussion between citizens and the Police Department.

In June 2006, Michael Nutter resigned his City Council seat and in July 2006 he announced his intention to run in Philadelphia's mayoral election. His campaign focused on four key areas: crime, education, job creation and ethics reform. He won the Democratic nomination in a five-way primary election with 37% of the vote and on November 6th, 2007, was overwhelmingly elected Mayor of the City of Philadelphia with 83% of the vote.

The *Philadelphia Inquirer* wrote that Michael Nutter "is easy to imagine on the national stage as the fresh voice of a resurgent Philadelphia" and that "Nutter can lead Philadelphia to a brighter day." The *Philadelphia Daily News* wrote that "Nutter has the intelligence, the vision and the experience necessary to take this city into its rightful future."

Mayor Nutter grew up in West Philadelphia at 55th and Larchwood Avenue, where he lived with his parents, sister and grandmother. He received an academic scholarship to St. Joseph's Preparatory High School, where he graduated in 1975. He enrolled in the University of Pennsylvania, and graduated from the Wharton School of Business in 1979.

After working for the campaigns of Mayor Ed Rendell and City Council members John Anderson and Angel Ortiz, he was elected as a Committee Person in the 52nd Ward in 1986, 52nd Democratic Ward Leader in 1990 and City Councilman in 1992. From 2003 to 2007, Mayor Nutter served as Chairman of the Pennsylvania Convention Center Authority Board. There he crafted a groundbreaking labor-management agreement, and helped to bring about the Center's current \$700 million expansion project.

Mayor Nutter serves on the Board of City Trusts, managing the City's charitable assets, supporting institutions such as Girard College and Wills Eye Hospital, as well as administering public school scholarship funds. Before pursuing his career in public service, Mayor Nutter worked as an investment manager at one of the nation's leading minority-owned investment banking and brokerage firms.

He resides in Wynnefield with his wife, Lisa, and daughter, Olivia, who attends a Philadelphia Public School. His son, Christian, lives and works in New Jersey. Mayor Nutter is a member of the Mt. Carmel Baptist Church in West Philadelphia.

REMARKS OF MAYOR MICHAEL NUTTER

It's an honor to be here today to welcome everyone to this important congressional hearing on green infrastructure and vibrant communities. Many of us in this room [!] have been here before talking about these issues and how green cities, clean water and new job opportunities can help make a more sustainable future for Philadelphia.

It has been my great pleasure, as mayor, to work with our congressional delegation and our new Office of Sustainability to meet our pledge to the citizens of Philadelphia to make this the greenest city in America.

I would like to thank our representatives for their incredible support in passing an almost \$800 billion Recovery program that begins to move America – and Philadelphia – toward a more sustainable future. [Laurie – any more details needed?].

It was just over 2 weeks ago that we announced our Greenworks Philadelphia framework for a greener, more sustainable future. Our guest of honor for that event was Van Jones. As President Obama's Special Advisor for Green Jobs he is at the center of efforts to restructure our national economy with green jobs that will benefit all Americans.

Through Van's appointment, the President acknowledges the need to be fighting urban pollution and poverty at the same time. As Van says, "Young people must have an opportunity to put down that handgun and pick up a caulk gun."

I would also like to thank our representatives for joining with me and others in the environmental movement when we welcomed Vice President Biden and the Middle Class Task Force here to Philadelphia in late February to discuss green jobs as a pathway to a strong middle class.

The Obama administration sees what we're doing in Philadelphia and what we're proposing and it wants to be supportive. Our time has come. The economic and environmental dangers that are before us are significant, but leadership is about facing calamity and seizing opportunity.

And having our congressional delegation here today speaks very well of our joint commitment to lead Philadelphia forward together in this new green economy.

Indeed, Greenworks Philadelphia is the result of a giant collaborative effort. Greenworks is big. It has 169 initiatives, including specific, measurable targets we're aiming to achieve by 2015.

Let me just spend a minute giving you a flavor of Greenworks. I will use an example that will be discussed in more detail by Howard Neukrug in the first panel.

William Penn once envisioned Philadelphia as a green country town. Today, we want to re-engage that vision.

It's estimated that nearly half of the city is covered with "impervious" surfaces, which rapidly shed rainwater from the streets and send it flowing into our sewers. We need to change that. We need to keep this rainwater out of our sewers and reuse, recycle and return it to the environment.

Greenworks proposes to just that. We can manage our stormwater and expand our green areas at the same time, using open space, trees and new technologies like green roofs and porous asphalt.

Greenworks proposes the city transform 3,200 acres of these impervious surfaces to land that will soak up rainfall in a way that will keep our rivers cleaner.

To take this a step further, Greenworks proposes the city set a goal of almost doubling our tree cover to 30 percent in every neighborhood in the next 20 years. In the next 7 years that means we need to plant 300,000 trees – a huge undertaking that will require support from property owners and groups like the Tree Tenders.

Greenworks Philadelphia is also dedicated to supporting the green jobs focus of the 2nd panel. We want to make green work for everyone – from people with a GED to a PhD. Greenworks isn't just carbon reduction, it's poverty reduction.

In a city with 25 percent of the population living below the federal poverty level, this is the opportunity we must seize – helping thousands of people become successful wage earners and good citizens.

The definition of a green job varies, but we see it as a well-paid, career-track opportunity that contributes directly to preserving or improving the environment. Green jobs can be found throughout the local economy: architects and engineers, installers of solar energy systems, the large fresh food movement and the people working in mass transit.

But I want to focus on one particular green collar activity – weatherization. Liz Robinson from the Energy Coordinating Agency will be speaking about this in a few moments.

Philadelphia has about 400,000 rowhouses. Most need new insulation, air sealing and cooling white or green roofs.

With your assistance in bringing federal Recovery funding to Philadelphia and help from great utilities like PGW and PECO, which are now our partners in increasing efficiency, we're proposing to accomplish 100,000 weatherizations through 2015.

The beauty of this program is that we have the building stock that will dramatically benefit from the energy remake. Homeowners will see reduced energy bills and utilities won't have to deliver as much energy to them.

Green Infrastructure means real jobs. Green jobs.

Jobs with a future for people who are in desperate need for work. Meaningful work that will make Philadelphia the vibrant, green and sustainable urban center it once was. This is our vision.

Thank you, Congressman Brady, Congressman Fattah and Congresswoman Schwartz, for taking the time from your busy schedules to hold this meeting today in Philadelphia, the soon-to-be greenest city in America!

PHILADELPHIA CONGRESSIONAL DELEGATION

REPRESENTATIVE ROBERT BRADY

Pennsylvania's 1st Congressional District

Congressman Robert A. Brady was sworn into office to represent the people of Pennsylvania's First Congressional District on May 21, 1998. The First Congressional District includes portions of South Philadelphia, West Philadelphia, North Philadelphia, Northeast Philadelphia, Southwest Philadelphia, Northwest Philadelphia, Center City and parts of Delaware County. District One is among the most ethnically diverse districts in Pennsylvania.

Born and raised in Philadelphia, Brady graduated from St. Thomas More High School, found employment as a carpenter and was soon part of the leadership of the Carpenters' union. He continues to be a member of both the Carpenters' and the Teachers' unions.

Congressman Brady was elected Chairman of the Committee on House Administration in May of 2007. In announcing his election, Speaker of the House Nancy Pelosi highlighted Brady's "...experience as a leading member of the House Administration Committee for four years and his in-depth knowledge of the internal functions of the House." She also highlighted his ability "to promote equality and diversity on Capitol Hill."

In his role as Chairman, Brady leads the Committee's oversight of federal elections and the day-to-day functions of the House of Representatives, as well as budget authorizations for expenses of House committees, and those for expenses of Members of Congress. The Committee is responsible for oversight of the House officers, including the administrative and technical functions of the House.

Additionally, under Chairman Brady's direction, the House Administration Committee oversees security on the House side of the Capitol Complex and works closely with the Capitol Police to ensure that every effort is made to keep the Capitol Complex secure while maintaining accessibility for the millions of constituents who visit every year. The Committee also oversees the management of the Library of Congress and the Smithsonian Institution including the National Zoo.

Brady held various leadership positions prior to becoming a member of the U.S. House of Representatives. His accomplishments include, but are not limited to serving as Deputy Mayor for Labor in the administration of Philadelphia Mayor W. Wilson Goode, serving as a consultant to the Pennsylvania State Senate, serving as a Pennsylvania Turnpike Commissioner and his role as a member of the Board of Directors of the Philadelphia Redevelopment Authority.

Throughout his legislative career, Congressman Brady has consistently earned an "A" or 100 percent rating from the AFL-CIO, NAACP, The Leadership Conference on Civil Rights, the National Hispanic Leadership Agenda, the Human Rights Campaign and every other national human rights organization that scores Congress. In addition, Brady has twice been honored as a "Friend of the National Parks" by the National Parks Conservation Association for his contribution to protecting and enhancing the environment in America's national parks. He is the first Philadelphian to chair either a full or subcommittee since former Congressman Bill Gray was Chairman of the Budget Committee in the 99th and 100th Congresses.

Brady has been an unwavering advocate for legislation that supports the well-being of financially disadvantaged communities. He has sponsored or co-sponsored legislation that promotes affordable housing, as well as strategies to ensure that all Americans have access to quality healthcare and life-saving prescription drugs. As a member of the Armed Services Committee, Brady has called for programs to support veterans as well as current members of our Armed Forces. While he has been one of the strongest supporters of our men and women serving in uniform, he has also been an outspoken opponent of the escalation of the Iraq War and has supported imposing a timeline for safe and orderly withdrawal from Iraq. In his role as Chairman of the Committee on House Administration, Brady has been a leading advocate for election reform.

STATEMENT FROM REPRESENTATIVE ROBERT BRADY

(Representative Brady was unable to attend the Field Hearing. In lieu of attending he provided the following statement.)

Thank you to the Academy of Natural Sciences for hosting this event, and to the Northeast Midwest Institute for inviting me to join my colleagues Congressman Fattah and Congresswoman Schwartz for this important hearing on green infrastructure. In these economic times, I remain absolutely committed to continuing to use federal policy as a means to green Philadelphia and its economy, and I am enthusiastic about working with Mayor Nutter to realize his goal of making Philadelphia the "Greenest City in America."

Just over two months ago, Vice President Biden came here to Philadelphia to hold his first meeting of the Middle Class Task Force, which focused on the role of green jobs in

strengthening America's middle class. I found it very telling that he had chosen Philadelphia as the venue for this pivotal event, because it shows that even the Administration recognizes the important role the city has to play in bringing about a more sustainable future.

Since then, the stimulus package that we developed with the President has begun to pour much-needed investment into the city's green infrastructure, including more than \$14 million for energy efficiency and conservation.

Congresswoman Schwartz's Green Communities Act is yet another important step in the right direction for cities across the country, and I am thankful to her for her leadership in introducing this important legislation, and am proud to be a cosponsor.

Again, I am very thankful of the work everyone here is doing to create jobs and improve the quality of life in our cities through the development of green infrastructure

REPRESENTATIVE CHAKA FATTAH

Pennsylvania's 2nd Congressional District

A life-long resident of Philadelphia, Congressman Fattah attended city public schools, the Community College of Philadelphia, the University of Pennsylvania Wharton School, and the University of Pennsylvania Fels School of State and Local Government where he earned a Master's Degree in Government Administration. He also completed the Senior Executive Program for State Officials at Harvard University's John F. Kennedy School of Government. Congressman Fattah is married to Renee Chenault-Fattah, and has a family of four children,

Congressman Fattah's top legislative priority is H.R. 2130 The Comprehensive Transform America Transaction Fee Act - The plan calls for a study on the elimination of all federal taxes on individuals and corporations and replaces the taxes with a fee on transactions. Eliminating federal taxes would stimulate the economy and spur job growth by allowing businesses to expand their operations and hire more employees.

The proposed transaction fee would be equivalent to current revenues generated by all federal taxes, while conceivably supplying additional income. The excess funds would serve to: eliminate the current national debt, provide universal health care, support an equitable public school finance system, and fund economic development in urban and rural areas.

Another of Congressman Fattah's legislative priorities is H.R. 2373 The Student Bill of Rights. The legislation requires States to certify with the Secretary of Education that their Public School System operates on an equal statewide basis in terms of offering all students access to some of the proven educational inputs necessary to achieve high academic outcomes. Therefore, for the first time ever, states will have an annual report card by which to be judged on for their ability to provide educational resources for all students. Congressman Fattah's seven fundamentals for learning include:

- 1) Instruction from a highly qualified teacher;
- 2) Rigorous academic standards, curricula and methods of instruction;
- 3) Small class sizes;
- 4) Up-to-date textbooks;
- 5) Up-to-date libraries;
- 6) Up-to-date computers;
- 7) Quality guidance counseling.

On an annual basis, The Student Bill of Rights will also publicly identify those states not providing these educational resources and penalize them with a loss of federal dollars if they do not comply.

Congressman Fattah has also introduced H.R. 378 The Homeowners' Emergency Mortgage Assistance Act (HEMA) which would establish a program to assist homeowners experiencing unavoidable, temporary difficulty making payments on mortgages insured under the National Housing Act.

