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HOW RELIABILITY OF THE INLAND WATERWAY SYSTEM IMPACTS ECONOMIC COMPETITIVENESS

(112–82)

HEARING

BEFORE THE

SUBCOMMITTEE ON
WATER RESOURCES AND ENVIRONMENT

OF THE

COMMITTEE ON
TRANSPORTATION AND
INFRASTRUCTURE
HOUSE OF REPRESENTATIVES

ONE HUNDRED TWELFTH CONGRESS

SECOND SESSION

APRIL 18, 2012

Printed for the use of the
Committee on Transportation and Infrastructure

Available online at: http://www.gpo.gov/fdsys/browse/
committee.action?chamber=house&committee=transportation

U.S. GOVERNMENT PRINTING OFFICE

73–826 PDF WASHINGTON : 2012

For sale by the Superintendent of Documents, U.S. Government Printing Office
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April 13, 2012

MEMORANDUM

TO: Members of the Subcommittee on Water Resources and Environment

FR: Bob Gibbs
Subcommittee Chairman

RE: Hearing on "How Reliability of the Inland Waterway System Impacts Economic Competitiveness."

PURPOSE OF HEARING

The Water Resources and Environment Subcommittee is scheduled to meet on Wednesday, April 18, 2012, at 10:00 a.m. in 2167 RHOB, to receive testimony on "How Reliability of the Inland Waterway System Impacts Economic Competitiveness" from the U.S. Army Corps of Engineers, a representative from the energy industry, a representative from the agriculture sector, a representative from the inland navigation economics profession, representatives from the inland navigation industry, and other affiliated organizations.

BACKGROUND

History of the Inland Waterways Transportation System

Federal interest in navigation in the United States stems from the Commerce Clause of the Constitution. The history of federal improvements to inland navigation in the United States dates back to the 1820's when Congress authorized construction of a canal connecting Lake Michigan to the Illinois River and authorized the United States Army Corps of Engineers to remove snags, debris, and other obstructions from the Mississippi and Ohio Rivers. These rivers and coastal ports were the primary routes of commerce for the new nation.

For nearly two centuries the federal government has dredged channels and built locks and dams, wing dikes, and other structures to create an Inland Waterways Transportation System for the efficient movement of goods. The System includes major rivers such as the Mississippi,

Missouri, Ohio, and Columbia Rivers, as well as smaller waterways such as the Tennessee, Arkansas, Monongahela, and Hudson Rivers.

Today the Inland Waterways Transportation System provides an alternative to truck and rail and is the most cost-effective and energy efficient means for transporting commercial goods, especially major bulk commodities like grain, coal, and petroleum products. The Inland Waterways Transportation System is also a key component of State and local economies and job creation efforts and is essential in order to maintain economic competitiveness and national security.

The United States Army Corps of Engineers operates and maintains approximately $235 billion worth of water resources infrastructure assets, including a network of 11,000 miles of the "fuel-taxed" Inland Waterways Transportation System. The Corps operates and maintains 221 lock chambers at 185 sites on 27 inland rivers and intracoastal waterways segments.

Costs and Benefits of the Inland Waterways Transportation System

Benefits of the Inland Waterways Transportation System are numerous. For instance, one 15-barge tow on a river can carry as much cargo as 216 rail cars or 1,050 large trucks. If the cargo transported on the inland waterways each year had to be moved by highways, it would require 58 million truck loads. A wholesale diversion of waterway traffic to the nation's rail network would require 100,000 additional rail freight cars and 2,500 additional locomotives.

Barges moving on waterways are safer, more fuel efficient, and less polluting than other means of transportation. For example, on average, a gallon of fuel can move one ton of cargo 155 miles by truck, 413 miles by train, and 576 miles by barge. Due to these efficiencies, carbon dioxide emissions were 2.1 million metric tons less in 2005 than if rail transportation had been used, and 14.4 million metric tons less than if trucks had been used.

Thirty-eight states are directly served by the nation's Inland Waterways Transportation System, constituting between 500 and 700 million tons of bulk commodities valued at more than $125 billion annually. At an average savings of more than $12.00 per ton over an alternate overland mode, this equals $7 billion in annual transportation cost-savings. Water transportation also has the potential to move huge amounts of cargo that could alleviate congestion on major highway arteries, such as I-95 on the Atlantic coast.

For some goods, as much as 50% of the ultimate price paid by the consumer is attributable to transportation costs. Keeping these costs low not only benefits consumers here in the United States, it also makes products produced in the United States more competitive on the world market. Congestion at an outdated lock on a waterway can result in increased costs that rob the farmer or manufacturer of his or her profit. Delay and its associated costs also can rob a farmer or manufacturer of his or her market. Agriculture products account for 22% of all transported tonnage on the nation's Inland Waterways Transportation System.

America's utility industry is also dependent on inland waterways. America's utility industry uses the Inland Waterways Transportation System to transport over 20% of the coal it

consumes to produce electricity. More than 30% of the oil and petroleum products used across the nation, and nearly all the home heating oil and gasoline used in New England, moves by barge.

Benefits to shippers and freight transportation savings are only a part of the benefits for the nation's Inland Waterways Transportation System. The Inland Waterways Transportation System also provides flood control benefits, increase nearby property values, provides water supply for nearby communities, generates hydroelectric power, provides recreational opportunities, provides local and regional economic opportunities, and enhances national security capabilities and readiness.

Condition of the Inland Waterways Transportation System

Aging infrastructure along the Inland Waterways Transportation System also presents a challenge. Nearly 60% of these facilities have been in service for longer than 50 years, while almost 40% are more than 70 years old, and two locks built in 1839 remain in service today.

Reliability of transportation networks is critical to the nation's economy. While this infrastructure has served the nation well, operation and maintenance expenditures will only slightly prolong the life of a depreciating asset that will continue to diminish in performance. And, as the asset gets older, its operation and maintenance requirements will grow.

Taking the Inland Waterways Transportation System as a whole, structures have been deteriorating faster than the nation has been replacing or rehabilitating them. As things break, they have to be fixed. The result has been a loss in the reliability of the system. For example, on the Ohio River, navigation outages have increased more than three fold since 2000, going from approximately 25,000 hours to 80,000 hours.

Even closures of locks on tributary systems could cause harmful economic impacts. For instance, closure of the locks on the Lower Monongahela River, a tributary of the Ohio River, would impact 21 million Americans who rely on electricity provided by coal that is shipped on the river. A closure of the locks on the Lower Monongahela River is estimated to have an annual economic impact of $997 million on utility prices alone.

Unscheduled outages are more costly than scheduled outages. Repair times can have major impacts for traffic that depends on the facility and for shippers and manufacturers that depend on timely delivery of products. A perception of unreliability leads to uncertainty, which often causes shippers to switch to more expensive means of transportation.

Many of the locks on the nation's Inland Waterways Transportation System are 600 feet long. While this was the industry standard in the 1920's, today's 15- barge tows that traverse the system are 1,200 feet long. As a result, most tows must lock using a time-consuming process in which the barges are decoupled from the towboat and moved 6 or 9 at a time through the lock. Assuming the barge tow has no delay at the lock, this can take 1 to 2 hours, under optimal conditions. However, in relation to the Upper Mississippi River-Illinois Waterway system, the farther south a barge travels the more traffic it encounters, thereby increasing delays.

For instance, lock delays at La Grange on the Illinois Waterway average more than 2 hours of delay, while Locks 22, 24, and 25 on the Upper Mississippi River average delays of 5 hours. Even on the two southernmost locks on the Upper Mississippi River, which are larger than the 600 foot configuration, delays still average between and 1 and 2½ hours. These average annual delays mask the more severe delays during grain harvest season and it is not uncommon for some traffic to suffer delays of a week or longer due to unannounced outages.

Two recent failures on the Ohio River at Markland Lock (5 months) in 2009 and at Greenup Lock (1 month) in 2010 demonstrate the need for renewed interest in the nation's Inland Waterways Transportation System. While unfortunate, these failures occurred at facilities where auxiliary lock chambers exist to temporarily accommodate barge traffic, though at a slower pace.

Had these failures occurred on a system like the Upper Mississippi River, where there are very few auxiliary locks, the impacts would have been compounded. According to recent studies, a failure at certain locks on the Upper Mississippi-Illinois Waterway could cost agricultural producers up to $45 million and barge companies up to $162.9 million depending on the lock and the length of the outage. A two-week failure at Lock and Dam 20 on the Upper Mississippi would be estimated to cost $5.1 million to barge company revenues, while a one-year failure would cost $150.1 million to barge company revenues. The grain industry would lose $2.8 million and $44 million respectively.

Even scheduled outages cause ripple effects throughout the nation's economic fabric. During a scheduled outage of the Columbia-Snake River System from December 2010 to March 2011, barge companies temporarily laid off a significant number of their employees, with one company laying off 67% of its workforce. And, rail and truck companies during the scheduled closure increased their rates from 2% to 4% respectively.

If the nation does not modernize and maintain the Inland Waterways Transportation System, the goods transported by barge will have to switch to other more expensive modes of transportation. When it becomes more expensive to produce and transport goods in the United States, production facilities and jobs move overseas.

Inland Waterways Trust Fund

The Inland Waterways Trust Fund was first authorized in the Inland Waterways Revenue Act of 1978 for the purpose of providing funds for the construction and rehabilitation of navigation projects. The 1978 Act created the Trust Fund by assessing a fuel tax on vessels that utilized the Inland Waterways Transportation System beginning in 1980 at a rate of $0.04 per gallon and incrementally increased to the current level of $0.20 per gallon in 1994.

However, it was not until passage of the Water Resources Development Act of 1986 that expenditures were authorized from the Inland Waterways Trust Fund. By then, the Trust Fund had grown to $260.2 million. Trust Fund expenditures pay for half of a given construction or

rehabilitation project with the other half coming from the General Fund in the Treasury, while operation and maintenance activities are paid for in total from the General Fund in the Treasury.

The Inland Waterways Trust Fund is an invested fund in interest-bearing obligations and the Trust Funds revenues are a combination of tax receipts and interest earnings. The Treasury Department is responsible for the quarterly collection and investment of these receipts while the United States Army Corps of Engineers is responsible for recommending the timing and amount of the expenditures during its preparation of the annual budget submission to Congress. Congress is ultimately responsible for appropriating funds from the Trust Fund and General Fund in support of construction and rehabilitation activities on the Inland Waterways Transportation System.

The balance in the Trust Fund steadily declined between 2003 (a year-end balance of $412.6 million) and 2009 (a year-end balance of $57.7 million) as Congress dedicated increased amounts to modernize the Inland Waterways Transportation System. In fact, from 2000 to 2009, expenditures exceeded revenues. This resulted in a decline of the Trust Fund balance to the point that today, expenditures are limited to the amount of annual fuel tax revenue collected for that particular year. The increased costs and constrained Trust Fund have resulted in a backlog of authorized yet unconstructed projects.

Challenges to Maintaining the Inland Waterways Transportation System

Challenges to maintaining the Inland Waterway Transportation System can be associated with both process and funding. In recent decades, it has become increasingly difficult to get projects through the congressional and Corps of Engineer process as well as increasingly difficult to maintain a level of funding to keep up with repair and replacement needs.

Those Inland Waterways Transportation System projects authorized in the Water Resources Development Act of 1986 were completed within an average of 6 years. However, projects authorized since 1986 have on average taken 20 years to complete and cost more than twice the authorized amount.

As an example, the recently completed project at McAlpine Locks and Dam near Louisville, Kentucky, took 10 years to complete. An almost identical lock chamber located next to McAlpine took only three years to complete in 1961. This difference reveals the difficulty in developing accurate capital planning forecasts and demonstrates a multitude of issues surrounding the project delivery process.

More alarming is the Olmsted Locks and Dam project on the Ohio River between Illinois and Kentucky. As authorized in 1988, the $775 million project was designed to replace two aging locks completed in 1929. While the project broke ground in 1992 and was expected to be completed no later than 2005, today the project remains incomplete and the cost estimates have been revised upwards to approximately $3.1 billion and the expected completion date (barring additional factors or complications) is beyond 2020, almost 30 years after the project broke ground.

Many factors contribute to this scenario at Olmsted. The cost escalation can be linked to factors such as design and scope changes, differing site conditions, and reprogramming funds to other projects. Some are factors which are within the control of the Corps of Engineers while others can be attributed to insufficient funding and factors outside of the purview of the Corps of Engineers.

These cost overruns have contributed greatly in the spending down of the Inland Waterways Trust Fund. While the economic benefits of this project outweigh the costs, frustration of the House of Representatives Committee on Transportation and Infrastructure and the Inland Waterways Users Board continues to mount.

This has caused ripple effects throughout the entire Inland Waterways Transportation System. Because it is so costly, until the project at Olmsted is complete, it is difficult to initiate, much less complete, other projects on the Inland Waterways Transportation System.

The Congress has been appropriating $170 million per year on average for the Inland Waterways Transportation System. Compare this to the estimate that it will require $3.8 billion to complete projects already under construction and there is another $4.3 billion of authorized projects for which construction has not started. To completely modernize the system with new construction and rehabilitation of old structures would require an estimated $18 billion. That is what would be required to fully realize the economic benefits of the Inland Waterways Transportation System.

Inland Waterways Users Board Recapitalization Plan

Section 302 of the Water Resources Development Act of 1986 established the 11-member Inland Waterway Users Board intended to give commercial users, who pay the fuel tax, an independent voice in investment decisions relating to the Inland Waterway System. Noting the complications surrounding the Olmsted Locks and Dam project and other projects authorized after 1986 , the Inland Waterway Users Board delivered recommendations to the Secretary of Army and Congress on April 13, 2010. The "Inland Marine Transportation System (IMTS) Capital Projects Business Model" proposes major revisions to reform the funding and methods for carrying out projects on the Inland Waterways Transportation System.

The Users Board recognized that under current practice, Inland Waterways Transportation System projects that have already begun construction would require an estimated $3.8 billion to complete. With average annual revenues of the Trust Fund between $75 and $85 million, these projects would not be complete until 2035 or 2040. There is also an additional $4.3 billion of authorized work that has not yet begun construction. Total authorized and unauthorized activities could be as much as $18 billion to address new construction and rehabilitation of existing structures. ($12.1 billion in new construction, $5.9 billion in rehabilitation.) Current investment levels are, on average, $170 million annually.

The recommendations of the Inland Waterways Users Board call for a 20-year recapitalization or asset renewal program that would, among other items, increase the investment level on the Inland Waterways Transportation System to $380 million annually. This increased

investment would require that Congress enact an increase in the Inland Waterway fuel tax from the current $0.20 cents per gallon to $0.26 per gallon.

In addition, the recommendations include provisions requesting Congress change the cost sharing formula for some construction and rehabilitation projects that cost less than $100 million. The Users Board suggests that all new construction or rehabilitation projects that cost less than $100 million be paid for from the General Fund in the Treasury, and for all construction or rehabilitation projects that cost more than $100 million be cost-shared 50%-50% from the Trust Fund and the General Fund.

Lastly, the Users Board recommends the establishment of a project-by-project cost-sharing cap to protect the Users Board and the industry it represents from unreasonable cost escalation and project delays. Cost increases above the proposed cap threshold would be 100% federally funded unless the increase was approved for cost-sharing by both the Users Board and the United States Army Corps of Engineers.

The Users Board also made numerous recommendations to the United States Army Corps of Engineers to address some changes in the planning processes in order to better streamline project delivery and reach project completions more quickly.

On March 29, 2012, Representative Ed Whitfield (R-KY), Representative Jerry Costello (D-IL) and 4 other bipartisan co-sponsors introduced H.R. 4332, the "Waterways Are Vital for the Economy, Energy, Efficiency, and Environment Act of 2012." This legislations tracks closely with the recommendations from the Users Board and would implement most of the Users Board proposal.

Witnesses

Major General John Peabody
Mississippi River Valley Division, United States Army Corps of Engineers

Mr. Martin Hettel
Senior Manager, American Electric Power River Operations

Mr. Mike Steenhoek
Executive Director, Soy Transportation Coalition

Mr. Mark Knoy
President, American Commercial Lines

Mr. Robert Dolence
Vice President, Leonardo Technologies

Ms. Kristin Meira
Executive Director, Pacific Northwest Waterways Association

A representative from the American Society of Civil Engineers (invited)

HOW RELIABILITY OF THE INLAND WATERWAY SYSTEM IMPACTS ECONOMIC COMPETITIVENESS

WEDNESDAY, APRIL 18, 2012

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON WATER RESOURCES
AND ENVIRONMENT,
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:07 a.m. in Room 2167, Rayburn House Office Building, Hon. Bob Gibbs (Chairman of the subcommittee) presiding.

Mr. GIBBS. Good morning. This hearing for the Water Resources and Environment Subcommittee of the Committee on Transportation and Infrastructure will come to order.

I want to welcome everybody today. In this committee hearing we are dealing with how reliability of the inland waterways system impacts economic competitiveness.

I will start here with my opening statement, and we will turn it over to Ranking Member Bishop.

Again, welcome. Transportation savings are a key factor in economic growth. As fuel prices continue to escalate, waterways transportation becomes an even more viable alternative for shippers, but an unreliable transportation system will inject uncertainty into decisions made by U.S. farmers and manufacturers, making U.S. products more uncompetitive in world markets.

While the Nation supports our rightfully called "Nation's gateways," the inland navigation system provides access to foreign export markets for manufacturers and commodity producers.

Water transportation is the most fuel efficient, least polluting, safest and least expensive means of moving cargo.

In addition, waterways provide freight mobility for products that are too large to move by any other means.

There are also some industries located on a river that are completely dependent on the inland waterways system to bring in the raw materials to their facilities.

Trade, especially global trade, is increasing. That means the need for transportation services will continue to grow and grow rapidly.

The question is not whether it will be rail or truck or boats, the question is whether or not we can produce an efficient integrated network of airports, railroads, highways, waterways and ports, that can respond to a changing world economy.