Under HEMA, homeowners who are at least two months delinquent in their mortgage payments and have been notified by their lender of intent to foreclose would be eligible to receive assistance. Repayment of such assistance with interest will be required after the homeowner regains his financial stability, a period not to exceed three years. As a state lawmaker, Chaka Fattah was instrumental in enacting this policy. In Pennsylvania, the program has helped 30,000 homeowners. After seeing its success statewide, Congressman Fattah now wants to allow homeowners nationwide a chance to keep their dreams realized.

In the 110th Congress, Congressman Fattah serves on the following Committees and Subcommittees:

- Appropriations Committee: This committee oversees \$800 billion in discretionary spending annually.
 - Subcommittee on Science, State, Justice and Commerce, and Related Agencies
 - Subcommittee on Energy and Water Development
 - Subcommittee on Financial Services and General Government

Experienced in all three levels of government-local, state and federal-Congressman Fattah spent 12 years in the Pennsylvania Legislature; he served six years as a state representative, and six years as a state senator. Congressman Fattah has held key leadership roles in both the Pennsylvania Higher Education Facilities Authority and the Executive Committee of the Pennsylvania Higher Education Assistance Agency, roles in which he helped 1.3 million students from Pennsylvania attend college. In 1986, he founded the annual Fattah Conference on Higher Education, which has motivated thousands of students to pursue graduate school opportunities. In February 2006, at the 20th anniversary celebration of the Conference on Higher Education, Congressman Fattah announced that all 700 undergraduate attendees would receive full scholarships to graduate school.

Congressman Fattah also designed and implemented “Read to Lead,” a free summer reading program that provided books and classroom teaching for 5,000 children. In addition, Congressman Fattah co-chaired the Web-based Education Commission, which made recommendations on how the Internet is being used to enhance learning opportunities for all learners from pre-kindergarten through high school. He has served as a member of the Pennsylvania State Board of Education, on the Board of Trustees for Lincoln University, Temple University, Pennsylvania State University and Community College of Philadelphia. Congressman Fattah has been identified by Time Magazine as one of the 50 most promising leaders in the country, and has been a guest on NBC’s Meet the Press and MSNBC’s Hardball.

REPRESENTATIVE ALLYSON SCHWARTZ

Pennsylvania’s 13th Congressional District

U.S. Representative Allyson Y. Schwartz is serving in her third term representing Pennsylvania’s 13th congressional district. The 13th district includes both the close-knit neighborhoods of Northeast Philadelphia, as well as the first ring suburbs of Montgomery County.

National and local media have noted Schwartz’s effectiveness as a member of Congress. The Philadelphia Inquirer called Schwartz a leader “with especially impressive accomplishments” who “knows how to forge bipartisan coalitions with folks on the other side of the aisle” and described her appointment to the “influential” Committee on Ways and Means as evidence of her “clout” and “prominence in the local congressional delegation.” National Journal magazine called Schwartz a “rising star,” and correctly predicted that she is “likely to settle into an influential role” on the Hill.

Prior to her service in Congress, Representative Schwartz was a leading healthcare executive in Philadelphia and from 1990 to 2004 served as a member of the Pennsylvania State Senate, where she was considered one of the most accomplished legislators for her ability to forge bipartisanship partnerships.

In just her second congressional term, Schwartz was appointed to the powerful Committee on Ways and Means, which has jurisdiction over tax, trade and revenue raising measures, as well as Medicare and Social Security. Schwartz’s appointment is an indicator of the confidence and respect that the Congressional leadership has in her legislative abilities.

Schwartz also continues to serve on the Budget Committee where she has distinguished herself as an outspoken critic of deficit spending. A strong proponent of fiscal discipline and a balanced federal budget, Schwartz believes the nation must reduce our enormous national debt and redirect our policies to meet the priorities of American families.

Long considered a leading advocate for children, Schwartz spearheaded Pennsylvania’s legislative efforts to provide healthcare coverage to the children of middle-class families. Her leadership led to the creation of the Children’s Health

Insurance Program (CHIP) in 1992, which served as the model for the federal plan that now provides health insurance to millions of children.

In Congress, Schwartz has continued to focus on healthcare, including working for the expansion of federal SCHIP to cover all eligible children. Schwartz is also instrumental in legislative efforts redirecting the nation's environmental and energy policies towards energy independence and the reduction of global warming. Her energy legislative accomplishments include smart reuse of Brownfield sites, incentives for businesses to build energy efficient buildings and securing tens of millions of dollars to enable communities throughout the 13th district to revitalize commercial business districts and develop new greenways.

She is a member of the centrist New Democratic Coalition and is considered a champion for business development, particularly in areas of biotechnology and technological innovation.

Schwartz's first Congressional legislative proposal, which passed as part of the business tax reduction bill in 2007, offers tax credits to businesses that hire veterans returning from Iraq and Afghanistan.

Noted for her diplomatic ability, Schwartz was appointed by Speaker Nancy Pelosi to serve as a member of the House Democracy Assistance Commission, which has the mission to strengthen democratic institutions by assisting parliaments in emerging democracies. She has traveled to Asia and Eastern Europe to assist foreign parliaments on both legislative processes and institution building. In March 2007 Schwartz traveled to Iraq where she met with soldiers from the 13th district, military leaders and Iraqi civilians.

Schwartz cites the influences of her father, a Korean War veteran, and her mother, a Holocaust survivor, as the source of her commitment to public service. These personal family experiences compel Schwartz to be a strong advocate for veterans and their families and to fight for foreign and domestic policies that build democracy, security, and opportunity for all people.

Schwartz earned a B.A. from Simmons College in Sociology and a Masters of Social Work from Bryn Mawr College. She is married and has two grown sons.

SHORT BIOGRAPHIES OF EXPERTS PROVIDING TESTIMONY

(In order of testimony)

HOWARD NEUKRUG

Director, Philadelphia Office of Watersheds

Mr. Neukrug has 30 years experience in the water utility sector planning and management, drinking water quality and treatment, urban planning, environmental policy, visioning and sustainability. He is a Professional Engineer and a graduate in Civil and Urban Engineering from the University of Pennsylvania. He has often testified before Congress and the US EPA on environmental, financial, infrastructure and other utility management issues, and has spoken at hundreds of local, national and international forums.

Mr. Neukrug is responsible for the creation and implementation of Philadelphia's Office of Watersheds and its "Clean Water, Green Cities" program which integrates land-based urban sustainability goals with the goals for clean, safe, attractive and accessible rivers and streams.

Mr. Neukrug is responsible for water supply protection for two million people in SE Pennsylvania as well as the city's CSO and Stormwater programs. His programs are among the nation's most successful examples of the integration of regional environmental programs across drinking water, wastewater, water resource and stormwater utility boundaries.

Mr. Neukrug serves as an advisor to the US EPA, the State of Pennsylvania, and the Delaware River Basin Commission. He is Chair of the US EPA National Advisory Council on Environmental Policy and Technology Water Infrastructure Sustainability Committee, Chair of the WEF Task Force on Energy and Climate Change, and serves on the Board of Directors of the Delaware Valley Green Building Council and the Clean Water America Alliance. He has served as a Trustee of the American Water Works Association (AWWA) Research Foundation, a Director of the AWWA, and as Chair of the AWWA Water Utility Council.

TESTIMONY OF HOWARD M. NEUKRUG, P.E.

Good morning, Representatives Brady, Fattah and Schwartz. I am Howard Neukrug, Director of the Office of Watersheds for the City of Philadelphia Water Department. It is an honor to take part in this panel.

Mayor Nutter has noted that global warming may be more than just an "inconvenient truth"; it may be our future. And no other resource will be more affected by climate change than water, whether we are looking at Philadelphia's waterfronts, its drinking water supply or the conditions of its rivers and streams and its underground infrastructure network.

In many ways, the effects we can expect from climate change in Philadelphia – higher temperatures, storm flooding and droughts - have already begun. This may be due (at least in part) to the concrete barriers we have placed between us and our environment, our massive sewer network and impervious streets and sidewalks and hundreds of thousands of acres of black tar roofs - oftentimes to the neglect of our parks, rivers and streams, and even street trees.

And, while we begin to work together on a global scale to address the root causes of climate change by moving towards an energy neutral world and minimizing green house gas emissions, Philadelphia is ready with a strategy to minimize the environmental, ecological and public health risks for changes that have already occurred, and new challenges that are yet to be realized to our own local environment.

In fulfillment of a campaign promise, and in recognition that a green economy may be the catalyst to our city's revival, Mayor Nutter has committed to making Philadelphia *The Greenest City in America*. While most are stymied by the magnitude of the environmental and economic challenges that face us as a nation and a world, Philadelphia has crafted bold solutions. They can be found in an ambitious new action plan called Greenworks Philadelphia.

Through Greenworks Philadelphia, the city fully expects that we will be able to strengthen *our economy while reducing our environmental footprint*. Philadelphia's walkable streets, comprehensive regional transit system, enviable park network, and historically significant and ecologically valuable rivers and streams are the principal ingredients for this greener future.

As I continue my testimony, please note the series of before and after pictures shown on the screen as they translate our words and intent into glimpses of a potential reality. This is the vision that we must not lose sight of – the vision that represents a green future for Philadelphia that also results in the restoration of the health and beauty of our streams. This is the vision that is endorsed and supported by the Mayor's Office of Sustainability and the Philadelphia Water Department.

On behalf of our Water Commissioner, Bernie Brunwasser, and the entire management team at the Philadelphia Water Department, I would like to first offer you our thanks, Congressman Brady, Congressman Fattah and Congresswoman Schwartz, for your ongoing support for our efforts.

Your support for legislation authorizing projects through the Southeastern Pennsylvania Waterways Program and for infrastructure funding through state revolving loan funds and the American Recovery and Reinvestment Act (ARRA) of 2009 is vital for communities like ours that have older infrastructure in need of renewal or replacement and are hungry for the opportunity to invest in new green infrastructure technologies for managing stormwater.

Most recently, as a result of stimulus dollars, we were awarded a nearly \$200 million SRF loan from PennVEST, to implement sorely needed wastewater and drinking water infrastructure improvements. An additional \$30 million of Green Reserve dollars also will facilitate the implementation of innovative and environmentally friendly

demonstration projects that might have been deferred in this economy. Thank you for this.

More generally, because of your support and interest in green sustainable programs in Philadelphia, PWD has received millions in Federal appropriations since 2003. These funds have enabled us to demonstrate a whole new kind of infrastructure for the City of Philadelphia, creating a greener mandate for our utility while providing a national model for innovative stormwater management across the country. These community-based projects include:

- porous- pavement basketball courts and sidewalks in Germantown, South and West Philadelphia, and West Mt. Airy
- rain gardens in Southwest Philadelphia, Northern Liberties, and East Mt. Airy
- greened streets in West Philadelphia, South Philadelphia, and East Falls
- fish migration in the Schuylkill River through a refurbished fish ladder at Fairmount Dam
- green roofs, cisterns and rain gardens in schools such as the School of the Future, the Wissahickon Charter School and the Penn Alexander School
- restored stream banks along the Cobbs and Tacony Creeks

All of these projects have helped us build our case for green infrastructure and better understand where we want to go and how to get there.

Over the past year PWD has crafted a vision for the City which will enable us to comply with the Clean Water Act goals by creating urban landscapes and streetscapes that manage stormwater more effectively than pipes while also contributing to other environmental and ecological improvements, and, perhaps most importantly, enhancing our local communities.

Your support of our programs has contributed to the success of this city in advancing this vision of a greener and healthier Philadelphia through projects that transform harsh, urban surfaces into patches of land that – to the rain – feel like nature.

For example, we have started a Model Neighborhoods Program where we are working with civic and public partners to recruit the residents in their neighborhoods to designate areas for green streets, green facilities, green public spaces, and green homes.

Model Neighborhoods are designed to create green "stormwater management parks" throughout the city to provide an exciting model to demonstrate how much can be accomplished when PWD partners with neighborhood organizations to achieve our green vision for a sustainable city. We believe that these green make-overs will result in a larger public demand for similar efforts throughout the city.

But money and local heart are not enough. To make this vision a reality, we all recognize the need to shift from controlling stormwater discharges into our rivers and streams to preserving the value of rain water. We believe we can do this by changing the relationship between land and rain water from one based upon a 19th century

approach of building massive pipe systems to capture and remove nature's rain to one where we welcome rain water as a local asset.

While we renew our infrastructure, we are planting trees and rain gardens and other above-ground amenities that provide multiple benefits of economy, sense of place, ecology, public health, and the environment.

Though PWD's green infrastructure program is a part of our regulatory approach to meeting Clean Water Act obligations, the regulatory benefits of green stormwater infrastructure approaches are only a small fraction of the wide-ranging and important benefits that will accrue to a city from adopting these approaches. The most important gains are found among the multitude of additional environmental and societal benefits that accrue from adopting a more sustainable, green approach.

When we account for the full range of environmental, social, and financial impacts, the green approach brings significant, wide-ranging, and measurable improvements to the urban environment.

If Philadelphia were to transform only 20% of the city's land area through the installation of new green infrastructure, in 20 years we would:

- significantly reduce sewage overflows to our rivers and streams
- create 200 million additional recreational user days at these resources
- reduce the number of heat-related deaths by 80 lives
- save 550 million kilowatt-hours of electricity
- reduce our cooling needs by a trillion BTUs
- reduce our greenhouse gas emissions by well over a million tons

And all of this is accomplished while creating hundreds of green jobs for local citizens.

The USEPA has been a great supporter of these concepts, as have environmental organizations like the National Resource Defense Council (NRDC) and American Rivers and many members of Congress.

But we have a problem. While many at the highest levels of the USEPA and elsewhere support this green infrastructure strategy, USEPA has yet to find the means for incorporating these ideas into its regulatory, policy, and enforcement framework.

We need a 21st Century Sustainable Cities interpretation of the Clean Water Act.

Without this, all of the good wishes of our many supporters- at USEPA, Pa DEP, our mayor and governor, Congress, and environmental advocacy groups - will be wasted.

We will remain burdened with doubt about the future of our programs by a sometimes myopic interpretation of how to achieve the goals of the Clean Water Act.

Simply put, expanding our underground sewer network is not a sustainable approach.

Yesterday's sewer systems were not designed to handle today's challenges. Nor are they equipped to mimic natural stormwater management principles essential for

restoring our rivers and streams to not just fishable and swimmable standards, but to make them accessible, safe and attractive for recreation.

And isn't that what all this is about? Caring for our streams so that they are clean and thriving and beautiful again?

Without trying to mention the hundreds of partners we have in these activities, I would like to recognize the Philadelphia Horticultural Society which has been a great partner in our Green City, Clean Waters Initiative. They have been instrumental in helping to implement demonstration projects, in testing new designs and engaging the community to support Green Infrastructure, and in organizing the communities to help maintain these projects.

The University of Pennsylvania is also a major partner, developing its own sustainability program to reduce energy use, carbon emissions, and stormwater runoff, and providing the technical and economic expertise on display during Vice President Biden's visit to Penn last month. The university is now working with PWD on several new projects now, including:

- replacing 14 acres of asphalt parking to green space and athletic fields, capturing stormwater with swales and cisterns which will re-use the rainwater for irrigation
- a new student residence with a green roof and green streets using new technology infiltration tree pits
- a new green walkway project with planted rainwater swales

In summary, I am here today on behalf of the Philadelphia Water Department to both thank you for recognizing that there has been a fundamental shift in how we view and manage the urban landscape, to urge you to continue to fund our green infrastructure programs to manage stormwater and to enlist you to convince the USEPA to support the water sector in its efforts to implement sustainable solutions to stormwater management. The USEPA must revise its policies to allow and encourage green, sustainable approaches for overflow controls.

The Green Communities Act is a great starting point. Green infrastructure is increasingly being seen across the nation as a cost-efficient strategy for protecting and restoring water resources and simultaneously achieving other environmental, community, and economic goals including providing green jobs for engineers, architects, construction workers, plumbers, maintenance workers, and many others. If fully funded, federal legislation could provide thousands of such jobs for participating communities.

The Green Communities Act is also very compatible with the proposal drafted collaboratively by and endorsed by the National Association of Clean Water Agencies, the Natural Resources Defense Council, American Rivers, Clean Water Action, the Low Impact Development Center, the Center for Neighborhood Technology, the Association of State and Interstate Water Pollution Control Administrators, and others.

This proposal – which is also endorsed by the Water Department - would build upon the statement of intent to promote green infrastructure that USEPA and all these groups

previously endorsed. The proposal has three goals: (1) establish Centers of Excellence to develop and disseminate green infrastructure technologies, (2) authorize a new federal grants program to support planning, implementation, and monitoring of green infrastructure projects and associated green jobs, and (3) –most importantly - require USEPA to create a program to promote green infrastructure and integrate it into existing regulatory programs.

In conclusion, the opportunities and the benefits of green stormwater programs are too great, and the potential for missed opportunities and the subsequent result - an unsustainable future for our urban centers - is too bleak for us to fail to act.

We need your help to frame policy and enforcement strategies that meet the goals of the CWA through implementation of green and sustainable cities.

We look forward to working with you and the other members of Congress on accomplishing these important goals. Thank you very much, and I will be happy to take any questions.

J. BLAINE BONHAM JR.

Executive Vice President, Pennsylvania Horticultural Society

J. Blaine Bonham Jr. serves as executive vice president of the Pennsylvania Horticultural Society (PHS) and founded its urban greening program, Philadelphia Green, in 1974. Under Bonham's aegis, Philadelphia Green moved from a small, grassroots initiative to the forefront of urban greening in the nation and now serves as a model for programs in other cities. In addition, Bonham oversees PHS's education, publications, membership, and development departments, with a total budget responsibility for over \$12 million.

In 2003, Blaine Bonham helped Philadelphia Green create the Green City Strategy, which was adopted by the City of Philadelphia. Through this initiative, Philadelphia Green developed and implemented a vacant land management program that has since converted 8 million square feet of once derelict land to green space.

Bonham collaborated with the producers of the acclaimed PBS documentary *Edens Lost & Found*, which prominently features PHS's greening work in the Philadelphia episode, aired in May, 2006. This series chronicled the public- and private-sector efforts of four cities—Chicago, Los Angeles, Seattle, and Philadelphia—to reclaim and create sustainable urban environments. It was produced by the Academy Award-winning company Wiland-Bell of Los Angeles.

He serves on numerous boards and currently chairs the board of the Greenspace Alliance, a regional organization that advocates the preservation of open space and natural resources as critical regional assets.

Bonham was a founding member of the Neighborhood Gardens Association/A Philadelphia Land Trust, an organization that assists communities in making gardens a permanent part of the neighborhood fabric.

In 1997, he served on an international team of planning and design professionals through the Countryside Institute, which advises local leaders in rural England on development and preservation issues. In 2000, Bonham co-chaired the Mayor's transition team subcommittee on blight elimination in Philadelphia's neighborhoods.

In 2005, Bonham also led a Philadelphia team that presented PHS's vacant land management model to an audience of government officials and non-profit leaders at The White House Conference on Cooperative Conservation in St. Louis, Missouri.

Bonham is a frequent lecturer and presenter at conferences in the community development and horticulture fields, including the 2007 American Planning Association conference, the 2008 American Association of Landscape Architects conference, Penn Institute for Urban Research's 2009 Growing Greener Cities Panel, and the Philadelphia Federal Reserve's 2006 Reinventing Older Cities Conference.

Bonham and Patricia L. Smith recently co-authored a chapter in University of Pennsylvania's 2008 book *Growing Greener Cities*. Bonham is the co-author of the book *Old Cities/Green Cities: Communities Transform Unmanaged Land*, published in 2002 by the American Planning Association. He is also the author of several articles and in 1995 produced *Urban Vacant Land: Issues and Recommendations*. Five years later, Bonham led the effort to undertake PHS's *Vacant Land Management Study*, which provided recommendations to city government on a comprehensive, proactive approach to Philadelphia's vacant land problem.

Bonham holds a bachelor of science degree in political science from Pennsylvania State University and an associate of science degree in horticulture from Temple University. He completed a Loeb Fellowship in advanced environmental studies at Harvard University in 1991. Prior to his joining the staff of PHS for a career in horticulture and human services, Bonham worked as a portfolio analyst for the Philadelphia National Bank.

TESTIMONY OF J. BLAINE BONHAM, JR.

Good morning, Congresswoman Schwartz and Congressmen Brady and Fattah. I am Blaine Bonham, Executive Vice President of the Pennsylvania Horticultural Society and I am honored to give testimony to you on the critical importance the green infrastructure plays in the future of Philadelphia and all cities and towns.

The Importance of the Green Infrastructure in Philadelphia

Philadelphia, like other American cities, recognizes the value of open space and its importance to the quality of life. Open space spurs economic development, tourism, and housing development. It improves the health of people as well as their natural environment.

Philadelphia residents understand that a healthy, green environment is vital to the city's future. A citywide survey conducted in 2007 showed that Philadelphians think more support and resources should be focused on open space and environmental issues. The survey found that "ninety-two percent of Philadelphians believe that environmental

and infrastructure improvements are necessary to improve the area's economic competitiveness and growth.” (Source: PennFuture survey - www.pennfuture.org.)

Despite its historically gritty reputation, Philadelphia enjoys a wealth of green resources actively used by millions of people, including one of the nation's largest city park systems. For too long, however, there had been no overall approach to preserve, maintain, and expand these resources to meet new opportunities for the green infrastructure to enhance Philadelphia's renaissance as a great world city. Mayor Michael Nutter's newly unveiled GreenWorks Philadelphia recognizes the critical role these green resources play in the City's portfolio of assets and its future as a sustainable, vibrant place to live, work, and play.

Green infrastructure serves as a city's natural life-support system and weaves its way through cities. The green infrastructure of the city includes:

- Neighborhood and regional parks
- The “urban forest,” including street trees and parkland trees
- Public landscapes, quadrangles, and plazas
- Landscaped streetscapes, gateways, and highway verges
- Playgrounds, play areas, ball fields, and recreation centers
- Community gardens
- Riverfronts
- Recreational trails and greenways
- Green roofs
- Abandoned land that can be utilized as new green spaces
- Other private and public land used for passive or active recreation

The Value of the Green Infrastructure

For cities, having a well-conceived plan and approach that protects and enhances its green infrastructure not only saves money, but also provides a host of benefits. Parks, greenways, and tree-lined streets improve local economies by attracting tourists, enhancing commercial districts, and increasing property values. A healthy urban forest improves air quality, absorbs storm water, and reduces summer cooling costs. Greener urban landscapes improve the quality of life by offering respite from city stresses, promoting social interaction, and reducing crime. They also promote better health by providing recreational opportunities and a cleaner environment. Not surprisingly, businesses view ample green space as an asset that can reduce health-care costs and attract new employees—important factors when corporations decide where to locate.

Some of the most compelling evidence for the importance of green infrastructure demonstrated the economic impact it has on a city. Largely until Dr. Susan Wachter, from University of Pennsylvania's Wharton School issued her study that demonstrated the positive impact of greening interventions on property values across Philadelphia, the city's green infrastructure was viewed as a nice-to-have amenity, but not critical to the redevelopment of the city (a notion also held across many cities).

Funded by the William Penn Foundation, *Public Investment Strategies: How They Matter for Neighborhoods in Philadelphia - Identification and Analysis* (2006) offers further proof of the benefits of greening, revealing significant increases in property values citywide where greening has occurred. “Overall, our conclusion is that the very high returns suggested by the results imply large-scale positive impacts from investment in public spaces,” Wachter says.

Key findings of the study include:

- Improvements to streetscapes (street tree plantings, container plantings, small pocket parks, parking lot screens and median plantings) can add as much as an additional 28% to the value of a nearby home.
- Neighborhood commercial corridors in “excellent” condition are correlated with a 23 percent net rise in value for homes within ¼ mile of the corridor and an 11 percent net rise for those within ½ mile.
- Homes located in “business improvement districts” (BIDs)—neighborhood-based organizations that provide special services like trash removal and greening, such as University City District and Frankford Special Services District—are valued 30% higher than comparable homes not located in BIDs.
- While proximity to a neglected vacant lot subtracts 20 percent from the value of an adjacent home, adjacency to a stabilized lot—one that has been improved through cleaning and greening—increases the home’s value by as much as 37 percent. (Cleaning the lot increases value by 20 percent, bringing the house in line with unaffected homes, and greening the lot imparts an additional 17 percent value.)

More broadly, *Public Investment Strategies* bolsters the argument for integrating greening into comprehensive revitalization efforts and demonstrates the dramatic, immediate impact of visible improvements. It provides concrete evidence that can be used to influence policy discussions and guide decision-making on neighborhood investments in Philadelphia and nationwide.

Quality green infrastructure is a key part of urban revitalization and will greatly impact Philadelphia’s future. It is imperative that city, state and federal elected officials and policy makers at all levels of government understand this and work to protect and enhance Philadelphia’s green infrastructure, working in partnership with non-profits and community residents to ensure a successful green environment.

A Green City Strategy

The Pennsylvania Horticultural Society (PHS), through its Philadelphia Green program, has been working with communities, government, and other non-profits for over three decades as both catalyst and advocate to demonstrate the critical role greening plays in transforming the city. In addition to PHS, groups like the member organizations of the Next Great City coalition, the Philadelphia Parks Alliance, the Pennsylvania Environmental Council, and PennFuture have been actively working to bring the care and management of green infrastructure to the forefront of political debate.

PHS has developed a **Green City Strategy** that promotes a thriving green infrastructure as an essential part of urban revitalization and pushes for increased investment in green spaces. It addresses six key aspects of the urban landscape, demonstrating their valuable importance and advocating their development, management, and preservation.