When we are trying to run this mode for a national integrated transportation system with infrastructure that was largely built before World War II, we do not do that for roads, rail or aviation.

While there is room for improvement in those sectors as well, in general, we have modernized in those areas and our economy has benefitted from those investments.

When it comes to the inland waterways system, we have been investing too slowly for too long.

Fifty-seven percent of our inland system is more than 50 years old, and 37 percent of that system is more than 70 years old. It is literally falling apart and we are falling behind.

Navigation outages along the system are increasing. For instance, the high river outages have increased from 25,000 hours in 2000 to 80,000 hours today.

This trend of increasing outages is expected to continue, while it affects the reliability of the system, it also foretells the likelihood of a major physical failure at one of the structures.

Without some rehabilitation and rebuilding, we can expect to pay more each year for an increasingly unreliable system.

The Corps of Engineers is charged with maintaining and improving the inland waterways system with the authorities and the funding provided by Congress each year.

For decades, the Corps had made to do with constrained funding, leaving the Commanders with no choice but to defer some maintenance projects and reduce operations at some of the locks.

I am concerned that if the Corps reduces the efficiency of some parts of the system, other segments are adversely affected.

If this cycle is not broken, we are going to lose water transport as a viable part of our intermodal transportation system, completely diverting cargo from water to rail that would require hundreds of thousands of additional railroad cars and an additional 2,500 locomotives.

If the cargo that is currently moved by the waterways had to move by truck, it would require an additional 58 million trucks moving on already congested highways annually.

After Hurricane Katrina, it became obvious that the warning signs were there all along, but many experts have been telling us for years that conditions were ripe in the New Orleans area for a disaster.

Today, we are getting a similar warning on the Nation's inland waterways system of transportation.

Finding alternative ways to move cargo will be expensive if not impossible. If transportation costs go up, the competitiveness of American products in the world market goes down.

I would just add I think some of our competitors in the world markets are making those investments and putting us at a disadvantage and uncompetitiveness that will cost us in the long run.

Addressing the infrastructure needs of the inland waterways system is not about economic benefits to a few barge companies, it is about keeping American farms, manufacturers and businesses competitive and growing American jobs.

Letting the inland waterways system decline further would be an economic disaster to add to the Nation's already significant fiscal problems.

Having an inland waterways system that is a viable alternative will keep costs down among all modes of transportation. If you take inland waterways out of the mix of transportation, in terms of transportation options, costs will go up, American products will become less competitive in the global marketplace, and that means lost jobs.

That is why I can say I am a fiscal conservative and I support investing in America where those expenditures stoke the fires of our economic engines and create jobs throughout our economy.

For a tiny percentage of the $1 trillion failed stimulus program in 2009 or the $450 billion jobs program recently suggested by the administration, we could spend that $8 billion necessary to recapitalize the inland waterways system, to finish the projects under construction and begin and finish the slate of authorized projects.

Given our economic conditions, I know that coming up with additional public money is going to be a huge challenge.

I think it makes sense to explore financing options. The administration has suggested a new lockage fee and the Inland Waterways Users Board has developed a comprehensive plan of increased user fees and changes to the current cost sharing arrangement.

While these ideas deserve more consideration, I think it is time to think further outside the box and consider enhanced public-private partnerships.

A significant part of project delays has come from project funds being parceled out to the Corps of Engineers in small amounts that drag the project out over many years than necessary.

Perhaps a private investor could supply all the funds needed upfront and pay back over an extended period of time. I think this is a possible paradigm worth exploring.

I welcome our witnesses today and look forward to hearing from you. At this time, I will yield to my ranking member, Mr. Bishop, for any comments you may have.

Mr. BISHOP. Thank you very much, Mr. Chairman. I appreciate you holding yet another hearing on the declining state of our Nation's infrastructure.

Today's hearing reinforces what most of our constituents already know, that America's system of infrastructure is crumbling and that consequences that result from infrastructure congestion, unreliability and failure are widespread and impact all sectors of the economy.

This morning we will hold our second hearing on the long-term challenges facing the movement of goods and services along our Nation's inland waterways system.

As one witness from our last hearing said on this issue: "The inland waterways system is one of this country's greatest assets that has allowed the low-cost movement of large bulk commodities in an efficient and timely manner."

Yet as the chairman also noted at our last hearing, our water resources infrastructure, especially our inland waterways system, is falling apart faster than we can fix it. I agree.

In my view, we are underinvesting in our Nation's critical infrastructure systems, including our highways, mass transit, sewers, and other water related infrastructure, as well as the projects carried out by the Corps of Engineers.

What I cannot seem to rectify are statements in strong support of the benefits that come from sustaining the projects and activities of the Corps while Members vote time and again to slash funding for these very same projects and activities.

The rhetoric does not match up with the actions, and this is troubling.

In my view, our infrastructure will only be as good as our willingness to pay for it. If we want a world-class infrastructure network, then we need to support the resources necessary to pay for it.

Unfortunately, in recent months, we have seen a concerted effort by some in Congress to go in the opposite direction, which in my view would hasten the reality that we warn against today.

Over the past year, this chamber has insisted on massive cuts to the appropriations of the U.S. Army Corps of Engineers, the Federal agency responsible for the construction and maintenance of much of the Nation's water related infrastructure.

For example, over the past two appropriations periods, the Republican led House has recommended cuts of close to 25 percent from the Corps' construction account, which is the principal account responsible for moving forward the major construction and rehabilitation projects along the inland system.

Similarly, the House has voted in support of significant cuts to the Corps' operation and maintenance accounts, that according to our witnesses' testimonies have strained the ability of the Corps to keep our existing water related infrastructure up and running.

Unfortunately, these cuts mark only the beginning of the Republican leadership's long-term plan for the Corps. The long-term plan for the Corps is what is displayed before you on these screens.

Under the Republican House budget, approved just before the Spring District work period, and for which every Republican of this committee save one, Representative Duncan of Tennessee, voted for, we can expect to see significant sustained cuts to the Corps' budget over the next 5 years to the point where total appropriations for the Corps may dip below $4 billion within the next 2 fiscal years.

That would represent more than a 25-percent reduction to the total Corps' appropriations over 5 years, not counting for inflation.

With all due respect to the witnesses, I hope someone can explain to me how we can even expect to maintain the adequacy of the inland system, let alone make recommended improvements with forecast reductions of over 25 percent of the Corps' construction operation and maintenance activities.

Later this morning, the Corps will highlight difficulties in maintaining the current system with diminishing funds, and how it must continuously defer necessary maintenance and rehabilitation to some future date.

My fear is that by knowingly providing the Corps with fewer resources than its current portfolio of projects requires, we are only increasing the likelihood that a major failure on the inland system will occur.

We have been warned. If the Ryan budget is maintained, in my view, we will have chosen to ignore these warnings.

In my view, it is irresponsible for Congress to expect our Nation's infrastructure to keep pace with all that our modern economy requires when we do not provide the resources necessary to even properly maintain these critical assets.

Similarly, it is irresponsible for this committee to continue to ignore the calls of stakeholders, Republican and Democratic administrations, and others to address issues surrounding the Inland Waterways Trust Fund that currently provides half of the cost of construction and major rehabilitation for projects in the inland system.

We all know that the greatest limiting factor for additional capital investment in the inland waterways system is the availability of funds in the Inland Waterways Trust Fund.

There was almost uniform agreement at our last hearing that the current structure is broken and in need of attention.

To date, we have been presented with an array of potential alternatives, ranging from the lockage fees proposed by both the Bush and Obama administrations, the proposal to generate additional revenues that was included as part of President Obama's jobs bill last Fall, and the capital development plan recommended by the Inland Waterways Users Board.

We have seen the offer of the administration to work with Congress to resolve this issue and the recognition from other committees that it is our responsibility to come up with a solution to this challenge.

Now is the time for this committee to roll up its sleeves and work through these proposals and others to address the long-term needs of the inland waterways system.

To that end, I have requested, as you know, Mr. Chairman, that we jointly hold a working roundtable to start moving this process forward.

I am hopeful that each of the witnesses here this morning as well as other stakeholders be asked to begin such an effort in the very near future.

This issue and the long-term needs of our entire water related infrastructure systems are far too important to delay any further.

Thank you very much, Mr. Chairman. I yield back.

Mr. GIBBS. At this time, before I introduce the witnesses, I want to recognize Congressman Todd Young from Indiana for special privilege. Go ahead.

Mr. YOUNG. Thank you, Chairman Gibbs and Ranking Member Bishop. I applaud the committee for convening this very timely and critical hearing on the reliability of the inland waterways system, and how it impacts our economic competitiveness.

As a Representative of one of the major inland waterways port cities, Jeffersonville, Indiana, I am dedicated to seeing that our Nation's inland waterways remain a commercial super highway capable of moving products to producers and goods to consumers.

I am deeply thankful and honored as all my colleagues are to have Mark Knoy, a constituent, and president and CEO of American Commercial Lines, here today to testify and share his expertise on the economic impact of the inland waterways.

As the son of a river boat captain, Mark grew up with firsthand knowledge of the waterways system. He worked his way from deck

hand to pilot and eventually started his own fleeting business with his father.

Before joining American Commercial Lines, he was vice president at American Electric Power Fuel Emissions and Logistics Group, and president of AEP River Operations.

Among other responsibilities, he currently serves as director of the Corps of Engineers' Inland Waterways Users Board, and vice chairman of National Waterways Foundation, and is former chairman of both the Waterways Council in the Midwest Region of the American Waterways Operators.

ACL is one of the Nation's largest and most successful marine transportation and manufacturing companies, and I am proud they have made Jeffersonville, Indiana, home.

ACL is an industry leader in efficiency, safety, and innovation, and I look forward to hearing Mark's insight into the industry's most pressing challenges, as well as potential reform proposals.

I thank the chairman and I yield back.

Mr. GIBBS. Thank you. At this time, I want to recognize the ranking member of the full Transportation Committee, Mr. Rahall.

Mr. RAHALL. Thank you, Mr. Chairman. I just very briefly want to commend you for calling today's hearing. I think this is a very critical issue for our Nation, not only are our inland waterways' operators responsible for number one, providing jobs for our people, but they are certainly important for this Nation's national security and safety.

You are important as far as moving goods, especially the coal that is so well produced in my part of the country, and moving that coal to its markets, both domestically and worldwide.

I commend you, Mr. Chairman. I also by way of passing note bipartisan legislation that has been introduced and I believe pending before this body, which is H.R. 4342, which has a wide range of supporters, both from the labor community, from the business community, and from the environmental community.

That legislation is called "The Inland Waterways Capital Development Plan."

I say that because I believe we could bipartisanly address the critical issues facing our inland waterways' operators.

Thank you, Mr. Chairman.

Mr. GIBBS. Thank you. At this time, I want to introduce our witnesses.

Our first witness is Major General John Peabody, Mississippi River Valley Division, United States Army Corps of Engineers.

I do want to congratulate him in his new position. He moved from Great Lakes to the whole Mississippi Basin.

Mr. Knoy was just introduced by his congressman.

Mr. Martin Hettel is senior manager, American Electric Power River Operations.

Mr. Robert Dolence, vice president, Leonardo Technologies.

Mr. Mike Steenhoek, executive director of the Soy Transportation Coalition.

Ms. Kristin Meira, executive director, Pacific Northwest Waterways Association, and Mr. James Rossberg, managing director of engineering programs of ASCE, Association of Civil Engineers.

I have just been informed we have some more statements, so we will get back to you in a minute, General Peabody, in a second.

Mr. Carnahan, go ahead. The floor is yours.

Mr. CARNAHAN. Thank you, Mr. Chairman. I want to welcome the panel and really thank the chairman and ranking members from our side for being here, for their leadership on this issue. I am going to ask unanimous consent to submit my full opening statement for the record.

Just to say briefly how important this is for our country, for our economy, for jobs, particularly for cities like St. Louis that I represent. This is a big deal.

This river system, this inland waterways system, really connects our country together in ways that are vital for our economy.

This is a win-win. Too many times the different modes of transportation get into this competition. This is a way, I think, for all those modes to look at how they can work together to really create a functioning, modern intermodal system in this country that is going to help all modes of transportation.

That is why I am especially proud to be an original co-sponsor of H.R. 4342, and all the groups that have come together behind that to actually get some of these things done.

I appreciate the way this coalition has stepped up to the plate, and we welcome you all here today.

Mr. GIBBS. Ms. Johnson? Go ahead.

Ms. JOHNSON OF TEXAS. Thank you very much Mr. Chairman and Ranking Member Bishop for holding this hearing, as it is critical that we maintain and improve our inland waterways system.

Failing to maintain these waterways will stifle trade and curtail economic competitiveness.

Having served both as ranking member and chair of this subcommittee, I am fully aware of how important it is to the country and most especially to my State.

Inland waterways are a significant component of our Nation's marine transportation system, and in Texas, trade and the ability to move goods is the life blood of our economy.

Texas has more than 1,000 miles of channel maintained by the Corps of Engineers, which I highly appreciate, and Texas ports create nearly 1 million jobs.

The maritime industry represents over $135 billion in economic value to my State.

If our inland waterways system is not maintained, that means loss of trade opportunities, delay in movement of commodities, and the potential to lose thousands of jobs.

I am realistic about the current weakness in our economy and the difficult fiscal climate, but without these adequate funds for these waterways, we are doing far more harm to American economic competitiveness.

I welcome the opportunity that this hearing brings to advance solutions to address the insolvency of the Inland Waterways Trust Fund.

Without an adequate maritime transportation system, the U.S. will lose its competitive edge in this global economy.

Thank you and I yield back.

Mr. GIBBS. Thank you. General Peabody, welcome.

The floor is yours.

TESTIMONY OF MAJOR GENERAL JOHN W. PEABODY, P.E., COMMANDER, MISSISSIPPI VALLEY DIVISION, UNITED STATES ARMY CORPS OF ENGINEERS; MARK KNOY, PRESIDENT AND CEO, AMERICAN COMMERCIAL LINES AND JEFFBOAT; MARTIN HETTEL, SENIOR MANAGER, BULK SALES, AMERICAN ELECTRIC POWER, RIVER OPERATIONS; ROBERT C. DOLENCE, VICE PRESIDENT, LEONARDO TECHNOLOGIES, INC.; MIKE STEENHOEK, EXECUTIVE DIRECTOR, SOY TRANSPORTATION COALITION; KRISTIN MEIRA, EXECUTIVE DIRECTOR, PACIFIC NORTHWEST WATERWAYS ASSOCIATION; AND JAMES A. ROSSBERG, MANAGING DIRECTOR, ENGINEERING PROGRAMS, AMERICAN SOCIETY OF CIVIL ENGINEERS

General PEABODY. Thank you, Mr. Chairman, Mr. Bishop, and distinguished members of the subcommittee.

It is an honor for me to testify before you today on the inland waterways operated and maintained by the Corps of Engineers and the thousands of professionals charged with making these systems work.

I currently command the Mississippi Valley Division but my previous job, as you alluded to, Mr. Chairman, was in command of the Great Lakes and Ohio River Division, where I also developed intimate familiarity with the challenges of this issue.

The Corps of Engineers facilitates commercial navigation by providing safe, reliable, cost-effective and environmentally sustainable waterborne transportation systems.

On the inland waterways, the Corps constructs, operates and maintains, rehabilitates and recapitalizes locks, dams, levees, floodways, and many other project features that enable vessels to transport cargo along 12,000 miles of waterways.

This system includes 221 operable lock chambers and associated dams at 178 active sites. About 9,000 miles of these waterways are within the greater Mississippi River Basin.

The Mississippi watershed is the largest naturally navigable river system in the world. Thanks to well over a century of investments by the Nation, the Corps has engineered structures throughout this watershed that resulted in a navigable network of interior waterways that in combination with the coastal system is longer than the navigable systems in the rest of the world combined.

The watershed drains a vast area, including one of the world's largest contiguous areas of productive farmland and major sources of underground mineral and energy wealth.

This gives the U.S. a unique economic advantage in enabling the inexpensive movement of goods from its interior to the gulf coast for export and internally to the United States for domestic consumption and industrial production as well.

I draw your attention to one example of hundreds that we could provide of photos of the crumbling infrastructure that has already been mentioned. I keep on my desk two examples as a daily reminder to me of this challenge.

This right here is a hunk of concrete I picked up at Allegheny 2 3 years ago when I visited that project.

This is difficult to see, but the nut on your right is a greatly deteriorated nut that was taken as part of routine maintenance off the Calcasieu system in Louisiana.

The nut on your left is what it is supposed to look like.

However, this competitive advantage is threatened by the aging of America's infrastructure which will require major investment or perhaps divestment, to sustain its reliability.

Our prior success in building engineered infrastructure taught Americans to expect that this infrastructure has always been, and will always be, there for us. But like everything built by man, infrastructure has limits. It must be properly maintained to ensure and extend its useful life. It must be periodically rehabilitated when it begins to wear out and deteriorate. When no longer viable to rehabilitate or economical to maintain, it either must be recapitalized, repurposed, or removed.

The Corps' portfolio of locks and dams has an average age of 60 years. These structures have performed well but many of them are showing obvious signs of wear and tear.

I draw your attention to the video here. What you are seeing is the collapse of a wall along the pool just above the Lockport Lock and Dam, in the Upper Illinois system. That was an 1890s vintage concrete wall that sloughed off while we were rehabilitating the project.

This was not built by the Corps. It was inherited by the Corps, I think, in the 1970s or 1980s.

In a select few cases, the condition of a project has deteriorated to a point that catastrophic failure is a real possibility, not a high probability, but a real possibility.

In all such cases with which I am familiar, there is an active construction project to replace or remediate the issue.

The Corps' ability to recapitalize this system, however, is limited by the Inland Waterways Trust Fund constraints on construction, most of which goes to the Olmsted Project in recent years.

To avoid possible catastrophic failures, the Corps has stepped up monitoring the system's condition via periodic inspections and increased scheduled maintenance, but the general reliability of the system is declining as unscheduled lock outages have doubled in the last decade.