Manage Vacant Land as an Asset

More than 40,000 derelict plots continue to plague Philadelphia. Over the past several years, the City has invested more than \$14 million in vacant land management, allowing Philadelphia Green to “clean and green” over eight million square feet of land—an area equaling more than 180 acres of formerly blighted lots. This both stabilizes and *reveals* the land, attracting new businesses, investment, and residents. Philadelphia Green is a national model for vacant land reclamation because its methods have a proven track record of success.

Use Innovative Approaches to Manage Excess Storm Water

In addition to serving as attractive open space, parks, landscaped public spaces, managed parcels of vacant land and green roofs can also harness and filter excess storm water, allowing it to drain slowly. PHS has worked with the Philadelphia Water Department (PWD) on several prototypical projects to retrofit vacant lots, parkland, and playgrounds to demonstrate this potential to ameliorate the critical problem of storm water runoff that pollute our rivers and streams that face Philadelphia and other cities. This innovative low impact, or “soft development,” system is “an important prototype for efficient watershed protection,” says Howard Neukrug, director, PWD, Office of Watersheds.

Support Neighborhood Greening Projects

With more than 400 active community gardens, Philadelphia has long been the national model for community-managed open space. Gardens, parks, tree-lined streets, and other open spaces used and maintained by neighborhood volunteers provide significant benefits to the city’s economic landscape and create viable neighborhoods. Through the City Harvest project, last year over 20,000 pounds of fresh produce from seedlings started at the Philadelphia Prison System and then grown in 40 community gardens was donated to food cupboards.

Adopt a Strategy that Revives and Improves the City’s Park System

Research consistently shows that investment in parks generates higher real estate values, economic revitalization, increased tourism, and better overall quality of life. The City recently took the historic step of combining the Department of Recreation and Fairmount Park system along with a change in governance structure, to more effectively manage these open space assets and deliver services efficiently. PHS’s Parks Revitalization Project works with residents in almost 100 neighborhood parks and the City to reclaim these spaces as the community outdoor living rooms. Civic and business leaders should support reforms in park governance and provide options for increased and diversified funding for city parks.

Strengthen the Urban Forest to Combat Blight and Reduce Pollution

Between 1985 and 2000, the loss of trees in Southeast Pennsylvania left the region unable to remove about 1.7 million pounds of carbon dioxide from the air annually—an estimated value of \$3.9 million per year (*American Forests*, 2003). Regional forests and green spaces also serve as filters for valuable watersheds. PHS has been the lead non-profit for the Governor’s TreeVitalize program over the last six years. Working with city government, regional municipalities, Penn State Extension, Morris Arboretum, community organizations, and residents trained and organized as Tree Tenders, 35,000 trees have been planted in Southeast Pennsylvania on streets, in parks, and along streams. In Philadelphia, a proactive new management system should partner with public and private organizations, businesses, and community groups to sustain and continue to expand Philadelphia’s tree canopy, and set ambitious tree-planting goals.

Promote Public and Private Investment in Treasured Spaces

Like Paris, London, and New York, Philadelphia is in competition to attract tourists and successful businesses, as well as retain a skilled workforce. A green environment is one crucial element to achieving this goal. PHS has been a leader in transforming public spaces into beautiful landscapes that raise the profile and reputation of our city as a destination. Investment in Center City’s civic spaces, gateways, and streetscapes—such as Logan Square, the Benjamin Franklin Parkway, Azalea Garden, and the Avenue of the Arts—positions Philadelphia as a “must-see” tourist destination and renowned world-class city.

While the Green City Strategy was developed for Philadelphia, it can serve as a template for any city considering how to enhance its redevelopment of communities through more effective management of its green assets. Congresswoman Allyson Schwartz introduced House Bill 2222, the Green Communities Act that will award grants to communities to enhance their green infrastructure with specific projects. The Act will require representatives from cities selected to participate in the program to undergo training that will increase their awareness of the value of their green infrastructures and plan the project’s implementation with community partners and other local non-profits as appropriate to ensure the sustainability of these projects.

All federal legislation addressing the urban landscape of cities should require them to have in place sustainability plans, like GreenWorks Philadelphia, to qualify for as grantees. Such policy will accelerate the investment in this vital resource in cities across the country and will greatly enhance the economic, environmental, and social health of our urban areas.

Thank you for the opportunity to comment on this important issue. PHS stands ready to work with members of Congress to promote the development of green infrastructures in communities across the country.

SUSAN WACHTER

Richard B. Worley Professor of Financial Management and Professor of Real Estate and Finance, The Wharton School at the University of Pennsylvania

Dr. Susan Wachter is Richard B. Worley Professor of Financial Management and Professor of Real Estate and Finance at The Wharton School at the University of Pennsylvania, and also holds the position of Professor at the Graduate School of Design. Dr. Wachter served as Assistant Secretary for Policy Development and Research at HUD, a President appointed and Senate confirmed position, from 1998 to 2001, and was principal advisor to the Secretary responsible for national housing and urban policy. The Chairperson of the Wharton Real Estate Department from 1996 to 1998, Wachter is the author of over 200 publications. Wachter served as President of the American Real Estate and Urban Economics Association and coeditor of *Real Estate Economics*, and currently serves on multiple editorial boards, and is Co-Director of the Penn Institute for Urban Research and Director of the Wharton Geospatial Initiative. For more information, please contact Dr. Wachter (wachter@wharton.upenn.edu) or see <http://www.upenn.edu/penniur/>.

TESTIMONY OF DR. SUSAN WACHTER

I: Introduction

Representatives Brady, Fattah, and Schwartz:

Thank you for the invitation to testify at today's hearing on "Vibrant Communities, Healthy Waters, and Job Opportunities: Exploring Green Infrastructure and the Role of Federal Policy." It is my honor to be here today to provide my perspective on green investment strategies that result in economic and real property value benefits in urban neighborhoods. In particular I will address how greening efforts have had a measurable positive effect on house prices across Philadelphia, a success story with broader implications for federal policy in support of greening initiatives. My testimony is based on a study that I and Kevin Gillen, a research fellow at the Wharton School, authored on public investment strategies and their effect on house prices. It also reflects my role as co-director of the Penn Institute for Urban Research, an institute where sustainability is a major focus of our work as we operate under the belief that cities are inherently sustainable because their dense development patterns discourage sprawl and excessive energy use.

II: Background on Philadelphia

Philadelphia as a former manufacturing center (and one of many such centers in the US) has experienced a major decline in population from 2.1 million in 1950 to under 1.5 million at present due to deindustrialization and the consequent loss of jobs. As a result of this decline, many neighborhoods in Philadelphia have experienced disinvestment, blight, and increased vacancy. The city currently has an estimated 40,000 vacant lots comprising upwards of 1,300 total acres of land. Blighted lots are distributed throughout the city except for Center City. Vacant lots, though concentrated in specific neighborhoods, are typically sporadically distributed among semi-intact

blocks of rowhouses, creating an irregular pattern of vacancy, with few large tracts appropriate for redevelopment. Given the spatial pattern of intermittent vacancy and occupancy, urban greening has emerged as a potentially key vacant land management strategy in Philadelphia.

Philadelphia needs to counter the effects of neighborhood decline and uneven development. Vacant lots are points of blight that contribute to the decline of the social fabric of neighborhoods. They contribute to crime and render neighborhoods unattractive, unhealthy and unsafe for residents and particularly for families with children. Vacant lots contribute to further disinvestment because they discourage maintenance of the housing stock.¹

Philadelphia is a city of neighborhoods and has potential to deliver attractive housing in pleasant communities, but this potential is currently undermined by the disamenity of untended, blighted land. In addition, throughout the city, green infrastructure has been seriously neglected by the loss of trees, greenways, even the maintenance of streetscapes in major corridors that are entryways to residential neighborhoods. The potential to reverse this and enhance the quality of life in the

neighborhood is recognized but it is difficult to do so. To do this requires collective will, decision making, and action.

Green investment is often an individual undertaking. For example, people can and do plant their own trees in order to enhance the attractiveness of their homes, when benefits of doing so exceed the costs. However, without collective action, similar public investment may or may not occur, even when clearly desirable. The result is investment that can reverse neighborhood blight may not be undertaken. This also means that successful collective action can have large returns, far larger returns than for undertaking individual greening investments.

III: Greening Efforts in Philadelphia

In 2005, we completed a research study considering the economic impact of urban greening in the Lower Northeast section of Philadelphia – an area that is the target of a multi-year vacant land management program run jointly by the New Kensington Community Development Corporation (NKCDC) and the Philadelphia Horticultural Society (PHS). In this study, economic models were used to demonstrate that homes in the neighborhood rose in value as a result of tree plantings, park improvements, and vacant lot cleanup.

The NKCDC- and PHS-sponsored Vacant Land Management Program was launched in 1995 to address the growing crisis of vacant land caused by a cycle of

¹ Wachter and Wong (2007) point out that green investments such as tree plantings can be viewed as a signaling event. If so, the event can have value above and beyond that of just the investment itself. For example, it indicates that investment in a neighborhood is occurring, that social capital between residents is improving and that the neighborhood appears to be on a perceived —upswing—. The authors measure the intertemporal dynamics of this effect via an event-study methodology that measures how the capitalization of green investments varies with time from the event.

abandonment, demolition and neglect in this formally heavily industrialized community. During the first year of the program, PHS planted street trees and established community gardens with organized block groups. By 1996, NKCDC and residents implemented the first large-scale tree planting on six vacant lots. Following these plantings, joint efforts between both organizations resulted in the ongoing establishment of community gardens, street tree plantings, and the stabilization of vacant land. NKCDC also began administering a side-yard program in 1996 that facilitated the transfer of vacant property to adjacent homeowners. The Vacant Land Management Program served as a pilot project for the City's Neighborhood Transformation Initiative (NTI) – a comprehensive campaign begun in 2002 to eliminate the blight caused by long-term vacant structures, abandoned automobiles, and trash strewn vacant lots. The city worked with PHS to design a citywide greening strategy to treat both existing vacant lots and new lots created through ongoing vacant property demolition. Vacant lots were cleared of debris, seeded, landscaped with tree plantings, and enclosed with rustic wood post fencing. Between 2000 and 2003, the program was responsible for cleaning, improving and maintaining 12,186 lots. Another 18,800 lots were cleared of trash and debris.

We determined these efforts' effect on property values using econometric analysis of spatial and time-based data. These include data on City of Philadelphia property sales and more than 50 attribute characteristics for 120,000 properties and 200,000 sales for the period 1980 to 2004, provided by Realist, Hallwatch.org, and the City of Philadelphia's Board of Revision of Taxes. Separate datasets on greening investment data were collected and integrated with the property database, including precise geography and date, for each investment to the extent available. The Pennsylvania Horticultural Society provided data on where and when trees were planted, and we were able to compare neighborhood values before and after these plantings based on nearby property sales.

Some key findings, based on a 2004 median priced Philadelphia home of \$82,700, include:

While proximity to a neglected vacant lot subtracts 20% (\$7,443) from the value of a home, adjacency to a stabilized lot (one that has been improved through cleaning and greening) imparts an additional 17% (\$14,059).

Improvements to streetscapes (container plantings, small pocket parks, parking lot screens and median plantings) can add as much as an additional 28% (\$23,156) to the value of a home.

Nearness to a new tree planting can have a positive effect of up to 9% (\$7,443) on home value.

Walking distance (less than 1/8 mile) from a subway station increased property values by 3% (\$2,481).

Proximity to a commercial corridor negatively affects home values, generally due to noise and congestion. However, this effect is reversed if the corridor is in "excellent" or "good" condition. This is the first study that demonstrates the positive impact of maintenance of commercial corridors. The net impact of being located less than ¼ mile

from a commercial corridor in “excellent” condition was an increase in 23% (\$19,021); a location ¼-½ miles from an “excellent” commercial corridor boosts the value 11% (\$9,097).

IV: Conclusion – Federal Policy Implications

This study contributes to our understanding of the determinants of how people value their neighborhoods by identifying the impacts of place-based investments on property values in surrounding areas. While the importance of neighborhood effects of community investment seems intuitive, most studies fail to find empirical evidence of such neighborhood effects. This study does so by deploying a new methodology for evaluating the impact of place-based investments, making use of precise time-based, spatial information to identify when and where the investment occurs, while controlling for other property and neighborhood characteristics. Since the focus is on investment strategies rather than static characteristics of neighborhoods, the information is relevant to community and city decisions on whether and which investments are supported.

The primary focus of the place-based investments studied here has been greening of public spaces. And, the methodology used is especially pertinent to studies of greening because of the specific time- and space-based nature of greening events are both observable and measurable. As such, green investments in particular are a particularly apt subject category to measure the returns from place-based investments in public spaces. For policymakers, these results can assist in determining the expected return from place-based investments, as well as identifying the specific types of investments that yield the highest returns.

It is anticipated that the findings of this and similar studies will inform policy discussion on neighborhood investments in the City of Philadelphia and that they will be applicable to other U.S. cities facing the challenge of disinvested neighborhoods and the need to evaluate neighborhood reinvestment strategies. The conditions that make Philadelphia home prices susceptible to the positive effects of streetscape improvements, vacant lot clearing, tree plantings, and commercial corridor maintenance are not unique and I am confident that similar efforts will yield similar results in cities across the country, especially in the deindustrialized northeast and Midwest.

References

Growing Greener Cities: Urban Sustainability in the Twenty-First Century, co-editors Susan Wachter and Eugénie L. Birch, Philadelphia: University of Pennsylvania Press, 2008.

Wachter, Susan and Kevin C. Gillen. “Public Investment Strategies: How They Matter for Neighborhoods in Philadelphia – Identification and Analysis.” Penn Institute for Urban Research, 2006.

LIZ GARLAND

Associate Director, American Rivers, Clean Water Program Pennsylvania

Liz works with local and state decision makers who have water resource management responsibilities. Her work enables funding and encourages low impact development and green infrastructure practices that sustain communities.

Liz joined American Rivers' Clean Water Program for Pennsylvania in August of 2007. For five years prior she worked in West Virginia advocating for clean water policies and enabling watershed groups to protect rivers serving their communities. For nearly 15 years, Liz developed Geographic Information System capacity in Virginia for resource managers and planners protecting watersheds. In addition, Liz has interlaced her 30 years of whitewater experience working in the outdoor industry and volunteering to secure sound river management, recreational access and flows, and ensuring boater safety.

Liz holds a B.A. in Geography from Mary Washington University, and completed her graduate studies in Geography at Virginia Polytechnic and State University (Virginia Tech)

TESTIMONY OF LIZ GARLAND

Good morning Congressman Brady, Congressman Fattah, and Congresswoman Schwartz. I thank you and the staff of the Northeast-Midwest Institute for the opportunity to address the Vibrant Communities, Healthy Waters, and Job Opportunities: Exploring Green Infrastructure and Role of Federal Policy Philadelphia field hearing. My name is Liz Garland and I am Associate Director of American Rivers' Clean Water program in Pennsylvania. American Rivers is the preeminent national advocate for healthy rivers and the communities that depend upon them. American Rivers believes that sustaining rivers and clean water vital to our nation's health, safety, and quality of life requires an approach to water management that integrates green infrastructure and water efficiency into our conventional water infrastructure. This hearing is an example of Congress' readiness to promote a vision for sustainable water management that will integrate our built and natural assets by focusing first on green infrastructure. Aligning federal funding and policies to achieve this vision will green America's blue collar work force with skills that support long lasting and effective projects while also reducing polluted stormwater run-off and sewer overflows today, and making our communities more resilient to a changing climate in the future. On behalf of our 65,000 members and supporters, I applaud this hearing's exploration of the opportunity for green infrastructure within federal policy, and for the opportunity to testify.

This testimony will address the following topics:

A vision for 21st century water infrastructure;
Defining “Green infrastructure;”
Green infrastructure and green jobs; and
Recommendations for green infrastructure.

Overview: A Vision for 21st Century Water Infrastructure

This moment in time offers a unique opportunity for Congress to put forth a new vision for sustainable water management. The public has recently come to understand that we must transform our approach to energy by embracing efficiency and renewable technologies that rely upon nature to fuel our economy in the 21st century. We need a similarly transformative model for water infrastructure. A new vision for sustainable water infrastructure is one that integrates traditional and green infrastructure in a way that works with nature instead of against it. Green infrastructure approaches to clean water management include using rooftop vegetation to control stormwater and reduce energy use, restoring wetlands to retain floodwater, installing permeable pavement to mimic natural hydrology, and using potable water more efficiently. Such smart infrastructure approaches have far-reaching benefits – they reduce stormwater runoff and sewage overflows, increase water infiltration to recharge drinking water supplies, and create valuable green space. They also cost less than traditional pipes, treatment plants and reservoirs, and create domestic jobs. By treating water on-site and reducing water use, green stormwater controls and water efficiency reduce energy costs and corresponding greenhouse gas emissions by decreasing the amount of water that must be pumped, distributed and treated. Moreover, these green approaches are flexible in terms of scale and can be integrated at the building and neighborhood scale as well as across watersheds and river basins. The multiple benefits of these approaches and flexibility that they provide make them a perfect response to the uncertainties and volatility of a changing climate

Given that the nation’s economy is struggling with the worst crisis since the 1930s, making smart investments with multiple benefits is all the more critical. At the same time the country is struggling financially, the nation’s decaying infrastructure is threatening long-term economic competitiveness. America’s water infrastructure is at a crisis point: water and wastewater systems now receive the lowest grade, a D-, of all infrastructure systems rated by the American Society of Civil Engineers.² While aging sewers and treatment plants, growing population, and sprawling development patterns strain our existing clean water systems we continue to lose crucial elements of our natural clean water system – headwater streams, wetlands, forests, and natural floodplains. Climate change is already making the problem worse, and scientists predict more frequent and severe droughts and floods as the planet warms. In fact, one-third of the U.S. experienced moderate to severe drought last summer and 40 state water managers have forecast significant water shortages in the coming five years. Annual flood

² American Society of Civil Engineers, Report Card on America’s Infrastructure, accessed online Oct. 25, 2008, <http://www.asce.org/reportcard/2005/index2005.cfm>

damages in the U.S. have increased from \$1 billion in the 1940's to \$5 billion in the 1990's.³

Water quality is also at risk. The U.S. Environmental Protection Agency (EPA) has stated that water quality declines are reversing decades of improvement, and in less than a decade, without substantial increases in water infrastructure funding, pollution will return to 1970 levels.⁴ Furthermore, climate change will stress clean water at both extremes – some areas will experience increased flooding and corresponding sewer overflows and stormwater pollution while other areas that become drier will encounter a higher concentration of water pollution. To reverse this trend we will need to spend over \$650 billion on capital improvements for our drinking water and sewage infrastructure through 2019.

Unfortunately, since 2002, federal clean water funding has declined significantly, leaving states and local governments to fill the gap. A recent gap analysis for Pennsylvania determined that \$43.8 billion would be needed to fill the gap between revenue and need for water infrastructure over the next 20 years.⁵ Between 2004 and 2005, states and municipalities spent \$36 billion on sewers and another \$46 billion on drinking water, and in 2006, local governments made 96% of all sewage treatment investments.⁶ However, the financial crisis and economic downturn have sharply decreased local investment.

We need a new national commitment to water infrastructure investment, but we must also invest more wisely. The new agenda for water in this country cannot rely upon the outmoded approaches of the past two centuries. Continuing with old approaches would lock in investments for decades that are too costly, too inflexible, and may cause more harm than benefit. In order to reverse these trends, American Rivers has urged Congress to direct more funding and align policies to solutions that work best and most cost effectively in a world dominated by climate change and new economic challenges.

Wisely, Congress has chosen to make investments in 'green' water infrastructure projects through the economic stimulus package (the American Recovery and Reinvestment Act), by requiring that at least 20% of all water infrastructure investment through the State Revolving Funds be used for green infrastructure, water efficiency and other environmental innovation. These projects will provide both an immediate economic boost and adequate clean water to drive future economic growth. Already, the demand for stimulus dollars to fund green infrastructure and water efficiency across the nation is demonstrating a need for long term commitment to green approaches of water management from federal funding programs. For instance, Philadelphia is ready to invest more than \$9 million in green infrastructure recently awarded by PENNVEST, but this represents just a fraction of the green infrastructure project needs identified by the

³ Pielke, R.A. Jr. "Nine Fallacies of Floods". *Climatic Change*, #42, 119-127

⁴ U.S. EPA, The Clean Water and Drinking Water Infrastructure Gap Analysis, at 8, September, 2002 (<http://www.epa.gov/owm/gapreport.pdf>)

⁵ Governor's Sustainable Infrastructure Task Force Report, November 2008

⁶ U.S. Conference of Mayors, Mayors Water Council, *Local Government Investment In Municipal Water And Sewer Infrastructure: Adding Value To The National Economy*, at 1, August 14, 2008 (accessed October 25, 2008, <http://www.usmayors.org/pressreleases/uploads/LocalGovtInvInMunicipalWaterandSewerInfrastructure.pdf>)

City. Immediate and on-going investment in green infrastructure will put Americans to work building sustainable, adaptable water infrastructure that will be our legacy to future generations.

American communities need a public works program that can support economic growth, create new jobs and protect our most vital resource: clean water. Retrofitting homes and businesses with efficient plumbing fixtures has been shown to significantly lower water consumption, add effective capacity to sewage treatment systems, reduce energy costs associated with treatment and transportation of water and improve ecosystem health by leaving more water in rivers. New York City, for example, replaced 1.3 million inefficient toilets through a rebate program in the 1990s, reducing per capita water consumption 34% and saving \$200 million in water infrastructure costs.⁷ Green roofs, rain gardens and other green infrastructure techniques can reduce wastewater flowing into overtaxed sewer systems, minimize flooding and recharge groundwater supplies. By integrating green infrastructure into their sewer overflow reduction plan, the City of Indianapolis will be able to reduce the size of sewage pipes and save over \$300 million.⁸ Protecting and restoring wetlands and other natural areas near rivers can reduce and slow flood peaks, reducing damages downstream. They also absorb sediment and other pollutants and prevent them from contaminating waterways, cutting water treatment costs. Transforming our water infrastructure to focus on protecting, restoring and replicating our natural environment will be a necessary part of creating communities that are economically and environmentally vibrant.

Green Infrastructure Defined

As a working concept, green infrastructure can broadly be defined as an approach to water management that reduces stormwater runoff, sewer overflows, and flooding by protecting, restoring, or mimicking the natural hydrology of an area. This is often accomplished through the use of plants and soils or engineered solutions that recreate natural processes.⁹ In other words: planting trees and restoring wetlands, rather than building costly new water treatment plants; replacing parking lots and driveways with permeable pavement to reduce wastewater treatment demand; increasing water efficiency instead of building new water supply dams; and restoring floodplains instead of building taller levees.¹⁰

Green infrastructure solutions can be applied on different scales, from the house or neighborhood level, to the broader landscape level. On the local level, green infrastructure practices include rain gardens, permeable pavements, green roofs, infiltration planters, trees and tree boxes, and rainwater harvesting systems that maximize the opportunities for stormwater to infiltrate into the ground or transpire back

⁷ New York City Department of Environmental Protection. "Water Conservation Program" Flushing, NY: New York City Department of Environmental Protection, 2006.

⁸ *Sewer Overhaul Means More Green*, The Indianapolis Star. Oct. 14, 2008

⁹ Gary Belan & Katherine Baer, *Green Communities for Clean Water*, River Network, River Voices 18:1 (2008).

¹⁰ See generally, American Rivers, *Greening Water Infrastructure*

http://www.americanrivers.org/site/PageServer?pagename=AR7_GreenInfrastructure_Background.

into the atmosphere. At the largest scale, the preservation and restoration of natural landscapes (such as forests, floodplains, streams and wetlands) are critical components of green infrastructure.

Already, green infrastructure is being used successfully by a number of cities around the country.¹¹ Philadelphia, Chicago, Portland, Seattle, Milwaukee, Philadelphia, San Francisco and others are recognized as leaders in this area. Interest continues to grow as communities recognize the multiple benefits of using cost-effective techniques such as rain gardens, green roofs, and permeable pavement to manage stormwater on-site, reducing the need for expensive, hard infrastructure projects and stretching scarce dollars further. In Clayton County, Georgia, for example, a constructed wetland system that receives treated wastewater and recharges reservoirs had a consistent supply of water throughout the drought. While surrounding communities had severe water use restrictions and saw reservoirs drop below 50% capacity, Clayton County never dipped below 77% of reservoir capacity.¹² Additionally, the constructed wetland system has saved roughly \$50,000 in annual electricity costs from reduced treatment needs¹³ and has eliminated the need for 300 miles of pipes and 20,000 sprinklers.¹⁴

This surge in interest from cities, towns and counties across America has been enhanced by the EPA's Green Infrastructure Initiative, which has broad support from industry, local government, and conservation groups.¹⁵ Formal recognition by EPA of the validity of using green infrastructure techniques to meet regulatory requirements for combined sewer overflows (CSOs) and stormwater under the Clean Water Act further illustrates the value of these approaches.¹⁶

One of the main advantages of using green infrastructure is the multiple benefits it provides compared to conventional infrastructure. These benefits include cleaner water, more reliable water supply, cooler temperatures, improved human health and adaptation to climate change.¹⁷ While the environmental benefits of green infrastructure are well documented, the short-term economic benefits have not been

¹¹ See generally, NRDC, *From Rooftops to Rivers: Green Strategies for Controlling Stormwater and Sewer Overflows* (2006) and Water Environment Research Foundation, *Using Rainwater to Grow Livable Communities* (2008) <http://www.werf.org/livablecommunities/>.

¹² Saporta, M. August 24, 2008. Praise flows freely for Clayton County's water system. Atlanta Journal-Constitution; Associated Press. October 19, 2007. No backup plan in place for drought-stricken Atlanta. Fox News.

¹³ Clingan, C. June 2, 2008. Green infrastructure highlights American Wetlands Month. National Association of Counties, County News. Washington, D.C.

¹⁴ Clayton County Water Authority. 2005. 50 years of insight: the story of Clayton County Water Authority (1955-2005). Morrow, GA.