On the screen now is one of the sources of possible failure. It is not just the crumbling infrastructure but from time to time, there are operational challenges with the navigation industry. This is a barge that struck the dam gates on Lock and Dam 25 that necessitated a shutdown and significant expenditures to repair it.

Other indicators also tell us that this trend is increasing, this trend of declining reliability.

For the last decade, the Corps has been actively pursuing several initiatives to address this challenge to include increased efforts to document project conditions and prioritize resources, efficiency initiatives to reduce equipment, cut excess operations capacity, regionalize assets across multiple districts, and other efforts.

We also studied lock and dam construction projects which revealed some issues for improved construction management, and recently the Corps partnered with the inland waterways navigation industry to develop ideas for a long-term approach to recapitalizing

infrastructure. The report identified several ways to strengthen our project delivery processes, and we have incorporated many of its recommendations.

The Corps is also embarking on a Civil Works transformation effort as part of a strategic plan to knit together these and other efforts. The desired effect will be more effective and efficient processes to deliver Corps' projects and manage them with maximum efficiency.

Current revenue trends, however, makes sustaining our full infrastructure portfolio unaffordable. We have made, and will continue to make, hard choices and tradeoffs about prioritizing resources to deliver the greatest return for the money available. These tradeoffs include such things as reducing hours of operations at some of our lower use locks. Without additional funding or revenue sources, we may be forced to put some projects in caretaker status in future years.

Mr. Chairman, I conclude by representing to you the conditions that our workforce operates under, the photo that was just on the screen shows our operators who were repairing the Markland gate failure which occurred approximately 2 years ago.

On behalf of the thousands of unheralded but dedicated Corps' operations professionals who labor dutiful and long hours and often in dangerous conditions, Mr. Chairman, Mr. Bishop, members of the subcommittee, I thank you for the opportunity to testify, and I look forward to your questions.

Mr. GIBBS. Mr. Knoy, the floor is yours.

Welcome.

Mr. KNOY. Good morning, Chairman Gibbs, Ranking Member Bishop, and members of the subcommittee.

I am Mark Knoy, president and CEO of American Commercial Lines and Jeffboat. We are based in Jeffersonville, Indiana, and have 2,250 employees, 1,450 in the barge transportation segment and 800 in our barge manufacturing segment, Jeffboat.

I appreciate the invitation of the subcommittee to appear today and the initiative of our Congressman, Todd Young, to bring perspective to the vital issue of reliable waterways transportation.

My testimony today will cover three key topics, accountability, reliability, and a plan for addressing the challenges of aging infrastructure which support operations on our most efficient transportation system, the inland waterways.

Where is the accountability today for stewardship of our taxpayer provided funds for construction and rehabilitation of inland waterways infrastructure?

In the private sector, a major cost overrun of a capital investment program would be subjected to rigorous management oversight and direct intervention when fiscal controls went awry.

However, thus far, our Government treats a fourfold increase in the estimated cost of just one project as no big deal.

For too long, too little scrutiny has been provided to the construction technique of this project. Congress has only recently been informed that the project has increased in cost by 50 percent, $1 billion, in the last year.

I am, of course, talking about the Olmsted Lock and Dam Project on the Lower Ohio River.

Where is the outrage? Where is the accountability when a 7-year project will now take 32 years to construct or perhaps even longer?

The new twin 1,200-foot locks were built using a traditional coffer dam technique. They will be 20 years old when the first barge locks through in the early 2020s.

The dam is another story. It is being built using an experimental technology, building in the wet. Initially, this approach was envisioned as saving $60 million. However, the project is now woefully behind schedule and billions of dollars over budget.

As a result, we have lost faith in the technology and in the investment in this project.

Remember, please, that we, the industry and its customers, have absolutely no control over the decisionmaking for this project.

We are expected to write a check for one-half of the project costs and have paid $650 million towards this project to date. With an annual appropriation of $150 to $185 million for construction of inland navigation projects, the consequences of Olmsted's overrun means that almost no other investments will be made for any of the 24 projects authorized by this committee for modernization of the navigation system until at least 2022 at the earliest.

Reliability. How can you have any confidence in the reliability of a system when 56 percent of the infrastructure is beyond its designed life?

Where 34 locks are over 80 years old? When a significant failure at a lock could close a major freight transportation artery, a disaster for the local and national economy.

When we are told by the agency managers that we are in a crisis and heading for a catastrophe, when a new initiative is being rolled out this week to do less with less by shutting down locks or reducing hours of service with the sole criterion being the number of commercial lockages at the facility.

Ironically, we are experiencing more problems with our newer locks, like Robert C. Byrd and Mel Price, than we are of the older locks.

We are on the brink of losing customers because of fear of unreliability. The industry is seeing the divergence of the smaller shipper category first, but larger shippers are questioning more often the continued investment in waterside facilities.

How inefficient does our Government want our waterways to be? As you have already noted, Mr. Chairman, replacing 1 barge tow would require an addition of new capacity of 216 rail cars plus 6 locomotives or over 1,000 tractor-trailer trucks to an already clogged surface transportation system.

I am sure you are thinking that I must be a heck of an optimist to be in this business. For all the challenges, the inland waterways still serve as the Nation's best transportation system.

What is lacking is the will to make change, to embrace a vision of investment in waterways transportation.

There is a plan, a good solid strategy for reforming our current approach and replacing outdated project delivery methods with on time and on budget performance.

A plan for prioritizing our work, for funding the project construction requirement through a combination of user fees and cost sharing changes.

There are bipartisan champions who have authored this plan, the "Magnificent Seven," we call them. Congressmen Whitfield, Costello, Duncan, Carnahan, Johnson, Congresswoman Terri Sewell, and Congressman Bob Aderholt.

They have come together to propose legislation, H.R. 4342.

Waterways are vital for the economy, energy, efficiency, and the environment.

This is a farsighted vision for the future of our Nation's inland waterways transportation system.

Four of these Members of Congress serve on this committee, and we urge this subcommittee to act this year on H.R. 4342 as part of your Water Resources Development Act.

Mr. Chairman and members of the subcommittee, we indeed face daunting challenges and great opportunities.

The administration has not brought forth a realistic workable plan to address these challenges. Detractors of the current program offer no alternative, but there is one plan out there, H.R. 4342, and a good place to begin the discussion on the path forward.

I look forward to working with the subcommittee to continue to provide the best transportation service to our Nation.

Thank you, sir.

Mr. GIBBS. Thank you.

Mr. Hettel, welcome, and the floor is yours.

Mr. HETTEL. Good morning and thank you, Chairman Gibbs and Ranking Member Bishop for allowing me to testify here today.

My name is Martin Hettel. I have been employed within the river transportation industry for the last 32 years, 16 of these years have been with American Electric Power River Operations Division.

AEP owns and/or operates 3,275 barges and 90 tow boats. Our headquarters is in Chesterfield, Missouri, and we have field offices in Pittsburgh, Pennsylvania; Lakin, West Virginia; Paducah, Kentucky; Convent, Louisiana; and Mobile, Alabama.

AEP River Operations currently employs over 1,500 people. In 2011, AEP River Operations transported over 74.4 million tons of cargo within the inland waterways system. Our traffic patterns move freight from the gulf coast between Brownsville, Texas, and Pensacola, Florida, between New Orleans and Catoosa, Oklahoma; St. Paul, Minnesota; Chicago, Illinois; Pittsburgh, Pennsylvania; and all points in between.

Within the last few years, we have seen what is a very reliable transportation system deteriorate more and more each year to the point we now experience lock outages on a regular basis.

While the reliability of the entire river transportation system is vital to AEP River Operations, of the 74.4 million tons of cargo we moved in 2011, 48.3 million tons were delivered into, out of, and within the Ohio River Basin.

Therefore, the rest of my testimony will focus on the extraordinarily serious problems within the Ohio River Basin.

Within the last 8 years, we have experienced several lock failures on the Ohio River.

In 2003, Greenup was down for 52 days. In 2004, McAlpine experienced a total river closure for 10 days.

In 2005, the Hannibal Lock experienced a 13-day closure of the main chamber, and during that time, the auxiliary chamber failed which caused a 5-day total river shutdown.

In 2009, Markland experienced a failure at the main chamber which lasted 154 days. In 2010, we had yet another failure at Greenup Lock, along with a closure at J.T. Meyers, an outage of Lock 52, that lasted 32 days. This outage at Lock 52 cost AEP River Operations $4.6 million in delay costs while waiting to transit that lock.

These outages are in my graph here as Attachment 1 to my testimony.

An outage at Markland that started July 11 of last year is still not operational. The lock is not expected to be operational until August 3 of this year. This will amount to a 389-day main chamber closure at Markland Lock.

As of the end of last month, this outage at Markland has cost AEP River Operations already $3.8 million in delay costs. By the time this lock is back operational by August 3, the total cost to AEP River Operations is estimated at $5.5 million.

In addition this year, we had another outage at Greenup scheduled for June 3 through September 1. This 90-day outage is expected to cost us $1.3 million in delay costs.

When you add up the outage at 52 in 2010, Markland last year and this year and Greenup, AEP's total exposure will be over $11.4 million of delay costs.

These outages are increasing each year. The Corps of Engineers predicts that by 2015, we will experience eight more lock outages. By the year 2020, they predict 14 lock chamber outages. By the year 2025, 18 lock chamber outages, and by the year 2030, 22 lock chamber outages.

This is in my Attachment 2. Just for the record, green is good, red is bad.

All these delays affect the consumer. As we all know, when the cost of transportation increases, the final cost to the consumer also increases.

As we have seen in our day to day lives at the grocery store, when fuel costs increase, so do the costs of delivered goods to the market. When the cost of transportation of raw materials increases, the final cost to the finished product also increases.

American Electric Power's electricity to the consumer increases as our costs of delivering fuel to power plants increase.

AEP has looked at the predicted lock failures and put together a program that estimates the additional cost to deliver fuel to our power plants, should we experience a catastrophic failure in the upcoming years.

As an example, if both chambers at Willow Island fail as the Corps predicts in 2015, the cost to get fuel to our power plants via truck, rail, trans-loading around the lock or buying coal on the spot market, would be well over $22 million a month.

The predicted lock failure is compounded by the recent EPA regulations put into law, particularly the Mercury and Air Toxics Standards, that will shut down coal power plants, with less availability for producing electricity coupled with a complete lock closure such as the Corps predicts at Willow Island, a situation could

very well arise that affects the reliability of an electricity grid potentially causing brownouts or perhaps even limited blackouts.

Not only do these lock delays affect the consumer within this country, it can also affect a producer of materials that are exported out of this country.

With the world markets that the United States competes in, increased costs of transporting these products can put the producers at a competitive disadvantage in the world marketplace. Thus, affecting the steel producers, the coal producers, the farmers, and anyone else who competes with the export of bulk commodities out of this country.

AEP River Operations and hundreds of other companies and organizations believe one critically important step that Congress should take to address this situation is to approve and send to the President for his signature H.R. 4342, The Waterways Are Vital for Economy, Energy, Efficiency, and Environment Act of 2012.

This legislation introduced by Congressman Whitfield and Congressman Jerry Costello, a member of this important subcommittee, and others, introduced on a bipartisan basis, would put in place what we believe is a balanced, comprehensive workable 20-year inland waterways system modernization investment plan.

A second critical step that Congress should take is to ensure on a continuing basis the Corps of Engineers is provided with adequate operational and maintenance funds to keep the Ohio River and the remainder of the inland waterways functioning at an optimal level.

Our Nation's waterways are too important to do anything else.

In closing, I would like to thank you again for this opportunity to testify, and I am pleased to answer any questions the subcommittee may have.

Mr. GIBBS. Thank you. Mr. Dolence.

Sir, welcome, and the floor is yours.

Mr. DOLENCE. Thank you, Mr. Chairman and members of the subcommittee for inviting me to speak to the subcommittee today.

I have submitted my entire statement for the record but will keep my opening remarks brief.

My name is Robert Dolence. I am vice president and principal of Leonardo Technologies or LTI. LTI is a small privately held business incorporated in the State of Ohio with headquarters in Bannock, Ohio, and offices in Montana, Pennsylvania, New Hampshire, New York, Virginia, and West Virginia.

LTI is an energy technology consulting firm focused on safe, affordable and environmentally acceptable production and use of energy.

Our more than 100 professionals are involved in the fuel and energy cycles from production, upgrading, transporting, utilization and disposition of residual materials.

I was invited to speak today regarding a study LTI performed in 2011 for the U.S. Army Corps of Engineers titled, "Measuring the Impact of Monongahela Lock Closures on Forecasts of Utility Steam Coal Consumption, Sourcing and Transportation in the Ohio River Basin."

In this study, LTI was asked to assess the likely impacts to the regional and national electric utility industries and the coal indus-

try that provides fuel to those plants resulting from a catastrophic failure of any one of the three lock and dam sets, No. 2, No. 3, and No. 4, on the lower portion of the Monongahela River closest to Pittsburgh, Pennsylvania.

I would like to note it is another great river city.

The locations can be viewed on the map on page three of the written testimony. It is my understanding these lowest three lock and dam sets on the Monongahela River closest to Pittsburgh were selected because they are in the poorest state of repair and more susceptible to a catastrophic failure.

For this study, it was decided to adopt the assumption of failure at one of these lowest three lock and dam sets, would shut down the entire traffic on the Monongahela River.

Our modeling effort using the Greenmont Energy Model or GEM, automatically calculates the lowest cost transportation alternative for each of many coals into a single electric energy plant.

It is important to note that the model does not evaluate or determine the adequacy of alternative transportation systems. It simply assumed that the alternate transportation capacity was available.

Although not specifically evaluated in the study, it is likely that the alternate transportation system, if capacity exists at all, would at least be stressed, thereby putting further upward pressure on prices.

Therefore, the results are considered a conservative estimate of impacts since the system would have to work harder to supply the electricity demand, and might even fail if there is a shortage of trucking and rail capacity.

It was also beyond the scope to assess the interrelationships between river, rail, and truck transportation and the subsequent non-coal or non-electricity price impacts.

These areas include, but are certainly not limited to, availability and price impacts to transportation fuel and non-coal commodities, highway traffic density increases, highway safety, and exacerbated physical impacts to highway and rail infrastructure with increased traffic.

The Monongahela River Lock and Dam study resulted in the following conclusions: Under the liberal assumption of adequate over land transportation alternatives, no brownouts or blackouts occurred, but economic impacts were significant.

Approximately 21 million individuals are affected by the direct impact of the Monongahela dependent plants of interest service areas.

The ripple effect goes far beyond the plants of interest service areas, reaching out to a majority of U.S. electricity users, in excess of 200 million.

Through domino effects of increased transportation costs compounded by electricity dispatch reactions associated with the loss of the Monongahela River waterway traffic, the cost of producing electricity increases almost across the entire United States.

Our modeling indicates the resulting price paid by electricity customers nationwide would increase by as much as $1 billion annually.

These impacts are single-year impacts that would occur repeatedly for each year the lock and dam remained inoperable.

The impacts noted are only electric price effects resulting from coal river traffic impedance. The impacts do not include other commodities currently transported on the Monongahela River, including petroleum, aggregates, grain, chemicals, ores and minerals, and iron and steel.

If only one-half of the total 2008 tonnage, a little over 21 million tons, barged through the three Monongahela River locks of interest were transported by truck, that is assuming the other half could be shipped by rail, it would equate to an additional 1,500 20-ton tri-axial trucks every day, or more than 60 loaded trucks an hour entering the local roads and highways. This number does not include the empty truck return hauls.

Although not part of the study, increased price of electricity causes an increase in production costs for businesses and cost of living for the general population, which typically results in a negative impact to economic growth.

In other work by LTI, it was forecast that even with sustained low natural gas prices, maintaining less than $4 per million BTU natural gas cost levels for 50-plus years, coal maintains a significant role in electric fire generation, industrial and commercial use, and exports, with a total coal demand staying above the 1 billion tons per year level for the next 50 years.

Based on the combined detailed modeling performed, LTI concludes the Ohio River navigation system is a vital component to ensuring safe, reliable, low-cost domestic energy, including electricity to our country.

This concludes my prepared comments. Thank you for the opportunity to present the results of our study and my personal observations. I look forward to your questions.

Mr. GIBBS. Thank you.

Mr. Steenhoek, welcome, and the floor is yours.

Mr. STEENHOEK. Thank you, Mr. Chairman and members of the subcommittee.

In the interest of brevity, I am just going to confine my comments to four statements.

Number one, transportation, particularly the inland waterways system, is not just a contributing factor to the economic competitiveness of U.S. agriculture in general and the soybean industry in particular, it is the predominant one.

When you look at the cost our customers pay on the international marketplace for agricultural products, and for soybeans in particular, the reason why we in the United States are the most economical choice on the international marketplace is not due to our lower cost of production. It is due to the lower cost of transportation.

We are not the only country that can produce what the international marketplace needs, but what sets us apart is our ability to deliver it to them in a cost-effective manner.

The expansion of the Panama Canal really presents an opportunity for agriculture and freight interests in general, with the greater efficiency of maritime transportation, but that opportunity is incumbent upon us to make needed investments in our port infrastructure and our inland waterways system, otherwise, it will be a missed opportunity.

The next statement is our overall dilapidated locks and dams exhibited by unscheduled maintenance, mechanical breakdowns, and a threat of failure sends a terrible signal to those who utilize the system.

How can we expect grain handlers in this country and other freight interests to invest millions of dollars in new facilities or upgraded facilities if they do not have the confidence that they can make those deliveries to their customers in a cost-effective manner?

It is sending a real terrible signal to industry. We want rural America to be an attractive place for investments, and our concern is the unintended consequences, but it is an unambiguous consequence of our inability to invest in our inland waterways system, and really sends a discouraging message to that investment, that we in this country so desperately need.

Number three, the third statement, how you allocate money is just as important as how much money you allocate.

This is perhaps a blunt statement, but I think it is an accurate one, that if I were to design a funding mechanism that would result in consistent and dramatic cost overruns for our inland waterways system, I would design a system that we have right now, where there is great uncertainty, the money is not provided in one lump sum.

As a result, you see work commence. You see work stop. That is a very inefficient way to maintain the system.

I have been to the Panama three times over the last couple of years, and really have observed the Panama Canal Expansion Project and the Panama Canal right now.

Here is a project that was commenced in 2007. It is slated to be completed in 2014. Actually, the Panama Canal Authority had to swallow some pride over the last week where they made the dire announcement that the canal expansion is not going to be completed in October of 2014, it will be completed in December of 2014. Actually, at the end of the day, it might be early 2015.

What a contrast to how we do things in this country. The reason why they have such a superior record on deliverance of projects is not because they have superior engineers that we have in this country. We have wonderful engineers in this country.

When you look at how they are financing this project, you see money provided in a lump sum. You see certainty of funding. That is a much more appropriate way to invest in major capital expansion projects.

You see it replicated throughout the world. I think that we have a lot to learn. I think the country that built the Panama Canal has a lot to learn from the country that currently owns and operates the Panama Canal.

Fourth and finally, the statement I would like to make is a predictably good inland waterways system is superior to a hypothetically great one.

I think that we are failing on two fronts. Number one, we are failing on our ability to build these new and expanded locks. The testimony referenced—the earlier testimony referenced the Olmsted Project, and that is the quintessential example.

We are doing a poor job of building these new projects, but at the same time we are doing a poor job of maintaining the system we currently have.

I think it would be a much better message sent to industry, to those who utilize the inland waterways system, if you can provide some greater predictability and certainty to the system, since we are asking them to make these millions of dollars in investments and explore these markets, domestic and international.

I think that would be a much better message to send. Practicing good stewardship of this important system versus trying to develop something that is hypothetical.

That concludes my comments, Mr. Chairman. I would be pleased to answer any questions.

Mr. GIBBS. Thank you.

Ms. Meira, the floor is yours, and welcome.

Ms. MEIRA. Thank you. Mr. Gibbs, Mr. Bishop, members of the subcommittee, I am honored to participate in this panel and appreciate the opportunity to highlight our unique river system in the Northwest.

We are grateful to the subcommittee for convening this hearing to focus on the needs of the Nation's inland waterways.

Founded in 1934, PNWA represents Columbia River, Puget Sound, and Northwest coastal interests on navigation, transportation, energy, regulatory and environmental policies.

PNWA's membership includes over 115 public ports, tow boat companies, steamship operators, ag and forest products producers, public utilities, manufacturers, and others in Oregon, Washington, Idaho, and Northern California.

Our Nation's economy relies on a safe, efficient and cost-effective multimodal transportation system. That system includes road, rail, air, and water.

The Columbia-Snake River System is a critical piece of the Nation's navigation portfolio, providing benefits not just for the Pacific Northwest, but far into the heartland of our country.

The Columbia River is the Nation's number one gateway for the export of wheat and barley, and when you consider the movement of soy and other grains, our river system is the third largest grain export gateway in the world.

The Inland Columbia-Snake River System is a water highway that stretches from Vancouver, Washington, and Portland, Oregon, inland 360 miles to Lewiston, Idaho, and Clarkston, Washington.

Our inland system is comprised of a 14-foot-deep navigation channel and a series of eight locks. These are the highest lift locks in the United States, and are among the highest in the world, with the John Day Lock tapping out at 110 feet.

Our inland system handles over 10 million tons of commercial cargo each year, with a value of over $3 billion.

I mentioned earlier that we are the top wheat export gateway in the Nation, roughly half of the wheat exported out of the deep draft Lower Columbia River arrives at those export facilities by barge.

Other commodities that move on our inland system include petroleum products, containerized ag products, forest products, and large project cargo.

Our system provides some environmental benefits as well. A typical barge on the Columbia-Snake River System can carry 3,500 tons. That compares with 100 tons per rail car and 29 tons per truck.

We estimate that each year, barging on our system keeps 700,000 trucks off the highways that run through the sensitive air shed of the Columbia River Gouge National Scenic Area.

Early in the last decade, our colleagues at the Portland and Walla Walla Districts of the U.S. Army Corps of Engineers recognized that our aging locks would require strategic repairs to remain operational and reliable.

They also recognize that these projects would need to be planned and executed to have the least impact to our regional and national economy.

It is important to remember with the scale of our navigation infrastructure projects, a catastrophic failure of one of our lock dates would translate to at least a 1-year closure of that project. That is how long it takes to design, fabricate and install a lock gate of that size.

We also do not have any smaller backup locks at our projects. Allowing our locks to degrade to the point of failure simply is not an option.

A closure of one of our projects creates a bottleneck for the entire system.

Beginning in 2006, the Corps and PNWA partnered to discuss the highest priority repairs, funding estimates, and timeline.

The goal, minimize planned and unplanned system closures. This collaborative planning meant that our river system was well poised to execute funding made available through the 2009 American Recovery and Reinvestment Act.

The Corps began working with stakeholders to prepare for new downstream gates at three of our projects, and major repairs at three other locks.

A tremendous amount of coordination went into what was eventually a 15-week complete closure of our inland navigation system. This type of long-term plan closure had never been done on any inland waterway in the United States.

We worked closely with the Corps for over a year to prepare growers, shippers, ports, tow boaters, steamship operators, and fuel companies, the media, the legislators, and the States of Oregon, Washington, and Idaho for this unprecedented closure.

Special emphasis was placed on outreach to grain buyers overseas who were accustomed to sourcing U.S. wheat from the historically reliable Columbia-Snake River System.

Every moment of the 14 months leading up to the closure was necessary to ensure that both domestic and international stakeholders were prepared for the shutdown of our system.

I am pleased to say that this effort was a complete success, and a project for which the Corps, stakeholders, and Congress can truly be proud of.

Because of the outstanding partnership between the Corps and stakeholders, impacts to our regional and national economy were minimized.

I want to note that the positive experience we had is not indicative of the economic impacts that would be suffered if there were an unplanned closure of our system.

Because this was a well planned effort, shippers could decide whether to ship early, use alternate transport where available, or increase their storage locally with the intent to ship after the system reopened.

A major study just completed at Washington State University confirmed that most producers attempted to either ship their goods prior to closure or after the system reopened.

The lock closure demonstrated that the Columbia-Snake is key to the international competitiveness of many producers in our region, and is the preferred mode of transportation for many goods produced in our heartland.

Last year's closure addressed the most immediate needs on our river system, but we know that our projects continue to age, meaning more components will reach the end of their design lives.

We continue to partner with our Corps' Districts and our Division, and our joint goal is to identify major maintenance needs, predict system closures years in advance, and protect the reliability of our system.

We realize every agency is facing funding shortfalls. It is imperative that our country continue to provide the infrastructure that makes commerce possible.

It is our belief that future regional national economic competitiveness hinges on the availability of reliable navigation infrastructure, our water and highways.

Thank you again for this opportunity to testify, and I am happy to answer any questions you may have.

Mr. GIBBS. Thank you.

Mr. Rossberg, the floor is yours. Welcome.

Mr. ROSSBERG. Thank you. Mr. Chairman, Congressman Bishop and members of the subcommittee, the members of the American Society of Civil Engineers are pleased to provide our views on how the reliability of the Nation's inland waterways impacts the economic competitiveness of the United States.

Mr. Chairman, you have our complete written statement for the record, so let me just summarize a few key points.

First, efforts by the administration and Congress to address the growing deficiency in investing in our waterways' infrastructure have been largely ineffectual due to political considerations that give preference to deficit deduction and tax cuts over the badly needed and concededly expensive restoration of our Nation's critical infrastructure.

These policy failures at the White House and in Congress threaten our Nation's global economic competitiveness.

In 2009, ACSE's report card for America's infrastructure gave the Nation's inland waterways a grade of D–, an indication that the system is near failure, that you have heard from other witnesses today.

Neither the President nor Congress has done anything in the year since to improve upon that extremely dismal assessment, such as the adoption of a long-term systemic approach to improving the performance and condition of our national waterways.

Second, 47 percent of all locks maintained by the U.S. Army Corps of Engineers were classified as "functionally obsolete" in 2006.

Without the badly needed funding, by 2020, another 93 existing locks will be obsolete, or to put it another way, more than 8 out of every 10 locks now in service will be outdated. Most locks are now anywhere from 50 to 70 years old.

The current system of inland waterways lacks resilience. Waterway usage is increasing, but facilities are aging, and many are well past their design life of 50 years.

Recovery from any significant event will be hampered by the age and deteriorating condition of the system, posing a direct threat to the American economy.

The estimated cost of repairing and modernizing the assets of the inland system is approximately $8 billion. Despite the obvious needs, the balance in the Inland Waterways Trust Fund has been declining for more than a decade. In April of 2010, the Inland Waterways User Board, a consortium of waterways users created by Congress, released a proposed investment strategy for the inland waterways system that would increase the 20 cent diesel fuel tax to 26 or 29 cents.

Applying a tax of 26 cents to each gallon sold to the estimated fiscal year 2011 fuel sales would generate about $109 million annually or an additional $1 billion over 10 years.

The tax rate for the Trust Fund has been 20 cents per gallon since January 1st of 1995. We believe that an increase in the waterways users' fee is long overdue, and we concur with the IWUB recommendation that the current fee be increased between six and nine cents a gallon.

ASCE's support for the IWUB plan, however, is contingent upon two important considerations. First, any increase in the user fee should also include a provision to index that fee to the consumer price index and be adjusted every 2 years.

And, second, any diesel fuel tax revenues received by the Trust Fund should be firewalled to establish discretionary spending limits in the same manner used for the Highway Trust Fund and the Aviation Trust Fund, and to reserve the Inland Waterways Trust Fund revenues exclusively for the reconstruction of a systems aging infrastructure.

And lastly, our major point is the Corps of Engineers' Civil Works Program has suffered from chronic underfunding for essential infrastructure systems. If allowed to continue, this trend will likely result in ever greater system failures and the consequent expenditures of tens of billions of dollars to rebuild what could have been built more economically in the first place.

Following Hurricane Katrina in 2005, an ASCE study commissioned by the Corps reported that chronic underfunding and indifference to maintenance were the principal causes of the levy failures after Katrina. The President's budget for the Civil Works Program in fiscal year 2013 and the House budget resolution would further reduce Federal investment in the Nation's essential national Civil Works system.

This week the House Appropriations Committee has drafted a bill that would set the Corps' fiscal year 2013 budget at $4.7 bil-

lion, a decrease of nearly 6 percent over the fiscal year 2012 enacted level of $5 billion. The funding level in the legislation is inadequate to meet the needs of an aging waterways infrastructure and must be increased.

Doing more with less is not a solution. It is a political slogan that ignores the consequences of continuing to underinvest in our essential infrastructure. America cannot compete in the world marketplace with 100-year-old locks, two shallow harbors, and promised investments in key infrastructure systems and a seeming blindness on the part of policymakers to the economic peril we face.

Congress and the President can never say "we were not told."

Thank you.

Mr. GIBBS. Thank you.

I am going to start out the first round of questions, but I would first like to say I think everybody is in agreement that we have a challenge and potentially very even catastrophic issue before us that affects our economy and our standard of living in a large part of the country.

I do want to start out with General Peabody. I think we need to talk maybe briefly about Olmsted. I do not want to point fingers at anybody, but I think maybe we can learn from the past, and I think there is plenty of blame to go around, and one, I think it comes out as the evidence of basically Congress' failure over many, many years to fund the projects initially and get on with it. I know other things are factored in there, the studies, the requirements, and feel free to talk about that, General, too, why maybe there are some of the delays to that beyond what the Corps can do.

But I want to give you a chance to respond a little bit on what is happening in Olmsted because that is taking so much of the capital budget and so much concern. I think that, like I said, we can learn from the past, but not to blame totally anybody's fault in particular, but let's see if we can use that as constructive.

So, General, I will give you a chance to respond to some of the discussion we have had so far.

General PEABODY. Thank you, Mr. Chairman.

I would appreciate a little bit of leeway on the brevity aspect. I will try to be as brief as possible, but as I think you know, and you have visited there, this is a complex project.

Let me focus on what I consider to be the bottom line. There are four points. First and foremost, the location of the Olmsted Project in the Lower Ohio River, just before the confluence with the Mississippi, makes it the hub of the inland marine transportation system in the Mississippi watershed. In recent years, the tonnage that passes through that location averages between 80 and 90 million a year, and if past is prologue, we would anticipate that that tonnage over the next couple of decades would continue to climb steadily above 100 million tons a year. So it is critically important to the Nation, and I believe coal is the largest commodity that goes through that location.

Second, Lock and Dam 52. There are two locks and dams that the Olmsted project is replacing, both of which are in a highly deteriorated state. They were built in the 1920s, and they are sitting on timber piles. Lock and Dam 52, in particular the dam component, is very fragile. The wicket dam is sagging approximately 4 to

5 inches, and it is my belief that either Lock and Dam 52, or Charleroi on the Lower Monongahela River, are the two points in the system that are most likely to fail, given what I know.

The challenge is that we do not have Superman x-ray vision so we cannot see inside these projects. We cannot see underground. Testing would require destructive processes which could set in motion a sequence that would result in catastrophic failure. So our state of knowledge is imperfect.

Third, once complete, the transportation rate savings at Olmsted based on 2011 dollars are approximately $800 million a year. I think it is just under that, $780 or $790 million. Now, it is my understanding, and my information is a little bit dated, but the latest information I have is that the current estimate for the project completion in 2011 dollars is about $2.8 billion. The project pays for itself in just 4 years in transportation rate savings.

Fourth, the Corps can, and does, deliver complex projects on time and under budget when enabled to do so. A great example of this is the Hurricane Storm Damage Risk Reduction System. This is a $14.6 billion project. Thank you for the multiple supplementals from Congress enabling us to do that.

It was enabled by full funding upfront, which is not the Civil Works model for the vast majority of our projects. It was enabled by accelerated NEPA documentation and consideration by EPA and CEQ, and it was enabled by advanced risk-based cost estimating procedures which we have developed in the 20 years intervening since we began the authorization for the Olmsted Project, as well as other acquisition strategies that are much more innovative and involve industry much more upfront so that we have a greater clarity of the risk and industry can provide us the benefit of their knowledge.

Finally, the final bottom line point I would make is the truth regarding Olmsted is very complex, but the bottom line to me is pretty simple. At the time that we developed the authorization and the feasibility study, we simply underforecast the technical complexity of putting the largest lock and dam system this country has ever built in the most dynamic location of the river anywhere in this country that we have ever built a lock and dam. Those are just brutal truths.

And then, we suboptimized our way along the 20-plus years of execution. So that is the bottom line, Mr. Chairman. I can get into a lot of the details and the facts, and I would highlight a couple.

If you accelerate for inflation, which is the only proper way, in my opinion, to measure cost, then the cost is a little bit less than double what the final estimate was at the time, shortly after the authority was passed because I think our final estimate was just slightly above what the original authorization was.

We have sunk, and I do not have the precise figure, but it is close to $1.4 billion to date into this project. So those are sunk costs. We have done all the preliminary requirements that are required to do this, all the Civil Works studies processes, which goes back, I think, into the 1940s in this case. So this is a project with a lot of history behind it.

We have all of the environmental and NEPA documents and cultural and historical documentation and mitigation plans put in

place. We have the planning and engineering and design complete. We have built all of the infrastructure that you saw in place that enabled us to build these 3,500-ton Lego blocks and put them into the riverbed. All that is sunk cost.

To walk away from it or to try to go toward a different avenue, in my judgment, pending further analysis, which the Corps is doing, we would have to look at that very closely because there is a lot of effort and energy that has gone into this already.

Now, the Corps is—and we started this under my watch, I think, as you are aware, Mr. Chairman. We talked to you about this when you visited the project back in August of last year—the Corps is reviewing all possible alternative ways forward. Those include changing to alternate construction methods, what some people call "in the dry," but that is a traditional coffer dam. This is not a simple solution though because, again, most dynamic areas of the water river, 40-foot river stage change on an average year, which means the coffer dam has to be extremely robust and there is no bedrock. It is 300 feet down into alluvial river deposits before you hit bedrock. So you have to get friction piles down there. They are very expensive, technically complex, and it would likely be over-topped at some point, especially if we were to have a high water event like we had in 2011.

We are looking at project management oversight. I have spent a lot of my time when I was in command of the Great Lakes and Ohio River Division, examining the project management oversight. I came away convinced that we had in place proper procedures, but we are taking an external review to take a look at that and see if there is something we can do better.

We are engaged in looking at funding alternatives, and we are looking at the acquisition strategies. So, for example, perhaps shifting from cost reimbursable approach, which was the only way we could get the dam component to get bidders on it at the time about a decade ago, perhaps early contractor initiative, perhaps a firm fixed price, those are going to be examined.

Mr. GIBBS. OK, John. I am going to have to——

General PEABODY. That is my last point, sir. So I will turn it back to you for any followup questions.

Mr. GIBBS. OK. We are going to go on to questions here. So go ahead.

Mr. BISHOP. No, no, no. You go.

Mr. GIBBS. We are fine. There are not going to be many Members here. So we will have plenty of time to go back and forth here a few times. So go ahead, Congressman Bishop.

Mr. BISHOP. Mr. Chairman, I would be happy to defer.

Let me start with H.R. 4342, which several of my colleagues have offered as legislation. I think Mr. Duncan is one of the sponsors of it. Clearly, it represents a solution to a problem that we all agree exists, and that we all agree we must find a solution for.

But let me point out what I fear is the difficulty. It would add approximately in a static environment where Corps funding was steady state; it would add approximately $180 billion, million, $180 million of annual obligation to the Corps, which would be difficult for the Corps to accommodate in a static environment.