¹⁵ U.S. EPA, *Green Infrastructure Partnership* <http://cfpub.epa.gov/npdes/greeninfrastructure/gisupport.cfm>. Partners include the Association of Interstate Water Pollution Control Administrators, the American Public Works Association, the National Association of Clean Water Agencies, and the National Association of Environmental Local Government Professionals.

¹⁶ U.S. EPA, *Use of Green Infrastructure in NPDES Permits and Enforcement*, EPA Memo to Regional Water Division Directors State NPDES Coordinators, Aug. 2007. http://www.epa.gov/npdes/pubs/gi_memo_enforce.pdf.

¹⁷ These benefits are explored more fully in Testimony by Andrew Fahlund before the House Committee on Transportation and Infrastructure, Feb. 4, 2009 (www.americanrivers.org/SWMTestimony)

explored as extensively. The following section examines three categories of green water infrastructure projects and demonstrates that each would provide significant job creation to stimulate the national economy while producing long-lasting economic benefit to our water infrastructure investments:

Green Infrastructure and Green Jobs

In light of our nation's current economic situation it is important to highlight that green infrastructure creates jobs and increases revenue for the various sectors. Below we demonstrate the proven job creation of green roofs, water efficiency retrofits and wetland restoration as illustrative of the potential for green job creation.¹⁸ For the first two categories we estimate the job creation and other economic benefits from implementing these techniques on a national scale. The results demonstrate that green infrastructure can have far-reaching economic impacts on multiple sectors of the American economy while also beginning to build the water infrastructure important to maintaining competitiveness in the 21st century. A short summary is provided below with a more detailed explanation to follow.

Green roofs: Covering even 1% of large buildings in America's medium- to large-sized cities with vegetated roofs would create over 190,000 jobs and provide billions in revenue to suppliers and manufacturers that produce or distribute green roof-related materials.

Water Efficiency: A \$10 billion investment in water efficiency projects would produce a total economic output of \$25-28 billion, create 150,000-220,000 jobs and save 6.5-10 trillion gallons of water.

Wetland Restoration: The Cache River restoration, which directly employed 220 people and created over \$12.6 million in economic output, demonstrates the potential of a long list of pending wetland restoration projects.

Green roofs

Green roofs have long been recognized as an effective strategy to control stormwater, improve air quality and lower energy bills. Green roofs consist of a layer of soil and vegetation installed on top of a building. Widely used throughout Europe, they are rapidly gaining acceptance in the U.S. as well. Reducing both polluted stormwater runoff and energy costs required for heating and cooling. A number of cities have undertaken demonstration projects, and cities such as Philadelphia, Portland, Oregon and New York have recently begun to offer financial incentives to install green roofs.

¹⁸ Please note that the information presented here was originally published in two primary sources: American Rivers, *Creating Jobs and Stimulating the Economy through Investment in Green Water Infrastructure* (http://www.americanrivers.org/assets/pdfs/green-infrastructure-docs/green_infrastructure_stimulus_white_paper_final.pdf), and Alliance for Water Efficiency: *A Stimulus Package for Sustainable Water Infrastructure Investments* (http://www.allianceforwaterefficiency.org/uploadedFiles/News/NewsArticles/NewsArticleResources/Clean_Water_Green_Jobs-FLOW-Dec08.pdf)

EPA has recognized green infrastructure as an important tool in meeting water quality objectives and is encouraging its use in Clean Water Act permits.¹⁹

Less attention has been paid to the near-term economic stimulus effect of green roof construction. Our analysis demonstrates that covering even 1% of large roof surfaces in all medium to large American cities would generate over 190,000 jobs. Billions of dollars would go to American workers and the manufacturers that supply green roof materials. Indirect economic effects would spread the stimulus effect across a broader section of the economy. Green roof programs have the added advantage that they can be implemented more rapidly than large-scale water infrastructure projects and can thus provide an immediate boost to the economy. The combination of an immediate economic boost and long-term energy and water benefits makes green roofs a sound investment.

Methodology

Our analysis of the economic stimulus effect of a nationwide green roof initiative is based on draft data from a forthcoming report on the job creation potential of green roof construction in Washington, DC.²⁰ We adopt the estimates used in this study (Table 1) of the cost per square foot of green roof installed and the number of jobs created per million dollars of direct investment. Based on these ratios, we extrapolated the job creation potential to larger investments in green roofs across the country. It should be noted that labor and material costs in Washington, DC differ from those in other parts of the country. The median wage in Washington, DC is 29% higher than the median national wage.²¹ Thus for a given level of investment; a national initiative could cover more buildings with green roofs and create more jobs. While we use the Washington, DC figures to extrapolate the economic stimulus potential of green roofs to the rest of the country, the numbers likely underestimate the overall impact.

Table 1 – Washington, DC Green Roof Analysis²²

Number of Jobs Created	Cost	Total Green Roof Area (ft ²)
5,895	\$299,900,000	14,994,000
11,791	\$599,800,000	29,988,000
17,686	\$899,600,000	44,982,000

In order to estimate the cost of a nationwide green roof initiative, we first determined the total area to be covered. Based on our calculations, the total green roof-ready area in

¹⁹ U.S. Environmental Protection Agency. Green Infrastructure Initiative. Announced April 19, 2007 in "Green Infrastructure Statement of Intent" Agreement between U.S. EPA, National Association of Clean Water Agencies, Natural Resources Defense Council, Low Impact Development Center and Association of State and Interstate Water Pollution Control Administrators. http://www.epa.gov/npdes/pubs/gi_intentstatement.pdf. Accessed December 3, 2008.

²⁰ Washington, DC Office of Planning. Draft data from forthcoming report, Green Jobs from Green Roofs, 2009.

²¹ Lazere, Ed. "DC's Two Economies: Many Residents Are Falling Behind." Washington, DC: DC Fiscal Policy Institute, 2007, p. 13.

²² Washington, DC Office of Planning, op. cit.

U.S. cities over 50,000 people is 48.5 billion square feet.²³ Based on this area we created a range of cost estimates for a national green roof initiative depending on the percentage of green roof-ready area covered. From this cost estimate we generated a range of job creation numbers based on the Washington, DC data.

Results

Table 2 demonstrates that a nationwide green roof initiative has immense potential to create jobs and stimulate the economy. An initiative covering just 1% of the nation's green roof-ready building area in medium and large cities would create over 190,000 jobs. The cost of this initiative would total approximately \$10 billion, making the job creation benefits comparable to other types of public infrastructure investments. In addition, billions of dollars of this total would go to U.S. manufacturers and suppliers related to the green roof industry.

Table 2 – Job Creation Benefits of a National Green Roof Initiative

Greenroof-ready area covered	Cost ²⁴	Number of jobs created ²⁵
1% coverage	\$9,694,674,570	190,580
2.5% coverage	\$24,236,686,425	476,450
5% coverage	\$48,473,372,851	952,900
7.5% coverage	\$72,710,059,276	1,429,349
10% coverage	\$96,946,745,701	1,905,799

Table 3 demonstrates the job creation benefits of green roof programs in one city. For example, covering 5% of Chicago's green roof-ready rooftop area would create nearly 8,000 jobs.

Table 3 – Chicago, IL

Percent coverage	Cost	Jobs created
1%	\$80,722,604	1,587
5%	\$403,613,021	7,934
20%	\$1,614,452,083	31,737
40%	\$3,228,904,166	63,474
60%	\$4,843,356,249	95,212

While a national green roof initiative would have a strong stimulative effect on the economy, the greatest benefit would come from the reduced stormwater runoff, energy savings, lower air pollution levels and cooler temperatures. Table 4 demonstrates the stormwater runoff benefits from installing green roofs in Washington, DC. Even the most moderate scenario reduces runoff by nearly 300 million gallons. That implies 300

²³ For a complete description of the methodology used in this projection, please contact Rob Kimball: rkimball@americanrivers.org

²⁴ Washington, DC Office of Planning, op. cit.

²⁵ *Ibid*

million gallons of stormwater runoff containing pathogens, heavy metals, nutrients and other pollutants would not flow into the Anacostia or Potomac rivers or enter the city's sewer system and cause combined sewer overflows (CSO). This reduction in runoff and sewer overflows improves public health, eases pressure on aging sewer infrastructure, enhances recreational use of local waterways and improves habitat for aquatic species. By reducing energy costs associated with heating and cooling buildings (on hot summer days, green roofs can be as much as 90° cooler than conventional roofs), green roofs also lower greenhouse gas emissions and combat global warming.

Table 4 – Washington, DC Stormwater Benefits²⁶

Green Roof Coverage	Total Green Roof Area (sq.ft.)	Annual Stormwater Storage by Green roofs (gal)	Reduction in Annual Citywide Runoff	CSO Volume Reduction (gal)
20%	14,944,000	297,000,000	1.2%	75,000,000
40%	29,988,000	594,000,000	2.3%	150,000,000
60%	44,982,000	891,000,000	3.5%	210,000,000
80%	59,976,000	1,188,000,000	4.6%	273,000,000
100%	74,970,000	1,485,000,000	5.8%	334,000,000

Water Efficiency

Water efficiency programs offer the opportunity to create jobs and spur economic growth in the near-term while strengthening communities, ecosystems and economic competitiveness in the long run. There is a great potential to increase water efficiency throughout the U.S. EPA estimates there are 100 million antiquated toilets that use 2-3 times more water per flush than modern alternatives.²⁷ As extended droughts become more common throughout the country, communities will need to make the most of every drop. A significant workforce will be needed to replace inefficient appliances and fixtures, improve outdoor irrigation and reduce water use in industrial and commercial applications. A recent analysis by the Alliance for Water Efficiency (AWE) – considered in depth below - found that a \$10 billion investment in water efficiency programs would create a total economic output of \$25-28 billion and create 150,000 to 220,000 jobs.²⁸

Water efficiency programs have numerous additional benefits that will help ensure a competitive economy and healthy communities for future generations. First, a large amount of energy is needed to pump, transport and treat drinking water and collect and treat wastewater. Water-related energy use consumes 19% of California's electricity.²⁹

²⁶ Deutsch et al. "Re-greening Washington, DC: A Green Roof Vision Based on Quantifying Storm Water and Air Quality Benefits." Casey Trees Endowment Fund and Limno-Tech, Inc, 2002.

²⁷ Plumbing Fixtures market Overview: Water Savings Potential for Residential and Commercial Toilet and Urinals. D&R International. September 30, 2005.

²⁸ Alliance for Water Efficiency. "Transforming Water: Water Efficiency as Stimulus and Long-Term Investment." December 4, 2008. For the complete study visit:

<http://www.allianceforwaterefficiency.org/WorkArea/linkit.aspx?LinkIdentifier=id&ItemID=2638>

²⁹ Klein, Gary. "California's Water-Energy Relationship." Sacramento: California Energy Commission, 2005.

Nationally, the figure is conservatively estimated to be 3-6% though most water and energy experts believe it is much higher. Lowering demand can reduce greenhouse gas emissions and help communities lower energy costs. Reducing domestic water consumption can also lower household bills. This is especially important in low-income communities which have a disproportionate share of inefficient appliances and fixtures. Reducing demand on a city-wide scale can stretch existing water supplies further and preclude the need to construct expensive and energy-intensive new water supply projects. The City of New York, for example, replaced 1.3 million antiquated toilets in the 1990s. Through this and several other initiatives, the city reduced per capita water consumption 34% and saved the city nearly \$200 million by allowing it to defer water supply and wastewater treatment projects for 10 years.³⁰ Finally, reducing water consumption allows more water to remain in rivers and streams, leading to healthier ecosystems that can support recreation, tourism and other downstream water needs.

Methodology

The Alliance for Water Efficiency's recently-completed study provides an indication of the job creation and economic stimulus potential of water efficiency programs.³¹ The report examines a variety of water efficiency investments, including:

Indoor water efficiency: Replacing toilets, clothes washers, dishwashers, showerheads and faucets with more efficient models.

Outdoor water efficiency: Installing smart irrigation controllers, efficient irrigation equipment and real-time monitoring.

Commercial/industrial efficiency: Cooling tower upgrades, process water improvements, plumbing retrofits.

Water utility efficiency: Municipal water utility leak detection and system water loss reduction programs.

The study uses an input-output model of the U.S. economy to measure the near-term creation of jobs and labor income, growth in GDP and total economic output resulting from a \$10 billion investment in water efficiency. They derive water efficiency program expenditures and cost estimates from actual water and energy efficiency programs already developed for municipal water utilities. They include the economic impacts for all sectors of the economy impacted by a given program including manufacturing, warehousing, transportation and distribution.

Results

Total economic output per million dollars of investment is between \$2.5 and \$2.8 million. The gross domestic product (GDP) increases \$1.3-1.5 million per million dollars of direct investment. Furthermore, every million dollars of direct investment in water efficiency programs creates 15-22 jobs. Table 5 lists a number of efficiency projects and details the economic and job creation benefits for each one. Based on these results, the Alliance for Water Efficiency's report concludes that a \$10 billion investment in water/energy efficiency programs would raise the U.S. GDP \$13-15 billion and create

³⁰ New York City Department of Environmental Protection. "Water Conservation Program" Flushing, NY: New York City Department of Environmental Protection, 2006.

³¹ Alliance for Water Efficiency, op. cit.

150,000-220,000 jobs. It would also save 6.5-10 trillion gallons of water with a significant reduction in energy use as a result.

Table 5 – Economic Stimulus Benefits, Per Million Dollars of Investment³²

Program Option	Output (million \$)	GDP (million \$)	Labor Income (million \$)	Employment (jobs)
Water System Loss Control	\$2.82	\$1.44	\$1.05	21.6
Irrigation Controller Rebate/Direct Install Programs	\$2.55	\$1.31	\$0.85	20.4
High Efficiency Toilet Rebate Program	\$2.54	\$1.47	\$0.96	18.0
High Efficiency Toilet Direct Install Program	\$2.46	\$1.38	\$0.87	17.2
Industrial Water/Energy Survey & Retrofit Program	\$2.78	\$1.31	\$0.89	15.6

The direct and indirect economic benefits from a \$10 billion water/energy efficiency program would be spread broadly throughout the economy. Table 6 details the economic benefits by economic sector.³³

Table 6 – Distribution of Benefits from \$10 Billion Direct Investment in Water Efficiency Programs³⁴

Economic Sector	GDP (Million \$)	Employment (Jobs)
Ag, Forestry, Fish & Hunting	\$89	1,706
Mining	\$181	591
Utilities	\$232	438
Construction	\$1,112	16,917
Manufacturing	\$2,313	24,315
Wholesale Trade	\$1,016	8,353
Retail Trade	\$1,398	24,768
Transportation & Warehousing	\$357	5,235
Information	\$431	2,459
Finance & Insurance	\$753	5,594
Real Estate & Rental	\$1,054	5,500
Professional - Scientific & Tech Services	\$818	9,123
Management of Companies	\$305	2,242
Administrative & Waste Services	\$682	18,191
Educational Services	\$57	1,651
Health & Social Services	\$437	8,328

³² Alliance for Water Efficiency, op. cit.

³³ Economic sectors are classified according to the North American Industry Classification System (NAICS).

³⁴ Alliance for Water Efficiency, op. cit.

Arts - Entertainment & Recreation	\$78	2,059
Accommodation & Food Services	\$220	7,077
Other Services	\$1,113	17,548
Government & Non-NAICS	\$857	13,409
Total	\$13,501	175,504

This analysis clearly demonstrates that water efficiency programs have the potential to create jobs and stimulate manufacturing and many other sectors of the economy. The economic stimulus potential of these efficiency projects is similar to other types of public infrastructure investments. However, efficiency programs have the added advantage that they can be implemented relatively quickly and scaled according to need. They will be able to provide a more rapid economic stimulus than other type of infrastructure projects for which planning has not yet been completed.

Wetland Restoration

Wetlands are a vital part of the nation’s water infrastructure. They provide untold benefits, from controlling floods and buffering communities from droughts to filtering pollutants and improving water quality. After centuries of neglect during which half of the nation’s wetlands were lost,³⁵ communities are beginning to realize that healthy wetlands are essential to ensuring a clean and consistent supply of water for future generations. Undoing centuries of damage will take significant time and resources, but it can also create jobs and stimulate local economies. While it is difficult to estimate the economic benefits of wetland restoration on a national scale, as an example, one restoration project in Illinois created over \$12 million in economic output and directly employed 220 workers.³⁶

Wetland restoration could provide an immediate boost to the economy. In a quick survey in November 2008, American Rivers compiled a list of 37 wetland restoration projects totaling \$423 million in spending that are “ready to go,” meaning that design and planning has been completed but additional funds are needed to begin work.³⁷ By funding these and other wetland restoration projects, millions of dollars can be injected into local economies helping community financial stability and protecting and restoring natural water supply and flood control infrastructure.

Case Study: Cache River Wetlands Project

The Cache River Wetlands are located in a watershed in southern Illinois. It is one of only 22 designated Wetlands of International Significance in the United States under the Ramsar Convention on Wetlands. Since 1991 a public-private partnership known as the Joint Venture Partnership has worked to protect a 60,000-acre wetland corridor along

³⁵ Dahl, Thomas and Gregory Allord. “Technical Aspects of Wetlands: History of Wetlands in the Conterminous United States.” United States Geological Survey Water Supply Paper 2425.

<http://water.usgs.gov/nwsum/WSP2425/history.html>. Accessed November 19, 2008.

³⁶ Caudill, James. “The Economic Impacts of Restoration and Conservation-Related Expenditures: The Cache River Watershed in Southern Illinois.” May 2008.

³⁷ American Rivers, NRDC, Environmental Law and Policy Center and the Ferguson Group. “Ready to Go Green Infrastructure Projects.” December 11, 2008. www.americanrivers.org/stimulus

the Cache River. The group has undertaken significant efforts to restore the ecosystem through forest and wetland habitat restoration, reduction of sedimentation and stream bank/bed erosion and a partial reconnection of the upper and lower segments of the Cache River. With over \$10 million in funding from county, state and federal agencies, the Partnership completed an extensive list of restoration projects between 1996 and 2005. In May 2008 the U.S. Fish and Wildlife Service released a report examining the economic impact of this investment, which outlines the extensive benefits to the local and state economies.³⁸ The project directly employed hundreds and provided an economic boost to local businesses, but it also indirectly spurred economic growth as a result of the restored ecosystem.

Over the course of the ten year restoration project, nearly \$10 million was spent on salaries, equipment and materials within the state.³⁹ Table 7 shows how the expenditures were divided between salary and non-salary expenses and whether the money was spent locally.⁴⁰ Salary expenses are income earned by workers, while non-salary expenses are used for the purchase of equipment, supplies, building materials, bulldozers or other needs. Millions of dollars in wages were paid to workers throughout the local area and the state. Overall, 220 workers were employed to carry out the restoration and construction work. Local businesses and suppliers also benefited from millions in income as a result of the restoration project.

Table 7 – Restoration and Construction Expenditure Summary

Expenditure Type	Local Expenditures	Non-Local Expenditures	Total
Salary	\$3,157,192	\$2,781,035	\$5,938,227
Non-salary	\$1,408,448	\$2,405,208	\$3,813,656
Total	\$4,565,640	\$5,186,243	\$9,751,883

The economic benefit of the Cache River Wetland restoration goes beyond the direct wages paid and equipment purchased. There is a significant secondary economic stimulus and job creation effect for the region and the state. The total economic output for the restoration project totals more than \$12.6 million dollars (Table 8). This includes the salaries and equipment expenses from Table 7 and also indirect and induced effects. Indirect effects are the purchases by a retailer from a wholesaler or manufacturer that result from the direct expenditure. For example, if the agencies carrying out the restoration project purchase equipment from a retailer who subsequently purchases additional equipment from a manufacturer, the latter purchase would be counted as an indirect effect. Induced effects in this context refer to the increased spending by people employed in the restoration project. Together, the wetlands restoration project created total economic output of over \$4 million for the local area and an additional \$8.5 million for the state. In addition, over the ten year period,

³⁸ Caudill, James., op. cit.

³⁹ Total construction costs totaled over \$10.6 million, but the author of the economic impacts study only examines expenditures made in-state. A small amount, \$871,179 or 8% of overall project costs, left the state. The remaining 92% of expenditures totals over \$9.7 million.

⁴⁰ The local area is defined as Alexander, Pulaski, Johnson and Union counties.

130 jobs were created indirectly as a result of the restoration initiative which added additional income and additional tax revenue for the local area and the state.

Table 8 – Summary of Restoration Economic Impacts

	Local Spending	Non-local Spending	Total
Total Expenditures	\$4,565,640	\$5,186,243	\$9,751,883
Total Economic Output	\$4,157,221	\$8,475,142	\$12,632,363
Indirect Jobs Created	60	70	130
Indirect Employment Income	\$1,259,571	\$2,830,850	\$4,090,421
Tax Revenue	\$642,103	\$736,793	\$1,378,896

While we cannot extrapolate the economic benefit from this case study because, it demonstrates that wetland restoration can have a significant benefit to local communities and the region. The Cache River Wetland project directly created hundreds of jobs and provided an even greater stimulus indirectly through restoration spending. It also protected and revitalized a unique ecosystem that provides immense benefits to local communities in the form of wildlife habitat, flood control and water quality improvement.

Green Jobs Summary

The above analysis demonstrates that green infrastructure and water efficiency retrofit projects have a significant stimulus effect on local, regional and national economies. These projects are typically carried out for their important clean water benefits, but they can be an important part of an economic recovery plan as well. The multiple benefits green infrastructure provides will furthermore help communities secure sufficient clean water to support additional economic growth. Investing in green infrastructure now will provide jobs in the near term and will ensure the clean water supplies essential to long-term economic health.

Green Infrastructure Recommendations

Given the multiple benefits of green infrastructure to our communities and river systems, there is a great opportunity to promote green infrastructure and vibrant communities through federal policy. American Rivers recommends the following:

Integrate green infrastructure into broader water infrastructure spending and programs rather than treating it as separate. Mandatory set-asides in federal funding are critical in advancing these new approaches in the near-term, but future solutions must fully integrate green and traditional approaches. The City of Philadelphia Mayor’s Office of Sustainability recently recommended strategies to greatly expand the number of green jobs in the City including raising awareness about green business opportunities and

developing workforce readiness.⁴¹ Federal funding of green initiatives will support efforts such as these and Philadelphia's goal to double the number of green jobs while helping the City eliminate combined sewer overflows and reduce flooding.

Support stand-alone legislative initiatives, like Representative Schwartz's Green Communities Act and others, to increase funding and technical assistance for green infrastructure in communities nationwide. Funding and technical assistance should be provided both as part of economic development and environmental protection programs.

Provide authorization for EPA's WaterSense water efficiency program an EPA, a voluntary product labeling program that sets standards for water-efficient products like plumbing fixtures and appliances and allows manufacturers to certify their products under the WaterSense label. Similar to the successful EnergyStar program, WaterSense has the potential to save huge amounts of drinking water and reduce energy used to move and treat water

Fully implement Section 438 of the Energy Independence and Security Act that requires federal facilities to manage stormwater on-site and maintain predevelopment hydrology.

Hold federal agencies such as the Environmental Protection Agency accountable for facilitating and fostering green infrastructure in their policies, practices, and spending decisions. Specifically, EPA should provide guidance to states, including Pennsylvania, who must renew their municipal stormwater permits, on how to incorporate a performance-based stormwater standard into these permits to increase on-site treatment of stormwater using green infrastructure practices.

Protect and restore existing natural infrastructure critical for clean water by passing legislation to affirm the historic protections of small streams and wetlands afforded by the federal Clean Water Act.

Support research and development for innovative integrated green infrastructure but do not postpone investing in these smart strategies today.

We are at a pivotal moment in how we approach water management. Traditional water infrastructure will continue to play a role, but is designed to solve only a single problem and requires a huge capital investment. We must use this transformational moment to move to a wiser combination of green and traditional infrastructure that will meet the needs of the 21st Century. Building on the momentum that has been generated through the economic stimulus and on the great progress being made here in Pennsylvania, there are many opportunities to act now to ensure enough clean water and economic health into the future. Thank you for the opportunity to testify on green infrastructure.

⁴¹ The City of Philadelphia Mayor's Office of Sustainability, *Greenworks Philadelphia*, 62-64. <http://www.phila.gov/green/greenworks/index.html>, Accessed May 2009

LIZ ROBINSON

Executive Director, Energy Coordinating Agency

Liz Robinson has served as the Executive Director of the Energy Coordinating Agency of Philadelphia since its inception in 1984. She has over 25 years of experience in energy services, community development, and education. Prior to joining ECA she directed Peoples Emergency Center, an emergency shelter for homeless families and adolescents, taught in inner city schools, and worked as a community organizer. Liz graduated from Goucher College, Phi Beta Kappa with a degree in International Relations. She has an MFA from Wayne State University in Michigan. Among her current Board affiliations are the national Green Power Board and Regional Housing Legal Services.

The Energy Coordinating Agency (ECA) is a non-profit organization which helps people save energy and works toward a sustainable and equitable energy future for all in the Philadelphia region. ECA and its citywide network of Neighborhood Energy Centers serve more than 40,000 low income households every year, providing a full range of energy conservation, education, home repair and bill payment assistance programs for low income households. ECA is a leader in energy efficient, sustainable housing, both new and existing, both affordable and market rate. ECA is a LEED for Homes Provider, an ENERGY STAR Homes Rater, and a Home Performance with ENERGY STAR provider. ECA provides leadership in energy and sustainability policy development at City and State levels.