But we are not in a static environment. We are in an environment in which we have twice now in the House of Representatives, once right before Easter break and once again as recently as yesterday, passed a budget that would cut Corps funding for next year by at least $200 million.

So we are in an environment in which if we were to pass 4342, we would be adding $180 million of annual obligation to the Corps and taking away $200 million worth of capacity from the Corps. So round——

Mr. GIBBS. Just excuse me for a second. Indulge me. I have got to go vote in a committee, and I want to turn it over to Representative Bucshon until I come back.

Mr. BISHOP. OK, fine. OK. So we are talking about a $400 million swing in 1 year, and so I guess my question to you, General Peabody, and I know you do not speak for the Corps, but I would presume that to accommodate a $400 million swing in 1 year and still try to maintain all of the other activities and obligations of the Corps would be exceedingly difficult. Am I right about that?

General PEABODY. Mr. Bishop, yes, sir. Any budget cuts require choices and tradeoffs or budget reductions I should say, and those choices and tradeoffs are not easy, especially at a time where our infrastructure is already aging and, as testified to by many of us, requires, if we are going to sustain the infrastructure we have, and I think that is a fair question for us to ask ourselves.

Mr. BISHOP. But we would be——

General PEABODY. To require these tradeoffs.

Mr. BISHOP. Is it not fair to assume that we would be pushing around a problem, that we may very well solve the inland waterways problem with an additional $180 million a year, or at least be on a path to solving it?

General PEABODY. Without an increase in the Corps' overall budget, yes, we would have to reduce elsewhere.

Mr. BISHOP. Something would give.

General PEABODY. That is correct.

Mr. BISHOP. Harbor maintenance, dredging.

General PEABODY. Well, sir, you know the biggest——

Mr. BISHOP. Shoreline protection, something would go away.

General PEABODY. I cannot predict what that would take. It would probably, you know, cut across several aspects of the Corps' budget, from investigations, construction, on in, but our biggest account where most of the money is, I think it is on the order of 80 percent, is in the operations and maintenance account.

Mr. BISHOP. Yes.

General PEABODY. So while I cannot predict where the cost savings would come from, that is the account where, you know, most of the money is and, you know, would likely take a large proportion of the cut.

Mr. BISHOP. OK. I cut off the chairman. I should not have done that, but I have been suggesting to the chairman and to my colleagues and to the various stakeholders that we have to move off the dime here. We have got competing proposals. Each of the proposals has merit associated with them. Each of the proposals has problems associated with them. And what I have been suggesting is a round table where we bring together Members and stake-

holders and try to sit down and has this out and hopefully arrive at a solution that we can all find reasonable.

So let me just ask each of you, and I am just going to ask each of you to answer yes or no: would you be willing to participate in that kind of roll up your sleeves round table so that we can try to move off the dime here?

And I will start with you, General.

General PEABODY. Yes.

Mr. KNOY. Yes.

Mr. HETTEL. I think I would be supportive of anything the subcommittee could come up with in discussions to fix this problem.

Mr. BISHOP. So I will take that as a yes.

Mr. HETTEL. I would be supportive of anything the committee would come up with.

Mr. BISHOP. I will take that as a yes. Thank you.

Mr. DOLENCE. Yes.

Mr. STEENHOEK. Yes, sir.

Ms. MEIRA. Yes.

Mr. ROSSBERG. Absolutely.

Mr. BISHOP. I will take that as a yes as well.

OK. Thank you. My time has expired. I will yield back to the chairman. Thank you.

Dr. BUCSHON. [presiding.] Mr. Duncan.

Mr. DUNCAN. Well, thank you, Mr. Chairman. I thought that maybe you were going to ask some questions first, but that is fine.

I can tell you that you cannot serve on this subcommittee very long before you realize that the people of this country take all these subjects that we deal with in here very much for granted, our waste water system, our clean water system, our inland waterways system, and all of these things are very, very important to this country.

I was thinking just a moment ago another one of my committees held three hearings, I think, 2 or 3 years ago on the issue of steroids in sports, and we had many famous baseball players testify, but I remember when Roger Clemens testified the hearing room was packed with photographers and reporters. The very next week in that same committee we had a hearing on reforming the Federal contracting process, much more important, no reporters, no photographers, because we live in this celebrity age, and we a lot of times emphasize things that we should not emphasize and do not emphasize things that we should.

There are three or four people who have heard me tell this story in here before, but many years ago, I had a businessman in Knoxville who called me on a Thursday and asked if I would meet with him concerning the Chickamauga Lock, which is not in my district. It is close to Chattanooga, but I said, sure, that I was flying back to Washington. I still remember. I was flying at that time back to Washington on a 1:50 plane that afternoon, and I said, "I will meet you at a restaurant near the airport," and I expected that gentleman, and I would not have been surprised if he brought one or two people with him.

But I showed up in that restaurant, and there were about 100 people there that day, and I did not get to eat lunch because just one after another they stood up and told me how important the

Chickamauga Lock was to their businesses, and it really made an impression on me because, you know, I think for the first time I realized that this lock, even though it was not in my district, it was more important to me in the Knoxville area than it was even to the people closer to the lock.

And I have visited many of the locks around the country when I chaired this subcommittee, and I think it is very unfortunate that people do not realize how valuable this and how important that inland waterway system is to this Nation.

And then almost every project we deal with in here, the airports, the highways, we are taking three times or four times as long to complete these projects as there are in any other developed nation. I remember when I chaired the Aviation Subcommittee. The Atlanta airport people told us their newest runway, which now is several years old, had taken 14 years from conception to completion. It took 99 construction days.

The Federal highway people, I now chair the Highways and Transit Subcommittee, and their last two studies say 13 and 15 years, one study 13 years, one study 15 years, from conception to completion. These are not transcontinental highways.

So, Mr. Knoy, I did not get to hear your testimony. I was in some other meetings, but I read your testimony, and I loved it when you had in there, "Where is the outrage?" about Olmsted and talking about 32 years to take something that was supposed to take 7 years.

Let me ask you this. I guess I do not have many questions. I am just making some comments here, but one thing I noticed that you said. You said that we are having more promise with the new locks than the older locks. Why is that do you think?

Mr. KNOY. I do not know the answer to that question. Just intuitively and through the practice of our business though, our newest lock on the Ohio River system, Robert C. Byrd, we have just as many problems with it as we do the older locks. I do not understand why.

Mr. DUNCAN. Well, that is something that should concern all of us. We certainly need to look into that.

Mr. Hettel, I read in your testimony about the outage at Markland, and you said it is going to be 389 days; is that correct?

That and the other outage you mentioned, it is going to cost your company, you think, you are estimating $11.4 million?

Mr. HETTEL. That is correct. The Markland outage, the Corps is expected to get back in there this summer and complete that project early August. That will be a total of a 389-day outage at the main chamber at Markland.

But, yes, you add Lock 52 outage, the Markland outage, and the Greenup outage together, it is estimated somewhere around $11.4 million.

Mr. DUNCAN. Do you think that those outages are taking an undue amount of time to correct or do you understand what is causing outages of this length?

Mr. HETTEL. I do understand that Markland is a situation on water levels. I think the general is more apt to speak on that than I am. I do not think they had the funding to go back in and complete it. They did not want to go in and partially complete the job,

get flooded out, and go back in again because of funding constraints. Again we come down to funding constraints.

I believe there are 43 or 46 days of work left to do at that facility, and it has been sitting idle since the end of November.

Mr. DUNCAN. Well, I will just close with this. I know my time is up, but you know, it really galls me that we keep spending hundreds of billions in other countries, and I am not just talking about Iraq and Afghanistan because years ago all of these departments and agencies, they saw some department having an office in Rome or London or Paris or whatever, and they wanted to have offices there, and so I heard last year on the news that the FBI has more offices in other countries now than it does in the U.S., and it is every department and agency in the whole Federal Government.

We are spending hundreds of billions in these other countries. We are trying to run the whole world, and we cannot afford it. And we have got to start taking care of this country.

And I really appreciate the chairman calling this hearing because anything that we can do, anything that you gentlemen and lady can do to call attention to the situation in this country so that we do not continue to take these water systems and these inland waterways and so forth for granted because we are not going to be able to—somebody was mentioning the global competition. We talk about it, but we have got stop talking about and start doing something about it or we are going to lose out.

I met with the CSX Railroad about a month ago. This is an unrelated kind of thing in a way, and he said that they tried to 7½ years to get approval to mine this rare kind of mineral, and they finally gave up and went down to Brazil and got approval in a few weeks.

We have got to get these environmental radicals under control so that we can open this country up. All the college graduates wonder why they cannot find jobs except in restaurants as waiters and waitresses and so forth.

Thank you very much, Mr. Chairman.

Dr. BUCSHON. Thank you.

I think everyone can agree we need a dramatic effort to modernize the infrastructure on our inland waterways. The question continues to be, I guess, how we finance this work. Money alone is not the answer without an assessment of why we continue to have dramatic cost overruns and delays in the United States.

I toured the Olmsted project also with Chairman Gibbs, and so I have a pretty good understanding, and my district is on the Ohio River, Evansville, Indiana. So it is very important to my constituents.

Like many of the things we do here in Congress, it is time to change business as usual. Continuing to authorize taxpayer dollars without demanding more accountability and efficiency across the Government has to stop.

In my view the Republican budget reflects this philosophy. As a physician, I am going to reference a medical or have a medical reference. It is schizophrenic to continue to do the same thing over and over and over and expect a different result.

With that I would like to start out and ask General Peabody. Did the Corps receive stimulus money?

General PEABODY. Yes, Mr. Bucshon, we did. I think it was something approaching $5 billion total in stimulus money.

Dr. BUCSHON. So reading about the situation, the total assessment of the amount of money it would take to catch up on all of our projects was approximately what, $11 billion, something like that?

General PEABODY. I would have to take that question for the record, sir, but I can tell you that a little over $400 million of that money went to inland marine transportation system capital construction projects that were not cost shared by the Inland Waterways Trust fund.

An additional amount went to operations, maintenance. I do not have that.

Dr. BUCSHON. I guess my point is, you know, we have been talking a lot about millions today, and we have a stimulus of $5 billion. You know, that seems like enough money to solve quite a number of problems that we have been talking about here today.

Does the Corps have an itemization of where all that money went or has it been distributed to the Corps?

General PEABODY. Yes, sir, we do. I think the figure, and again, I will follow up for the record, but the figure on the backlog of authorized Civil Works construction is somewhere around $60 billion. So $5 billion, while a significant amount, is a relatively small proportion of the overall requirement, if we are going to sustain the infrastructure we have.

Dr. BUCSHON. Yes. Five billion sounds like quite a bit of money to me.

Since the mid-1980s, as you know, we have had a dramatic change in how difficult it is to get projects completed, and it is not the Corps' fault alone. Can you give me an assessment of why you think since the mid-1980s all of a sudden there has been a dramatic change in our ability as a country to complete projects?

General PEABODY. Well, I think a great example is one that I have talked many times with Mr. Steve Little about. He is the president of Crounse Corporation, and he talks about McAlpine Lock and Dam, which is at a critical point at the falls of the Ohio in Louisville. And in 1959 we started a project, the original lock, the current main lock chamber, built that in 3 years, completed it in 1962.

Then in 1999, we started an auxiliary chamber to extend that auxiliary chamber to 1,200 feet, and that took 10 years. Now, what happened in between, tells the tale of the tape, which is, we had a large number of new Federal laws, which the Corps has to comply with that are associated with environmental concerns, cultural and historical concerns, and so forth. That is a part of it.

The other part of it at that particular location was the location, you know—we took the easy spot on the first lock. So that left the hard spot on the second lock, and that had harder rock. I mean literally harder geology and more technically complex location to actually build a lock. So that was part of the other.

The last piece of that is what I talked about earlier: full, efficient funding upfront. We can only build as efficiently and as quickly as we have funding available to the task, and typically we do not have that, with rare exceptions like the New Orleans case.

Dr. BUCSHON. Prior to 1986 did you have it? I mean, prior to the mid-1980s the Congress was providing the appropriate funds at the appropriate time? Is that what you are saying?

General PEABODY. What changed in 1986 was the cost share requirement, which became a principle in the case of capital construction, was Inland Waterways Trust Fund cost shared. But I would have to go back and see whether this model of incremental, year by year funding has been. I think it has been the model for a large period of time, Mr. Bucshon. I cannot tell you how long though.

Dr. BUCSHON. Thank you. My time has expired.

Mr. Bishop, I think we are back.

Mr. BISHOP. Let's go to the chair. Gee, I keep trying to defer to you.

Mr. GIBBS. [presiding.] Go ahead.

Mr. BISHOP. A couple of things. Just with respect to the stimulus, those projects, at least those projects under the jurisdiction of the T&I Committee, were routinely reviewed. We had at least 15 or 20 hearings over the course of the period of time of the stimulus under the leadership of Chairman Oberstar, in which we monitored where the money was going, how it was being spent, the timeliness with which it was being spent and so on.

So I think there really was some pretty good congressional oversight in that regard. I think one of the points, General Peabody, that you are making is that one of the reasons that with the stimulus projects we were able to spend those out more quickly was that the stimulus in many cases waived the local cost share, and the 1986 WRDA brought in a local cost share.

General PEABODY. Sir, the ability to execute those dollars had nothing to do with the cost share requirement. Well, let me recharacterize that. Our ability to execute it had to do with the planning and engineering and design was mature for those projects.

Mr. BISHOP. So they were ready to go.

General PEABODY. If it had to have been cost shared, we would not have been able to execute it, notwithstanding the Federal ARRA funding available. That is correct.

Mr. BISHOP. OK. So at least that was a model that worked. I am not suggesting, by the way, that we eliminate local cost share. I do not know how we do that in this environment.

General PEABODY. I am agnostic on how we get revenue to execute our requirements. As the person charged with executing requirements, it is just very helpful to have that revenue, know when it is going to come, and have certainty year over year that you are going to get the efficient funding needed to execute the construction efficiently.

Mr. BISHOP. One of the mantras of this committee over the last 18 months has been that we need to do more with less. Mr. Rossberg, you referenced this in your testimony, in which you expressed some skepticism as to whether or not we can do more with less.

My own view is that there probably are areas of the Federal Government where we can do more with less, but I think in this area we would be hard pressed to find—I mean, I think the cost of rehabbing a lock is the cost of rehabbing a lock. You have got raw

materials costs, you have got labor costs, and I mean, you showed us, General, a series of pictures. Do you have a way forward in which you could do more with less to remediate some of the problems that you showed us?

General PEABODY. Sir, I think it is always possible to search out and gain efficiencies. One of the good things that has come out of this challenge for us is that we have been forced to look very introspectively at the way we conduct our business and find efficiencies.

However, there is an upper limit to how efficiently we can get. I do not think we are there yet, but I do think we have gotten most of the efficiencies squeezed out of our operations and maintenance procedures.

On the construction side, the headquarters has initiated a couple of different initiatives to look at increased project management and focus on what we are calling mega projects, like Olmsted, using the hurricane storm damage risk reductions system program as a model, and then applying that for mega projects in the future, but this is just something we are starting.

Mr. BISHOP. But if the Corps budget is, in fact, cut by $200 million, will you be able to get the same amount of work done or will there be at least some slippage from what you would normally do?

General PEABODY. Not in a year's time. That is for sure. Some of that would have to be absorbed through doing less.

Mr. BISHOP. OK. Last question. Ms. Meira, there was a comment about the stimulus. There was about $400 million worth of stimulus money that went to the Corps for inland waterway systems. My understanding is the Columbia-Snake River System got about $30 million of that; is that right?

Ms. MEIRA. That is correct.

Mr. BISHOP. And had that money not been made available through the stimulus, are you able to project when the remediation of the problems on the Snake River would have taken place? I mean, would it have happened a year later, 2 years later, 5 years later? What is your projection on that?

Ms. MEIRA. Sure. Thank you, sir.

Until the stimulus package came along, the plan that had been developed with the Portland and Walla Walla Districts was to cobble together enough O&M funding because these were repairs, not major rehabs or construction. It was to have enough money in hand to have an extended closure and install one gate, and then wait 4 or 5 or however many years, have another closure, another impact to the system, install another gate.

Mr. BISHOP. So the stimulus really did have a very beneficial impact at least with respect to that system.

Ms. MEIRA. For us it did. We had three gates and one coordinated closure.

Mr. BISHOP. And it is reasonable for me to assume that this $30 million employed a handful of people? Is that fair to assume?

Ms. MEIRA. I do not have the jobs numbers offhand, but certainly more than a handful, sir.

Mr. BISHOP. Thank you for that.

I yield back.

Mr. GIBBS. Thank you.

Sorry for my indulgence. I had to go vote in another committee.

I have got some questions here. I will start with General Peabody. We were talking about stimulus funding. Was there any stimulus money that was going to capital projects, projects that had been funded, and are they sitting? Were they fully funded? Do we have any projects that are in limbo now because of the stimulus funding?

General PEABODY. Sir, the way we were able to do that was project features or components were able to be advanced. So, for example, I believe an approach wall in one of the monoliths at Kentucky Lock was advanced. That was about, I think, $80 million. I think it was $87 million that went into Lower Monongahela. I think it was $40 or $50 million that went——

Mr. GIBBS. But specifically the Kentucky Lock, what is the status of the Kentucky Lock?

General PEABODY. Of which one, sir?

Mr. GIBBS. Kentucky Lock.

General PEABODY. Sir, that one is still under construction. There are two major features that are being executed now. One is basically being wrapped up. The other one will be wrapped up next year, and moving forward on that project will depend on availability of revenue and/or decisions about the allocation of that revenue associated with the Trust Fund.

Mr. GIBBS. So when those two features are complete, will the project be complete or is that just——

General PEABODY. No, sir. It is just those features. The project still has I think it is somewhere like $300 or $400 million worth of cost——

Mr. GIBBS. So even with the stimulus, the culture of dribbling money here and there remains pretty much constant.

General PEABODY. The stimulus in general, in terms of the lock and dam systems, advanced our construction projects at several of those locations. In some locations it completed it. An example is the Emsworth Lock and Dam on the Upper Ohio. That one had some dam safety scour issues, and we were able to complete those scour remediation. I think the Lock and Dam 25 on the Upper Mississippi, the same thing.

Mr. GIBBS. OK.

General PEABODY. But those are relatively small amounts.

Mr. GIBBS. Small amounts, OK.

General PEABODY. $10 to $20 million.

Mr. GIBBS. Thank you for that.

Mr. Hettel, I was intrigued a little bit when you said there are some issues with some of the newer locks that have been refurbished or constructed, the functioning or not. Can you expand on that a little bit?

That just kind of intrigues me. I want to know if there is an issue.

Mr. HETTEL. I think actually Mr. Knoy brought that up, but at R.C. Byrd Lock, and the General can probably elaborate more than me.

Mr. GIBBS. Oh, I am sorry. It was Mr. Knoy.

Mr. HETTEL. They found some coin blunt problems or something that they have to go into. We have got two 90-day outages scheduled for R.C. Byrd main chamber and auxiliary chamber, and I be-

lieve that was found through what they found up at Greenup when that outage happened.

The general could probably explain.

Mr. GIBBS. Mr. Knoy, it was you who made that statement. I am sorry.

Mr. KNOY. Yes. I responded to that earlier in your absence. I do not know what the differences are, but I question whether or not new technology is actually advancing our capabilities verse the older technology that has been proven. I think an example there is the miter gate. Throughout most of the systems, our locks in the systems work and function very well.

We have put in some different ways that we hang and operate those miter gates, going forward that seem to be less reliable and also the type of gates themselves. And the spare gates, I find it interesting that we have spare gates for Olmsted, which the lock has never been used and will not be used for another 10 or 12 years, but we do not have spare gates for locks that have heavier traffic.

So I do not know why the new technology is not lasting longer.

Mr. GIBBS. I want to go to Mr. Steenhoek for just a second. He referenced what was happening in Panama and other areas, and obviously in the green site especially, soybeans are in competition with Brazil.

Can you maybe expand just a little bit about the investments that are being made there and how they are doing things a little different and why we seem to become uncompetitive?

Mr. STEENHOEK. Yes, in Panama, the Panama Canal expansion project.

Mr. GIBBS. Yes.

Mr. STEENHOEK. Well, absolutely, and I think it is important to note that one of the major talking points from the inland waterway users is the age of our lock and M inventory, 60-, 70-plus years, and while that, indeed, is true and possibly could be troubling, I think it is important to remember that the Panama Canal was originally constructed in 1914, and when you go and tour that and you watch, and you can get a very good vantage point of seeing ships go through these locks, you do not see the leaky miter gates. You do not see the crumbling infrastructure. You do not see concrete cracking.

And so one of the big take-aways that I and the farmer board members that I took with me from that trip was maintenance and preservation goes a long way when you look at these types of infrastructure investments. Locks and dams are not cell phones—what you bought 10 years ago is obsolete today. The technology is very similar to how it has been, and so it has remained quite steady.

But I think the major conclusion that we had as far as why they are able to perform in a superior manner to us is how they actually provide the funding; that they have secured the funding. It is not provided lump sum upfront, but they have certainty of funding, and some of it is going to be cash flowed from their toll structure, but they know that the money will be there so that when they work with contractors, contractors can make massive purchases of concrete steel, secure labor force, secure dredging equipment, excavating equipment.

And consider the fact that this is a $5.25 billion project that is exponentially more complex than anything we have going on in our inland waterway system. They are building six new locks for post-Panamax vessels. They are widening the breach in the Continental Divide. They are expanding the volume of a lake to be able to service these new locks, but yet they are able to do it relatively on time and under budget, and I think the main reason for that is how they allocate the money is just as important as how much money is allocated.

Mr. GIBBS. I am glad you expounded on that because I think that is important.

A question, I guess, for all of the panelists and anybody can answer or choose not to answer it, but obviously budgets are tight and there has been declining funding, but there seems to be prioritized by whomever—I will not mention, I guess—to fund eco restoration systems. I am not against that, but when I look at the Corps' budget and we have gone through this, there is a lot more funding for that than for the assets, for our locks, levees and dams.

And I would argue that, you know, a strong, growing economy will provide resources to enhance the environment, and I think we all agree we are at risk of this major mode of transportation system at failure, and so does anybody want to respond?

Yes, Mr. Knoy.

Mr. KNOY. I would like to make a couple of comments in that regard, Mr. Chairman. I think part of what we tried to establish in the capital development plan was an equal sharing of the burden of the cost among all of the beneficiaries, and as of this date the tow boat and barge industry is the only industry that is paying a user fee of any of the beneficiaries of the system, and certainly the ecosystem benefits greatly from that system as well.

Mr. GIBBS. But you are aware that there is more funding from the tax dollars from the administration for the budget proposal, quite a bit more, for eco restoration funding.

Mr. KNOY. Yes, sir.

Mr. GIBBS. Does anybody else want to respond?

[No response.]

Mr. GIBBS. OK. I will move on.

The next question I had was I mentioned a little bit in my opening statement about looking at a new paradigm of public-private partnerships. Does anybody want to comment on the potential for that?

One thing, I am working on a bill on the water-sewer side to try to bring in private equity capital, which I think there is lots of money out there. I will just give you an example. On a sewage treatment plant, obviously rate payers cannot pay upfront, and there is a lot of investment types that need a decent return with not too high a tolerance for equity erosion risk.

So we are trying to put something together that we think we can match something up there for a public-private partnership, and I think that maybe on the inland waterways system maybe we could consider a pilot project, and the Corps might be looking at something like this where you have got a specific project or a region in a tributary or whatever. And my thinking is if you have a public-

private partnership, you would get that, for lack of a better word, accountability for funding and pick up some efficiencies.

So I would like to see if anybody would like to respond to kind of that concept or be open to that concept to try to bring in some private investment capital and then hopefully make the whole process more efficient because they would be a partner in it, and obviously they would have more say so than maybe what we have at the Inland Water Board and the stakeholders.

Does anybody want to? Mr. Knoy.

Mr. KNOY. I would be happy to comment again, sir. The inland river industry, we have met as a team. We have met with private funding sources. We have put forward a variety of different plans, just like we have the capital development plan, and we have heard that the administration is going to put forward an alternative funding plan as well, but all we keep hearing is they are going to, they are going to, and we are not getting any feedback or definition.

Mr. GIBBS. Well, I do not believe there have been any specifics on the administration's plan.

Mr. KNOY. Correct, not how to charge it, not how to collect it, what it would be, dollar amounts, et cetera.

Mr. GIBBS. Yes, Mr. Steenhoek.

Mr. STEENHOEK. Well, I think you are on target in exploring this option, Mr. Chairman. I think, you know, engaging the private sector could present the possibility of getting funding for these projects in more of a lump sum fashion so that it could mitigate the opportunity for further cost overruns for some of these projects.

The concern that we have though is the overall cost of these projects in the first place. You know, I try to put myself in the shoes of a rating agency, the Fitches or the Moodies of this world, and when they rate an investment as to whether or not it is investment grade or junk grade, they are looking at three things. They are looking at the size of the debt issuance, the volume of the money to apply to it, and the predictability of that funding.

And the concern that we have is, OK, if you get private money into the system, and there are foreign entities that are actually interested in this as well. We had a group of farmers that went to China just a couple of weeks ago, and one of the repeated refrains from our customers in China was, "We are concerned about the integrity of your supply chain."

And there is an expressed willingness to actually help finance U.S. infrastructure projects. Now, that is a whole different subject for another time, but there is this desire to apply money, but there is this concern about the cost of these overall projects. It is one thing to say we invite alternative sources of funding, but the problem still is these costs are so expensive, and the question is what is there payment plan for those projects for whether or not it is going to be an attractive investment.

Mr. GIBBS. Yes. Yes, Mr. Dolence.

Mr. DOLENCE. I think that we would all be remiss to not consider private investment. We talked earlier of efficiencies in the system and to introduce the free market and competition is one of the best ways to do that in my experience, and not only should you look for repayment from users, but the beneficiaries.

A lot of people spoke here today and talked about what the river traffic take off of the rails and takes off of the highways, and is there room for a quid pro quo there?

If you talk to the average person at least in the Pittsburgh area where I live, they complain about traffic and then they complain about trucks. Then they complain about truck traffic. So if the locks and dams fail, we are going to exacerbate that problem.

So who are the beneficiaries of the recapitalization?

Mr. GIBBS. Yes, General.

General PEABODY. Sir, just a quick comment. I cannot speak to the overall administration proposal or where that is, but I know that the Headquarters and, I believe, the Secretary's Office, has begun what I would characterize as exploratory discussions with Department of Transportation, I think other Federal agencies, and some private venture capitalist interests to look at the possibility of this exact issue.

I believe this would likely take some authority, you know, changes, but it is something that the Corps has actively begun looking at.

Mr. GIBBS. One just quickly. I do not know if Mr. Bishop has any more questions or not, but I want to just mention also we saw over the years the railroad industry abandon a lot of lines, tear up a lot of lines, and it seems to me I am concerned. I know the Corps has to make some tough decisions prioritizing, you know, and it might affect some of the tributary systems.

Does anybody care to comment if we kind of let the tributary system decline? Would that be analogous to what is happening in some of the railroad industry, you know, feeder lines that are feeding the system, and the importance of maybe that is a problem?

Do you want to comment on that? Mr. Dolence.

Mr. DOLENCE. Again, in the Western Pennsylvania area, I would suspect that there are a lot of people who gave up their right-of-ways on their rail lines which have developed into beautiful rails to trails, if you will. With the development of the Marcellus Shale, I am sure there are a lot of people who are second guessing that decision 20, 30, 40 years ago of giving up those right-of-ways because now they have the challenges of a lot of truck traffic on back rural roads where you look down over the hill, and there is a beautiful rail to trail.

I use the rail to trails. I like them, but it is just anecdotal in response to your question.

Mr. GIBBS. Yes.

Mr. KNOY. Sir, it is a trunk and branch system, if you will. We do need the ancillary rivers, the tributaries to feed the trunk, and a lot of the funding comes off the Lower Mississippi River which does not have the lock and dam infrastructure. So we do need it to work as a system.

Could we manage it more efficiently? Likely so.

Mr. GIBBS. OK. Go ahead.

Mr. BISHOP. Two things quickly. Thank you, Mr. Chairman.

I just want to return, Ms. Meira, just to the issue of the stimulus funding that funded the Columbia-Snake River Project. The fact that you were able to get it all done at once, was the total project cost less being able to get it all done at once as opposed to extend-

ing it out over the multiyear period, phasing it in that had been your original plan absent the stimulus money?

Ms. MEIRA. I think our Corps districts would agree that the answer to that is yes. To try to do it in a phased fashion would have cost much more over the years, and even worse, to wait for a catastrophic failure and to have that 1 year amount of time that it would have taken to on an emergency basis construct a new lock gate would have been exponentially more expensive than what they spent back in 2009, 2010, and 2011.

Mr. BISHOP. OK. Thank you.

The last thing, the chairman talked about a bill that he is working on for waste water infrastructure that would take what we refer to as a WIFIA approach, direct lending guaranteed by the Government, very low rates to municipalities.

I also am working on a bill that takes a similar approach. We have something that we call TIFIA in the surface transportation bill, again, direct lending to municipality, very low rates backed by proceeds from the motor fuels tax.

Is this something in the environment we are now in where we clearly have a constrained budget? We clearly have limited capacity to make the kind of investment that I think we all agree is required? Is this something that we should be looking at?

We obviously would have to figure out a receiving entity, I mean, because right now 100 percent of the system is owned and operated by the Federal Government. So the Federal Government would not be loaning to itself. It would have to be loaning to—I do not know—the Ohio River Authority or something like that.

Should we be thinking seriously about that kind of approach as, again, part of this toolbox approach, multi-avenues of bringing dollars to the table that would help solve our problem?

Mr. Steenhoek.

Mr. STEENHOEK. Well, I commend you, Ranking Member, for considering that and bringing new funding into the stream. My concern is, and I have mentioned this before, that we have to be careful that we are not trying to buy a $2 million home on a $20,000 salary.

Mr. BISHOP. That did not work out for a lot of people.

Mr. STEENHOEK. Right, right. And you could make sure that that $20,000 salary has a lot of certainty to it and predictability to it, but you cannot just solve this problem on the revenue side. You have to also address it on the cost side as well.

And so you have to ask the question: how can we bring greater equilibrium between the costs of these projects and the revenue to support them? And so looking at some of these things about preserving maintenance, you know, prioritizing that, I think that really needs to be a part of that discussion as well.

Mr. BISHOP. Fair enough. Anyone else?

[No response.]

Mr. BISHOP. OK. Thank you, Mr. Chairman. I yield back.

Mr. GIBBS. I have just got another question. I know we have had a lot of discussion about the competitiveness, for global competition and moving our products in and out, but I want to go back to Mr. Hettel's testimony, and since they run a significant barge operation, American Electric Power, on the Ohio-Mississippi River sys-

tems, in your testimony you talked about how many millions of dollars ADP has lost in delays, and that is a big problem. We all know that.

And you talked about also the potential of a complete failure and rolling brownouts, even blackouts. Can you maybe expound a little bit on the likelihood, and I may give General Peabody a chance to respond, too, of having—my understanding is on the Ohio River, there are no locks that do not have an alternative. Now, on the Lower Mon that is not true. On the Upper Mississippi or Illinois, I guess, it is not true.

But since you guys navigate the Ohio River a lot, is there a possibility we could have a complete lock failure at one of the locks that would shut down the system?

And if that were the case, and this might be where General Peabody might help, what kind of timeframe would we be looking at if we had a complete shutdown on the river?

Mr. HETTEL. Well, just to clarify, there are multiple locks on the Ohio River, a 1,200-foot chamber and a 600-foot chamber. All of the delay cost I referenced was having the 1,200-foot chamber closed for repairs, just to clarify that, and having to use the auxiliary chamber because then the system has too much volume to be able to handle it through a 600-foot chamber.

One of my attachments in my statement, testimony, shows the predictability that the Corps has put together for lock failure, and that is why I specifically mentioned Willow Island. The Corps predicts that both the main and the auxiliary chamber will fail in 2015.

Now, that may fail, the main chamber, the first part of the year, the auxiliary chamber the second part of the year, but if the main chamber goes down first and you put that much traffic through the auxiliary chamber, I am afraid we will have the same thing we had at Hannibal where they shut down the main chamber and then the auxiliary chamber failed afterwards.

Mr. GIBBS. General Peabody.

General PEABODY. Sir, I believe in Lower Mon there is actually auxiliary chambers at the first four or five of the lower locks. I would have to get the details for you.

But Mr. Hettel is correct in that there is high risk at several of the points along the system. Now, the two points as I mentioned earlier that I personally am most concerned about in the Ohio system are the Lower Monongahela and the Lower Ohio where I believe all the indicators we have are that the possibility of failure is real.

And it is very difficult to put a probability to that. It is probably in the low single digit percentage year over year, but when you accumulate that over time, those probabilities escalate and become fairly significant.

The 2011 flood that happened last year is a very low probability event, but it happened. The Nashville flood of 2010 resulted from a rain event that is something on the order of 1 to 10,000-year event, but it happened.

So these failure possibilities, any time that there is a possibility, it is too much of a concern for me.

Mr. GIBBS. General, I am interested in a lock failure. What would be the typical failure of a lock failure? Is it the miter gates not functioning or is the concrete walls or what?

General PEABODY. There is a host of causes. Most of them that cause outages in the locks have to do with operating machinery associated with the miter gates, and they are not all miter gates, but most of them are miter gates. So that is the most common issue.

However, we have been detecting what I would characterize as previously unknown failure modes recently. So, for example, when Markland went out in 2010, what happened, it was a cascading series of events, as these often are. It was a simple failure of the solenoid with the inflow chamber in the open position. So when the operator did not know that it had failed, he thought he had shut it off, but it was still water flowing in. He tried to close the gates. That created a water head difference. That led to pressure that caused the gates to fail, fall in the river; the chamber closed for, I think, 150-some days.

So there are a variety of issues. This gets to an important issue though. Our knowledge is imperfect when it comes to understanding potential failure modes or design deficiencies, and so as we go forward in time operating these designed infrastructures, we discover things that we did not previously know, and this is a constant of the engineering profession.

Understanding new failure modes, understanding design changes, and we constantly have to update our profession and make changes in this, what I characterize as progressive elaboration. That is part of the problem.

With regard to whether we have greater lock outages or greater issues on new locks, I would have to check on the data on that. I am not aware what the data says.

Mr. GIBBS. I think we are done with questions. We are all done. Everybody else has abandoned us.

I would like to conclude. First of all, I want to thank everybody for coming. I think we are trying to highlight the issue here of how important our maritime system is in the inland and the ports and how much commerce. I know the President had talked about wanting to double exports in 5 years or whatever it was, and I think the only way is you have got to have a transportation system to move all of that out to do it, and I think we certainly do not want to have an event where the American people wake up because we had an event like the levy failure in Hurricane Katrina. We do not want to have the system shut down because that will impact a lot of people's lives because of energy production, energy generation. That could be severely affected and all of the jobs in that entire major region of the country.

So thank you for coming, and we will work ahead and keep working on this, but thank you, and that concludes this hearing.

[Whereupon, at 12:10 p.m., the subcommittee was adjourned.]

OPENING STATEMENT OF
THE HONORABLE RUSS CARNAHAN (MO-03)
SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT
U.S. HOUSE OF REPRESENTATIVES

Hearing on
How Reliability of the Inland Waterway System Impacts Economic Competitiveness
Wednesday, April 18, 2012
10:00 am
2167 Rayburn House Office Building

Mr. Chairman, thank you for hosting this hearing to highlight the economic importance of the inland waterway system. America's inland waterway system is an essential economic driver and is a key factor to creating jobs and keeping our economy moving.