TESTIMONY OF LIZ ROBINSON

Green Collar Jobs Training in Weatherization and Green Building

ECA is currently renovating our old factory building in Kensington to become a state of the art Building Science Training Center. At the Center we will train for a variety of different "Green Collar" jobs to meet the needs of the rapidly growing energy efficiency and solar industries. This building was once part of Keystone Dyeing, a company that manufactured Civil War uniforms. Renovating and re-purposing this wonderful old building to train workers for the clean energy economy is a perfect example of the kind of renaissance that is possible in our cities. We are anticipating being designated as a weatherization training center by the State of Pennsylvania. The State is planning to rapidly increase training capacity statewide, in all aspects of the energy efficiency and solar industries in order to meet the immediate needs of the WAP program and Act 129, which requires the electric industry to meet specific energy conservation goals.

ECA is currently ramping up our capacity to significantly increase both our low income and market rate work. We accomplish this work both through our own employees and through subcontractors. Thus the Training Center will help meet our own needs for qualified personnel and contractors as well as training people more broadly.

While it is clearly true that the American Recovery and Revitalization Act (ARRA) is extremely helpful in jumpstarting the energy efficiency industry in this country, it will be critical that by March 2012, when the ARRA funding expires, that there would be enough energy efficiency program activity occurring, either through the Weatherization Assistance Program, or through market rate work to continue to grow this industry. We are worried that when the stimulus funding expires, the level of support for the WAP program will plummet, and we will have to lay off workers that have so recently been trained and hired. If the Cap and Trade system is up and running by then, and is causing large scale investment in energy efficiency across the country, that would greatly ease this transition.

Another federal policy which will greatly help smooth the transitions and accelerate the rate of growth of the clean energy industry, is to standardize certification requirements across programs to the greatest extent possible. One immediate area is for the Weatherization Assistance Program to require certification through the Building Performance Institute (BPI) for the Building Analyst, or Energy Auditor. This would be a huge step forward for the WAP program, and would enable WAP program auditors to easily transition to market rate work.

A tremendous opportunity in new construction is code enforcement. It is no secret that virtually all states are not uniformly enforcing their current codes. New homes are being built every day that do not even meet existing code. Getting up to the ENERGY STAR Homes level will be much easier if builders are actually meeting existing code. Whatever the federal government can do to induce states to enforce current code and to improve their energy codes, would greatly improve the energy efficiency of new homes.

Funding the ENERGY STAR Homes and Home Performance with ENERGY STAR Program directly would be extremely helpful to market transformation nationally. States are often tempted to support showcase projects rather than market transformation efforts. Putting a small amount of funding into both ENERGY STAR Homes and Home Performance with ENERGY STAR and requiring states to match this funding with non-federal funds would have tremendous impact on the states.

After decades of delay and most recently denial about climate change, it is really heartening to see that Congress and the Obama Administration are finally grappling with the tough issues inherent in creating a coherent energy policy for this country. America is finally beginning to address the greatest challenges of our lives: Peak Oil and Climate Change. It's great to see.

PAUL BONNEY

Vice President & General Counsel, PECO

Paul Bonney is Vice President & General Counsel of PECO, the electric and gas distribution company serving southeastern Pennsylvania. PECO is a subsidiary of Exelon Corporation, headquartered in Chicago and one of the largest utility companies

in the United States. Paul is responsible for managing PECO's legal, regulatory and legislative matters and has helped lead the company through various initiatives, including restructuring to implement competitive wholesale and retail electric markets in Pennsylvania, mergers and acquisitions and, more recently, the company's pursuit of conservation and renewable resources.

Prior to joining PECO in 1990, Paul was an associate at Morgan, Lewis & Bockius and a law clerk to the Honorable Edward N. Cahn, U.S. District Court for the Eastern District of Pennsylvania. He also worked for National Economics Research Associates, an economic consulting firm in Washington, D.C., and at the Board of Trade in Chicago.

Paul received a BA in Economics from Duke University and a JD from Georgetown University

TESTIMONY OF PAUL BONNEY

My name is Paul Bonney, and I am Vice President and General Counsel of PECO. PECO, headquartered in Philadelphia, is the largest electric and gas utility in Pennsylvania, serving 1.6 million electric customers in Philadelphia, Montgomery, Bucks, Delaware and Chester Counties and 480,000 natural gas customers in the four counties surrounding Philadelphia.

PECO employs more than 2,200 people and invests over \$400 million in capital annually in our distribution and transmission systems. Even as our region has felt the impacts of the economic downturn, our investments in major projects such as the nearby \$25 million Tunnel Substation expansion have moved forward. This particular investment in our critical infrastructure will support continuing growth in the University City area, particularly expansions of the world-class medical facilities at the Hospital of the University of Pennsylvania and Children's Hospital of Philadelphia.

PECO is part of Exelon Corporation, headquartered in Chicago and one of the nation's largest utility companies. Also within the corporate umbrella is Pennsylvania-based Exelon Generation, which itself employs almost 3,900 employees in the state. Exelon is one of the United States' leading corporate voices promoting environmentally responsible energy production, transmission and distribution.

On behalf of PECO and Exelon, I commend Representatives Schwartz, Fattah and Brady and the Northeast-Midwest Congressional Coalition for holding this hearing today to learn more about the Philadelphia region's commitment to promoting environmentally responsible economic opportunities. Our country and our region cannot prosper in the years to come without a new commitment to a more efficient and sustainable energy infrastructure that emphasizes conservation, renewables, next-generation electricity technologies and competitive markets that drive innovation.

At Exelon and PECO, we call our commitment to this vision Exelon 2020. Exelon 2020 is a roadmap to a low-carbon future by which our company plans to reduce, offset or

displace more than 15 million metric tons of greenhouse gas (GHG) emissions per year by 2020. This is more than the company's entire carbon footprint in 2001 and the equivalent of taking nearly 3 million cars off our roads and highways.

Exelon 2020 entails a three-pronged strategy for achieving this ambitious goal:

- 1) We will reduce or offset Exelon's carbon footprint by greening our own operations and supply chain.
- 2) We will help our customers and the communities we serve reduce their greenhouse gas emissions by offering industry-leading energy-efficiency programs and a diverse portfolio of green products and services; and
- 3) We will offer more low-carbon electricity in the marketplace by expanding the capacity of our existing low-carbon generation fleet and introducing new low-carbon capacity.

Last month, the US Environmental Protection Agency (EPA) recognized the tremendous success Exelon has achieved in reducing its environmental impact when it announced through its Climate Protection Partnership Division that the company has already reduced its greenhouse gas emissions by more than 35 percent since 2001.

In addition to this, Exelon has been a vocal advocate of a comprehensive national program to address global climate change through a mandatory greenhouse gas cap-and-trade program. We are a charter member of the United States Climate Action Partners (USCAP), a leading coalition of business and environmental organizations supporting prompt passage of national legislation to slow, stop and reverse the growth of U.S. emissions while growing our economy.

This can be accomplished through the balanced approach recommended in the USCAP Blueprint. The Blueprint proposes putting a "price" on carbon while cushioning the impact on our economy, and on our customers, during a reasonable transition. Our utility trade association, the Edison Electric Institute (EEI), has called for a similar approach that allocates 40% of emissions allowances to local utility companies to mitigate impacts on customers, subject to state regulatory oversight.

Of course, environmental commitment starts at home, and at PECO, we are taking aggressive steps to make the Exelon 2020 vision a reality in southeastern Pennsylvania.

Since launching Exelon 2020, we have, among other things:

Opened our first LEED certified service building in West Chester, which utilizes 20 percent less energy, 40 percent less water and includes 20 percent recycled building materials;

Increased our hybrid vehicles fleet by 11 percent, and we are pursuing additional vehicles through the PA Clean Cities initiative;
Completed the largest urban "green roof" project in Pennsylvania at our headquarters building in Center City. This 45,000 square foot project was completed in January, reducing peak roof temperatures, absorbing storm water run-off and improving local air quality in the city;
Acquired more than 450,000 Alternative Energy Credits from wind power and other renewable sources that we are banking toward future compliance with Pennsylvania's alternative energy requirements, and commenced the procurement of solar credits;
Awarded \$150,000 in PECO Green Region grants to 18 local communities in April for open-space preservation, parks and recreation and conservation, bringing our commitment since 2004 to \$650,000;
Purchased the output of one of the country's largest solar-generation installations just north of the City in Fairless Hills; and
Offered PECO Wind service, a product that permits customers to easily purchase renewable power and which some 40,000 customers have elected to take.

This year PECO will also seek LEED certification on three additional service buildings and complete the replacement of the landmark Crown Lights atop our headquarters building with LED lighting, improving the efficiency of this system by 20 percent.

In terms of helping our customers and the communities we serve, we are making unprecedented investments in efficiency. We are looking to build upon our American Council for an Energy Efficient Economy-recognized Low-Income Usage-Reduction Program (LIURP) to provide our customers with new options to reduce their consumption through remediation measures and conservation education.

We are offering a range of new natural gas energy-efficiency services and, in conjunction with regional stakeholders, are developing a plan to meet Pennsylvania's ambitious Act 129 electric-efficiency and peak-demand reduction mandates. Through the programs we implement to meet these mandates, we will invest \$87 million annually to provide new options for our residential, commercial and industrial customers to reduce their energy consumption and costs, with particular emphasis on low-income and institutional customers. We will be executing our energy-efficiency programs primarily through contractors who have field expertise in these areas, and we expect that the investments we are making in these programs will result in hundreds of new "green" jobs in the area.

We also have reached out proactively to our local governments, seeking to coordinate the energy-efficiency programs we are executing with their initiatives funded through the federal economic recovery legislation. We commend Congress for encouraging partnerships and leveraging opportunities in the Recovery Act legislation and we see strong opportunities in:

Low-income weatherization
Municipal buildings

Traffic and street lighting
Public housing
Schools
Commercial and industrial buildings
Energy-saving and reliability-enhancing smart-grid and smart-meter applications

In our state and region, we are fortunate to have the key players in government and industry and environmental leaders pulling in the same direction toward a greener economic future. Governor Rendell and his Administration and the state legislature have provided important leadership at the state level, our congressional delegation has consistently supported federal environmental initiatives and LIHEAP funding, and Mayor Nutter has made his "Greenworks Philadelphia" effort one of his highest priorities.

At PECO, we believe we share a vision with our customers and communities of a greener, more energy-efficient future. We commit that we will work collaboratively and through partnerships to translate this vision into a reality.

We commend you for hosting this hearing today and look forward to working with our federal, state and local leaders to build a greener energy future for Philadelphia and our region.

THE NORTHEAST-MIDWEST INSTITUTE AND THE NORTHEAST-MIDWEST CONGRESSIONAL AND SENATE COALITIONS

The Northeast-Midwest Institute is a Washington-based, nonprofit, and nonpartisan research organization dedicated to economic vitality, environmental quality, and regional equity for the Northeast and Midwest states. For over thirty years the Institute has conducted research and analysis, developed and advanced innovative policies, provided evaluation of key federal programs, disseminated information, and highlighted sound economic and environmental technologies and practices. The Institute is a 501(c)3 organization whose work is funded through grants from foundations, dues from member states, and contracts with federal and state agencies.

The Institute is unique among policy centers because of its close ties to Congress through the bipartisan Northeast-Midwest Congressional and Senate Coalitions that represent Connecticut, Delaware, Illinois, Indiana, Iowa, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, and Wisconsin. The House Coalition, formed in 1977, is co-chaired in the 111th Congress by Reps. James Oberstar (D-MN) and Steven LaTourette (R-OH). The Northeast-Midwest Senate Coalition was formed in 1978 and is currently chaired by Senators Jack Reed (D-RI) and Olympia Snowe (R-ME). The Institute also works closely with issue- and place-based congressional task forces including the Chesapeake Bay Watershed Task Force, Delaware River Basin Task Force, Great Lakes Task Force, House and Senate Task Forces on Manufacturing, Upper Mississippi River Task Force and the Revitalizing Older Cities Congressional Task Force.

REVITALIZING OLDER CITIES CONGRESSIONAL TASK FORCE

In the fall of 2007, the Northeast-Midwest Congressional Coalition established the Revitalizing Older Cities (ROC) Task Force. Members of Congress sharing an interest in restoring prosperity to America's great historic transportation hubs and manufacturing cities of the Northeast and Midwest now have a structured group to exchange legislative ideas and create effective policy. In addition, this task force utilizes the research capabilities of the Northeast-Midwest Institute. Representatives Brian Higgins (D-NY) and Mike Turner (R-OH) co-chair the ROC Task Force.

To support the ROC Task Force, the Northeast-Midwest Institute convenes stakeholders and policy experts to provide policy analysis and recommendations for federal action in seven areas germane to revitalization of older cities: housing; transportation, water infrastructure; energy and environment; brownfields; economic development; and healthy/livable communities. This effort builds on the Institute's strong tradition of assembling specialists to help advance federal initiatives that build on existing strengths of the region to solve its environmental and economic challenges.

PARTNERING ORGANIZATIONS

Special thanks to the following organizations

William Penn Foundation
The Academy of Natural Sciences
Pennsylvania Horticultural Society
City of Philadelphia
Northeast-Midwest Congressional Coalition
Northeast-Midwest Institute

This event is sponsored and organized by the
Northeast-Midwest Congressional Coalition
In coordination with
The Northeast-Midwest Institute



50 F Street, Suite 950, Washington, D.C. 20001
202-544-5200 www.nemw.org