When business and civic leaders talk about transportation issues there is often a lot of talk about trains, planes and automobiles. But one subject that gets very little mention is the importance of the waterway system to the nation economy, and to the cities along our great rivers such as St. Louis.

Millions of tons of commodities move through the Port of Metropolitan St. Louis each year. The U.S. Army Corps of Engineers report that an

average of 32.4 million tons of products moved through the port every year. That makes the St. Louis port the third largest inland river port by tonnage in the country. The Port of Metropolitan St. Louis is at the center of the nation's inland water system. The port is at the confluence of three major rivers, the Illinois River, the Missouri River and the Mississippi River. The inland waterway system connects the port with industrial centers in 15 states located along the Mississippi, Missouri, Ohio, Illinois and Tennessee Rivers and also with the Great Lakes and the Gulf of Mexico.

The U.S. inland waterway system consists of 12,000 miles of navigable waterways that connect with most states in the U.S. However, as the panelists here know too well, we have not done an adequate job maintain and investing in our inland waterway system where 54% of structures are more than 50 years old. 34 locks are over 80 years old, and a single failure could cripple goods moving along the river. Replacing one 15-barge tow would require 1050 additional trucks on our congested roads. Reliability and efficiency of our nation's inland waterway system is crucial to maintaining economic competitiveness.

The funds allocated to maintain the infrastructure of our nation's inland waterways are not being allocated across the many projects that

desperately need funding. The massive Olmsted Locks and Dam construction project on the lower Ohio River is approaching a cost of $3 billion. The project was supposed to take seven years, and now may take longer than 32 years. While this project is widely recognized as essential to the regional and national economy, it has left a very small portion of the total funds to be used for dam and lock repairs across the nation.

Currently, the Corps has $180 million per year available for lock repairs. With an average rehabilitation cost of $50 million per lock, the current level allows the Corps to fully fund only two or three lock projects each year. Additionally, forty-seven percent of all locks maintained by the U.S. Army Corps of Engineers were classified as functionally obsolete in 2006. Assuming that no new locks are built within the next 20 years, by 2020, another 93 existing locks will be obsolete—rendering more than 8 out of every 10 locks now in service outdated.

Addressing this issue is the reason I am an original cosponsor of H.R. 4242, Waterways are Vital for the Economy, Energy, Efficiency, and Environment (WAVE4) Act. I believe that we need to start working towards a solution to the infrastructure challenges along our inland waterways, and I believe this piece of legislations represents a great

start to that debate. The industry has come together and volunteered to raise their own taxes to pay for their infrastructure, and I believe we must utilize these funds to upgrade our structures all along the river.

I want to thank all of the witnesses for being here today and for their important work, especially Martin Hettel from my home State of Missouri (Chesterfield). I look forward to hearing their testimony.

DEPARTMENT OF THE ARMY

COMPLETE STATEMENT

OF

MAJOR GENERAL JOHN W. PEABODY, P.E.
COMMANDER, MISSISSIPPI VALLEY DIVISION
U.S. ARMY CORPS OF ENGINEERS

BEFORE

THE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT

UNITED STATES HOUSE OF REPRESENTATIVES

ON

HOW RELIABILITY OF THE INLAND WATERWAY SYSTEM
IMPACTS ECONOMIC COMPETITIVENESS

APRIL 18, 2012

Mr. Chairman and distinguished members of the Subcommittee, Thank you for the opportunity to testify on the economic importance of the Nation's inland waterways. I am Major General John Peabody, Commander of the Mississippi Valley Division, U.S. Army Corps of Engineers (Corps). I appear before you today on behalf of the thousands of Corps professionals who labor dutiful, long hours, often in dangerous weather conditions, to help facilitate commercial navigation and to deliver other benefits for the nation.

OVERVIEW

The goal of the Corps commercial navigation program is to facilitate commercial navigation by providing safe, reliable, highly cost-effective, and environmentally sustainable waterborne transportation systems. On the inland waterways, the Corps constructs, replaces, rehabilitates, and expands the locks, dams, channels, levees, floodways, and other project features that enable vessels to transport commercial cargo along about 12,000 miles of inland waterways. It also operates and maintains these features, including 221 operable lock chambers at 178 active sites. Approximately 9,000 miles of these waterways are within the greater Mississippi River basin.

VALUE TO THE NATION

The Mississippi watershed is the third largest watershed in the world. More importantly, it is the largest naturally navigable riverine system in the world. Thanks to well over a century of investments by the nation, the Corps has engineered structures throughout this watershed that have resulted in a navigable network of interior waterways that is greater in length than the navigable systems in the entire rest of the world combined. The Mississippi watershed drains a large area, which includes one of the world's largest contiguous areas of productive farmland, the American Mid-West as well as major sources of underground mineral and energy wealth. This geographic reality forms the basis for a unique geopolitical advantage, enabling the United States to cheaply move goods from its interior to the Gulf coast for export. It also allows minerals to be moved cheaply to the industrial centers of the Ohio Valley, and connects these centers to much of the nation as well as the world, via the coastal port complex of the lower Mississipppi River, from Baton Rouge to New Orleans.

The Nation's three busiest inland waterways – the Ohio River, the Mississippi River, and the Illinois Waterway – lie within the Mississippi watershed or are connected to it. They provide a low cost way for shippers to move goods. Through portions of the Gulf Intracoastal Waterway, they connect significant coal and petroleum producing areas with the refining and energy production centers of the country. They also help make the exportation of grain through New Orleans, from areas in the Midwest over a thousand miles inland, competitive with any location in the world.

The three principal inland waterways have been engineered by the Corps to deliver reliable, high volume waterborne transportation benefits. Since the 1960s, the Federal government has invested heavily in the maintenance and rehabilitation of these major transportation arteries, which support substantial movements of agricultural products, energy-related materials, and other bulk commodities and handle the vast majority of all inland waterways traffic. The Corps is giving priority to the continued maintenance and rehabilitation of the locks and dams on these key waterways.

RELIABILITY

America's world-class infrastructure is aging and will require major investments to sustain its productivity. Our nation's prior success in building engineered infrastructure has provided enormous advantages and superior services. Whether driving on our roads and highways, crossing over bridges which span watercourses and valleys, or enjoying the services provided by the development of our water resources, we have come to expect our infrastructure has always been, and will always be, there for us. When we flick on a light switch we expect the lights in our homes to come on; when we turn on a faucet, we expect clean, fresh, drinking water; when we flush a toilet, we expect the waste to disappear; and, when we drive our automobiles on a highway or a bridge, we expect a safe, smooth and timely ride. Our infrastructure-enabled lifestyle has become completely the norm of modern life. It is only when faucets runs dry, lights flicker out, or traffic slows to a standstill that most Americans even think about what should be self-evident – that our quality of life, health, economy, and national security have all been built upon the foundation of engineered infrastructure systems.

Americans can and should be proud to have the most extensive and one of the best performing and most reliable public works infrastructure in the world. But like everything built by man, infrastructure has limits to its useful life, and it requires constant maintenance and periodic renewal. These continuous investments are essential if we are to ensure the reliability of our infrastructure investments. Infrastructure must be properly maintained to ensure and extend its useful life. It must be periodically rehabilitated when it begins to wear out and deteriorate. When it is no longer viable to rehabilitate it or economical to maintain it, it must be recapitalized, repurposed, or removed, based on the return to the nation.

Specifically with regard to inland waterways, the Corps has a portfolio of 221 locks with an average age of 60 years. They have performed well, but many of them are showing obvious signs of wear and tear. In a select few cases, the condition of a lock or dam has deteriorated to a point that catastrophic failure is a real possibility. In all such cases with which I am familiar, there is an active construction project to replace or remediate the project.

Catastrophic failure of a lock or dam at a high-volume point along one of the major waterways would have significant economic consequences because other transportation modes generally lack the capacity to either quickly or fully accommodate

the large volume of cargo moved on the inland waterways. Therefore, cost and congestion of other modes (mostly rail) could be greatly affected and some cargoes may be delayed for extended periods. For example, the Corps extended a planned 18 day closure at Greenup Locks in 2006 when extensive deterioration of the miter gates was discovered. This lengthy, unplanned delay cost shippers over $40 million and several utilities came within days of having to shut down due to exhausted supplies of coal.

The Army Corps of Engineers is focused on maintaining the key features of our existing infrastructure to avoid such a catastrophic failure. We are also monitoring the system's condition via periodic inspections, in order to identify and address any significant decline in its efficiency or reliability. Our increased monitoring efforts over the past decade illustrate that there has been a recent increase in the number of unscheduled lock outages and the Corps will continue its efforts to attack this trend. In particular, the Corps measures performance based on the total number per year of one-day and seven-day closures due to mechanical failures of main lock chambers on the high and moderate use inland waterways.

PROACTIVE EFFORTS

The Corps continues to be concerned about the condition of our infrastructure and is working to address it. For the last decade we have been taking several steps to address this challenging issue, to include increased efforts to document project conditions and prioritize resource allocation to the greatest needs, target resource allocation more efficiently , reducing equipment capacity, and regionalizing assets across multiple districts. These initiatives have been increasing in scope and specificity in recent years. We also undertook a case study of lock and dam construction projects, which revealed some issues for improved construction management. Subsequently, the Corps partnered with the inland waterways navigation industry in developing a long-term approach to recapitalizing our inland navigation infrastructure. Process improvements were identified and implemented to improve and strengthen our project delivery processes. These involve more accurate and risk-based cost and schedule estimating, improved program and project management, and improved contracting methods. We have initiated risk-based asset management principals in our maintenance program, but are still seeking to fully capture and quantify reliability issues with fidelity, so as to best focus our maintenance, rehabilitation and recapitalization efforts. The Corps has embarked on a Civil Works Transformation effort that is focusing on accelerated planning studies, improving methods of delivery, and developing a detailed asset management system. All of these efforts collectively will result in more effective processes to deliver Corps projects and manage them with maximum efficiency. We have already made significant progress in becoming more efficient in managing our projects, and will continue to seek ways to further improve.

We have made – and will continue to make – hard decisions with regard to use of available resources. The Corps has reduced hours of operation at several of our lower

use locks and is currently initiating similar actions at several other sites. We have also deferred dredging at many of our lower use inland waterways.

INLAND WATERWAYS CAPITAL INVESTMEMENTS

In allocating funds within the civil works program, the Corps gives priority to the work that offers the greatest return to the Nation in achieving economic, environmental, and public safety objectives. For example, this includes providing priority funding for the maintenance of existing high-performing inland waterways. However, current revenues to the Inland Waterways Trust Fund require the Corps to limit spending for inland waterways capital investments.

In September 2011, as part of his Jobs Bill proposal, President Obama transmitted a legislative proposal to the Congress to reform the laws governing the Inland Waterways Trust Fund. The proposal would provide an additional source of financing for major new investments in the inland waterways to support economic growth. It includes a new user fee, which would supplement the revenue collected from the fuel tax, and would increase the total paid by commercial navigation users sufficiently to meet their share of the costs of activities financed from the Inland Waterways Trust Fund.

CONCLUSION

The Army Corps of Engineers will continue to provide engineering analysis, make recommendations, and execute programs and projects to carry out its responsibilities related to the inland waterways.

Mr. Chairman and Members of the Subcommittee, this concludes my testimony. I am grateful for the opportunity to testify regarding the benefits and reliability of the water infrastructure system of this nation. I look forward to answering any questions you or the other Members may have.

STATEMENT OF MARK KNOY

PRESIDENT AND CEO, AMERICAN COMMERCIAL LINES AND JEFFBOAT

JEFFERSONVILLE, INDIANA

BEFORE

THE WATER RESOURCES AND ENVIRONMENT SUBCOMMITTEE

OF THE

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

APRIL 18, 2012

Good morning Chairman Gibbs, Ranking Member Bishop and Members of the Subcommittee. I am Mark Knoy, President and CEO of American Commercial Lines and Jeffboat. We are based in Jeffersonville, Indiana and have 2,250 employees – 1,450 in the barge transportation segment and 800 in the barge manufacturing segment.

I appreciate the invitation of the Subcommittee to appear today and the initiative of our Congressman, Todd Young, to bring perspective to the vital issue of reliable waterways transportation.

My testimony today will cover three key topics: accountability, reliability, and a plan for addressing the challenges of aging infrastructure which support operations on our most efficient transportation system- the inland waterways.

Where is the accountability today for stewardship of our taxpayer-provided funds for construction and rehabilitation of inland waterways infrastructure? In the private sector, a major cost overrun of a capital investment program would be subjected to rigorous management oversight and direct intervention when fiscal controls went awry. However, thus far our government treats a four- fold increase in the estimated cost of just one project as no big deal. For too long,

too little scrutiny has been provided to the construction technique of this project. Congress has only recently been informed that the project has increased in cost by 50%, a BILLION DOLLARS in the last year.

I am of course, talking about the Olmsted lock and dam project, on the lower Ohio River. Where is the outrage, where is the accountability when a 7 year project will now take 32 years to construct; or, perhaps longer? The new, twin 1200 foot locks were built using a traditional coffer dam technique. They will be 20 years old when the first barge locks through in the early 2020s.

The dam is another story. It is being built using an experimental technology-building "in the wet". Initially, this approach was envisioned as saving $60 million dollars. However, the project is now woefully behind schedule and billions of dollars over budget. As a result, we have lost faith in the technology and in the investment in this project. Remember please that we – the industry and its customers - have absolutely no control over the decision making for this project. Yet we are expected to write a check for one-half of the project cost.

With an annual appropriation of $150 to $185 million for construction of inland navigation projects, the consequences of Olmsted's overrun mean that almost no other investments will be made for any of the 24 projects authorized by this Committee for modernization of the navigation system until 2022, at the earliest.

Reliability-how can you have any confidence in the reliability of a system when 56% of the infrastructure is beyond its design life? Where 34 locks are over 80 years old? When a significant failure at a lock could close a major freight transportation artery - a disaster for the local and national economy? When we are told by the agency managers that we are in a crises and heading for a catastrophe? When a new initiative is being rolled out this week to "do less with less" by shutting down locks or reducing hours of service with the sole criterion being the number of commercial lockages at the facility? Ironically, we are experiencing more problems with our newer locks, like Robert C. Byrd and Mel Price than the older locks. But we are on the brink of losing customers because of fear of unreliability. The industry is seeing the diversion in the smaller

shipper category first, but larger shippers are questioning more often the continued investment in water-side facilities. How inefficient does our government want our waterways to be? Replacing one 15-barge tow would require addition of new capacity of 216 rail cars plus 6 locomotives or 1,050 tractor trailer trucks to an already clogged surface transportation system.

I am sure you are thinking that I must be a heck of an optimist to be in this business. But for all the challenges, the inland waterways still serve as the Nation's best transportation system. What is lacking is the will to make change, to embrace a vision of investment in waterways transportation.

But, there is a plan. A good, solid strategy for reforming our current approach and replacing outdated project delivery methods with on-time and on-budget performance; a plan for prioritizing our work; for funding the project construction requirement through a combination of user fees and cost-sharing changes.

And, there are bi-partisan champions who have authored this plan- "The Magnificent Seven": Congressman Ed Whitfield, Congressman Jerry Costello, Congressman Jimmy Duncan, Congressman Russ Carnahan, Congressman Tim Johnson, Congresswoman Terri Sewell and Congressman Bob Aderholt. They have come together to propose legislation, H.R. 4342, Waterways are Vital for the Economy, Energy, Efficiency, and Environment. This is a farsighted vision for the future of our Nation's inland waterways transportation system. Four of these Members of Congress serve on this Committee and we urge this Subcommittee to act this year on H.R. 4342 as part of your Water Resources Development Act.

Mr. Chairman and Members of the Subcommittee, we indeed face daunting challenges and great opportunities. The administration has not brought forth a realistic, workable plan to address these challenges. Detractors of the current program offer no alternative. But, there is one plan out there H.R. 4342 and a good place to begin the discussion on the path forward. I look forward to working with the Subcommittee to continue to provide the best transportation service to our Nation!

Testimony Presented by Martin Hettel
Senior Manager, Bulk Sales of AEP River Operations
Water Resources and Environment Subcommittee
Hearing on the reliability of the Inland Waterways Transportation System
April 18, 2012

Good morning and thank you for allowing me to testify at this hearing today. My name is Martin Hettel and I have been employed within the River Transportation Industry for 32 years, the last 16 years with American Electric Power's River Operations Division. AEP owns and/or operates 3,275 barges and 90 tow boats. Our headquarters is in Chesterfield, Missouri; and we have field offices in Pittsburgh, Pennsylvania; Lakin, West Virginia; Paducah, Kentucky; Convent, Louisiana; and Mobile, Alabama. AEP River Operations has over 1,500 employees.

In 2011, AEP River Operations transported over 74.4 million tons of cargo within the Inland Waterways Transportation System. Our traffic patterns move freight on the Gulf Coast between Brownsville, Texas and Pensacola, Florida; between New Orleans, Louisiana and Catoosa, Oklahoma; St. Paul, Minnesota; Chicago, Illinois; Pittsburgh, Pennsylvania, and all points in between.

Within the last few years, we have seen what had been a very reliable transportation system deteriorate more and more each year to the point that we now experience lock outages on a regular basis. While the reliability of the entire River Transportation System is vital to AEP River Operations, of the 74.4 million tons of cargo we moved in 2011, over 48.3 million tons were delivered into, out of, and within the Ohio River Basin. Therefore, the remainder of my testimony will focus on the extraordinarily serious problems within the Ohio River Basin.

Within the last 8 years, we have experienced several lock failures on the Ohio River. In 2003, Greenup Main Chamber was closed for 52 days. In 2004, McAlpine experienced a total river closure of 10 days. In 2005, Hannibal lock experienced a 13 day closure of the Main Chamber and, during this time, the auxiliary chamber failed which caused a total river shut down for 5 days. In 2009, Markland experienced a failure at the Main Chamber which lasted for 154 days. In 2010, we had another failure at Greenup Lock for 22 days, a failure at J. T., Meyer Lock for 9 days, and an outage at Lock 52 for 32 days. This outage at Lock 52 cost AEP River Operations $4.6 million in delay costs. This increase in Lock outages is displayed in Attachment 1 (USACE LRD Historical Lock Outages)

An outage at Markland Lock that started on July 11th, 2011 is still not in operation and this lock is not expected to be operational until August 3rd of 2012. This will amount to 389 days the Main Chamber at Markland has been out of service. As of the end of last month, this outage has cost AEP River Operations over $3.8 million in delays costs. If Markland does in fact get back into operation on August 3rd, the total delay cost to AEP River Operations will be over $5.5 million for this one outage. In addition, we have Greenup Lock scheduled for yet another outage From June 3rd through September 1st of this year. This 90-day outage at Greenup will cost AEP River Operations another $1.3 million in delay costs.

When we add up the outage at Lock 52 in 2010, the outage at Markland in 2011 through 2012 and the upcoming outage at Greenup in 2012, AEP River Operations will have experienced a total of over $11.4 million in delay costs due to lock outages.

These outages are increasing each year. The United States Army Corps of Engineers predicts that, by the year 2015, we will experience outages at 8 lock chambers; by the year 2020 we will have outages at 14 lock chambers; by the year 2025 we will have outages at 18 lock chambers; and by the year 2030 we will have outages at 22 lock chambers. (Attachment 2 - USACE Predicted Lock outages for the Ohio River)

All of these delays affect the consumer as when the cost of transportation increases, the final cost to the consumer also increases. As we have seen in our every-day lives at the grocery store, when fuel costs increase, the costs of goods delivered to market increase. When the cost of transportation of raw materials increases, the cost of the finished product also increases. With American Electric Power, electricity to the consumer increases as our cost of delivering fuel to power plants increases. American Electric Power has looked at the predicted lock failures and put together a program that estimates the additional cost to deliver fuel to our power plants, should we experience a catastrophic failure in the upcoming years. As an example, if both chambers at Willow Island Lock fail, as the USACE predicts will occur in 2015, the cost to get the fuel to our power plants via truck, rail, and trans-loading barges around the lock, and to purchase coal on the spot market, would be over $22 million dollars per month.

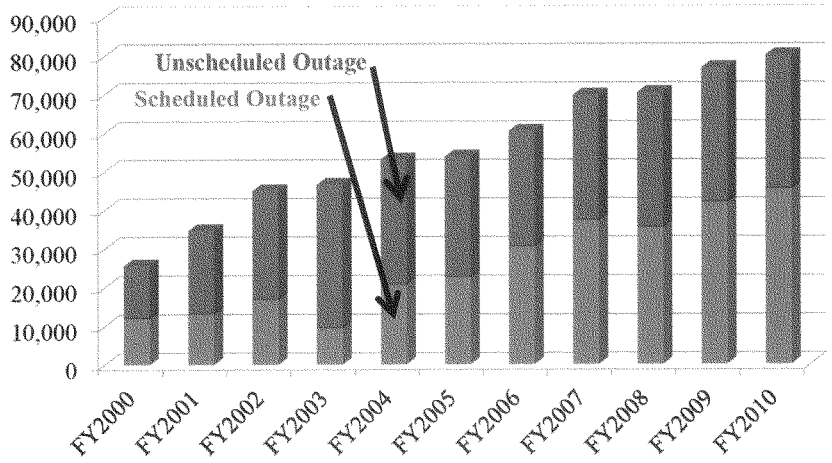
The predicted lock failures are compounded by the recent regulations the EPA has put into law, particularly the Mercury and Air Toxin Standards that will shut down coal fired power plants. With less availability for producing electricity coupled with a complete closure at a lock, such as what the USACE predicts at Willow Island, a situation could very well arise that affects the reliability of the electricity grid potentially causing brown outs or perhaps even limited black outs.

Not only do these lock delays affect the consumer within this country, it can also affect the producer of materials that are exported out of this country. With the world markets that the United States competes in, increased costs of transporting the products can put the producers at a competitive disadvantage in the world market place, thus affecting the steel producers, the coal producers, the farmers, and anyone else that competes for the export of bulk commodities out of the United States.

AEP River Operations and hundreds of other companies and organizations believe that one critically important step that Congress should take to address this situation is to approve and send to the President for his signature H.R. 4342, the "Waterways Are Vital for the Economy, Energy, Efficiency, and Environment Act of 2012". This legislation, which Congressman Ed Whitfield from Kentucky and Congressman Jerry Costello from Illinois---a member of this important Subcommittee---and others have introduced on a bipartisan basis, would put in place what we believe is a balanced, comprehensive, workable 20-year inland waterway system modernization investment program for the Nation. A second critical step Congress should take is to assure on a continuing basis that the Corps of Engineers is provided with adequate operation and maintenance funds to keep the Ohio River and the remainder of the inland waterway system functioning at an optimal level. Our Nation's inland waterways are too important to do anything less.

Thank you again for the opportunity to testify this morning. I'd be pleased to address any questions that the Subcommittee may have for me.

Attachment 1



Attachment 2

	Project	2010		2012		2015		2020		2025		2030	
		MAIN	AUX	MAIN	AUX	MAIN	AUX	MAIN	AUX	MAIN	AUX	MAIN	AUX
Upper Ohio	Emsworth		*		*		*		*		*		*
	Dashields		*		*		*		*		*		*
	Montgomery		*		*		*		*		*		*
	New Cumberland												
	Pike Island												
	Hannibal												
	Willow Island												
	Belleville												
	Racine												
	RC Byrd												
	Greenup												
Mid	Meldahl												
	Markland												
	McAlpine												
Lower Ohio	Cannelton												
	Newburgh												
	JT Myers												
	Smithland												
	Locks 52		*		*		*	D	D	D	D	D	D
	Locks 53							D	D	D	D	D	D
	Olmsted												

STATEMENT OF

ROBERT C. DOLENCE

VICE PRESIDENT

LEONARDO TECHNOLOGIES, INC.

BEFORE THE

SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT

COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE

U.S. HOUSE OF REPRESENTATIVES

How Reliability of the Inland Waterways System Impacts Economic Competitiveness

April 18, 2012

Mr. Chairman and Members of the Subcommittee:

Thank you for inviting me to speak to the Subcommittee today. I have submitted my entire statement for the record, but will keep my opening remarks brief. My name is Robert Dolence. I am Vice President and Principal of Leonardo Technologies, Inc. or LTI. LTI is a small, privately held business incorporated in the State of Ohio with headquarters in Bannock, Ohio, and offices in Montana, Pennsylvania, New Hampshire, New York, Virginia, and West Virginia. LTI is an energy and technology consulting firm focused on the safe, affordable, and environmentally acceptable production and use of energy. Our more than 100 professionals are involved in the fuel and energy cycles from production, upgrading, transporting, utilization of, and disposition of residual materials. Our

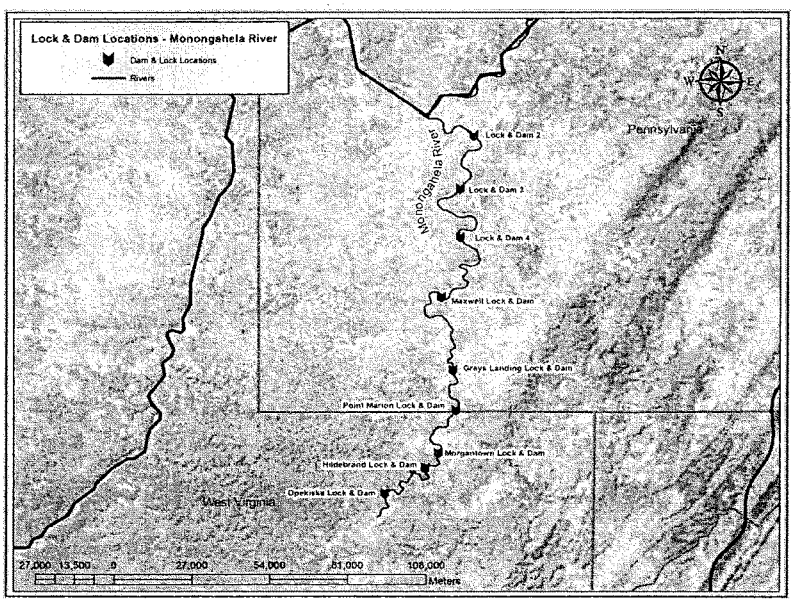
portfolio of expertise transcends a wide variety of fuels and fuel use technologies including, but not limited to, coal, natural gas, petroleum, biomass, biomass-coal co-firing, renewable energy (solar and wind), energy efficiency, traditional pulverized coal plants, advanced coal fired plants, coal gasification, biomass gasification, fuel cells, electric grid, and electric generation.

On a professional level, I have spent more than 30 years in the energy business. I am a registered professional mining engineer having spent most of my time working in the coal regions of Appalachia as a coal producer, as a federal regulator (Office of Surface Mining – OSM), state regulator (Deputy Secretary for Pennsylvania's Department of Environmental Protection), Research & Development (R&D) Program Manager (U.S. Department of Energy's National Energy Technology Laboratory – NETL), and management and environmental consultant.

I was invited to speak today regarding a study LTI performed in 2011 for the U.S. Army Corps of Engineers, titled, "Measuring the Impact of Monongahela [River] Lock Closures on Forecasts of Utility Steam Coal Consumption, Sourcing and Transportation in the Ohio River Basin[1]." In the 2011 study, LTI was asked to assess the likely impacts to the regional and national electric utility industries and the coal industry that provides fuel to those plants, resulting from a catastrophic failure of any one of the three lock-and-dam sets (#2, #3, or #4 below) on the lower portion of the Monongahela River closest to Pittsburgh, Pennsylvania. These dams

[1] *Measuring the Impact of Monongahela Lock Closures on Forecasts of Utility Steam Coal Consumption, Sourcing and Transportation in the Ohio River Basin*; October 10, 2011; Redacted Report; Contract number: W91237-08-C-0010.

were selected due to their annual historic coal traffic and vulnerability to failure; that is, current risk due to their age and condition.



Actual 2010 data was used "retrospectively" to model potential dam failure impacts. The work was performed in mid-2011 by LTI's Principal Investigator, Dr. Lloyd Kelly, using a proprietary energy modeling system, the Greenmont Energy Model (GEM®)[2]. The highlights of the work follow.

The Monongahela River is a nine-lock tributary of the Ohio River. The navigable portion of the Monongahela River extends 128 miles from Fairmont, West

[2] GEM® – Greenmont Energy Model, a proprietary model developed by and licensed from Greenmont Energy Consulting of Parkersburg, WV (www.greenmontenergy.com). GEM® simulates the coal and electricity supply/demand balances in the U.S. A description of GEM® can be found at the end of this testimony.

Virginia, to the confluence of the Allegheny and Monongahela Rivers where they form the Ohio River at Pittsburgh, Pennsylvania; a location commonly referred to as "Three Rivers." There are four coal-fired electric power plants on the Monongahela River. Eighty-nine percent (89%) of the river traffic is coal being shipped to these and other plants, as well as commercial, industrial and export markets. It is my understanding that the lowest three lock-and-dam sets closest to Pittsburgh are in the poorest state of repair and more susceptible to a catastrophic failure. After some discussion with representatives of the U.S. Army Corps of Engineers, it was decided to adopt the assumption that such a failure at one of these lowest three lock-and-dam sets would shut down the entire traffic on the Monongahela River because it likely would not be economic to maintain and operate tugboat and barge fleets in isolated stretches on the upper portion of the Monongahela without passage to and beyond the Ohio River System. Therefore, LTI's modeling scenario for the failure mode was one of complete loss of traffic on the Monongahela River.

Before I discuss the quantitative impacts LTI observed from our simulation modeling, it is important to note that our modeling automatically calculates the lowest cost transportation alternative for each of many different coals into every single electric utility plant. This includes finding the lowest cost alternate transportation for those situations where the coal would have traversed a portion of the Monongahela River but now cannot do so in the failure mode scenario where a lock-and-dam set has experienced catastrophic failure. The resulting new least expensive transportation will be at a higher cost than if the Monongahela were open to traffic, and this could either: (a) raise the cost of electric generation using the same coal, (b) cause the plant to choose a different coal to burn, or (c) cause the

plant to dispatch less electricity (either in favor of a competing coal-fired plant or perhaps in favor of a gas-fired plant, depending on the ultimate dispatch cost competition).

It is important to note that our model does not evaluate or determine the adequacy of alternate transportation systems; it simply assumed that the alternate transportation capacity was available, but the overall transportation cost for the substitute shipments would be higher since the least expensive barge transportation on the Monongahela was no longer available. Although not specifically evaluated in the study, it is likely that the alternate transportation system, if capacity exists at all, would at least be stressed thereby putting upward pressure on prices. Therefore, the results shown might be considered a "conservative" estimate of impacts since the system would have to work harder to supply the electricity demand (and might even fail) if there is a shortage of trucking and rail capacity. It was also beyond the scope to assess the interrelationships between river, rail, and truck transportation and the subsequent non-coal or non-electricity price impacts resulting by the alternate. These "non-studied" areas include, but are certainly not limited to, price impacts to transportation fuel prices, non-coal commodities, traffic density increases, highway safety, and impacts to highway and rail infrastructure.

The Monongahela River lock-and-dam study resulted in the following conclusions:

- Under the liberal assumption of adequate overland transportation alternatives (see notation above), no brownouts or blackouts occurred, but economic impacts were significant.
- Approximately 21 million individuals are affected by the direct impact of the Monongahela-dependent "Plants of Interest" service areas.

- The ripple effect of the impact goes far beyond the Plants of Interest service areas direct impacts, reaching out to a majority of U.S. electricity users, in excess of 200 million people.
- Through "domino" effects of increased transportation costs compounded by electricity dispatch reactions associated with the loss of the Monongahela River waterway traffic, the cost of producing electricity increases almost across the entire United States. Depending on the actions of various public utilities commissions (PUCs) and the potential pass-through of wholesale purchased electricity price increases, modeling indicates the resulting price paid by electricity customers nationwide could increase by as much as $1 billion annually.
- The impacts stated above are single-year impacts that would occur repeatedly for each year the lock-and-dam remained inoperable.
- The impacts noted are only electric price effects resulting from coal river traffic impedance; the impacts do not include other commodities currently transported on the Monongahela River portion of the Ohio River Navigation System (approximately 15% of tonnage in this length of river is petroleum, aggregates, grain, chemicals, ores/minerals, and iron/steel)[3].
- If only one-half of the total 2008 tonnage (21,776,100 tons) barged through the three focus Monongahela River locks were transported by truck (assuming the other half could be shipped by rail), it would equate to an additional 1,500 twenty-ton triaxle trucks every day, or more than 60 trucks an hour, entering the local roads and highways.
- Generally, increased price of electricity causes an increase in production costs for businesses and cost of living for the general population, which

[3] http://outreach.lrh.usace.army.mil/Locks/Mon234/Default.htm.

typically results in a negative impact to economic growth (quantifying these effects were beyond the scope of this study).

It is also interesting to note, in other work by LTI, it has been forecasted that even with sustained low natural gas prices (maintaining less than $4/MMBTU natural gas cost levels for 50 plus years) coal maintains a significant role in electric power generation, industrial and commercial use, and exports with a total coal demand staying above the 1 billion tons per year level for the next 50 years. Based on the combined detailed modeling performed, LTI concludes the Ohio River Navigation System is a vital component to ensuring safe, reliable, low cost, domestic energy – including electricity – to our country.

This concludes my prepared comments. Thank you for the opportunity to present the results of our study and my personal observations. I would be happy to try to answer questions, if you have any, Mr. Chairman.

GREENMONT ENERGY MODEL (GEM®)

Model Overview

The Greenmont Energy Model (GEM®) is an optimization model which calculates the unique combination of a large number of parameters that achieves the lowest cost of electricity generation in the United States for a given amount of electricity demand. The model uses both Linear Programming (LP) and Mixed Integer Programming (MIP) optimization techniques and thus can be characterized as an LP/MIP optimization model. GEM® simultaneously solves 84 time blocks for a single year (six seasons times 14 time zone combinations for time-of-day load distribution). Since all this is done simultaneously, it means that in one single module of computation, optimal co-dependent values are determined for all of the varying parameters including, among others, amount and type of coal choice by unit; level of each unit's dispatch; environmental clean-up decisions between new equipment, fuel switching, allowance purchasing; location, amount and type of new generation capacity; retirement of existing units; amount of economically justified mining capacity expansion for each cost level for each type of coal; fob coal mine prices; wholesale electricity prices; and pollutant allowance prices. The model carries forward results from each previous year so that in a succeeding year the correct amount of (1) generation capacity by type, (2) mining capacity and remaining reserves by type and cost level, and (3) clean-up capacity for each pollutant are available. All of the varying parameters are output by the model in database tables, and many of the key outputs are aggregated upward to regional and national totals that are automatically graphed across years.

The GEM® model minimizes total system cost of U.S. electricity production and distribution. The demand zones or areas, together with load curves, are given and connected via a transmission network. Power plants supply energy into this network. A power plant is assigned to a particular demand area, based on its location. For power plants not fired by coal or gas, a simplified generation cost and emission rate is applied. For gas fired plants, the generation cost is taken off a gas supply curve based on elasticity assumptions.

Coal-fired power plants that play an import role in today's energy system are modeled at a detailed level. The GEM® Model is the only major energy model that optimizes at the boiler level, as opposed to solving at a higher grouping level and then back-allocating the solution to individual real-world boilers. Every boiler of every coal-fired power plant in the United States is represented separately in the GEM® model. Pollution abatement technology plays a major role in the GEM® model. Coal-fired power plants can invest or use already installed abatement technology capacity to reduce the emission rates for all major pollutants. In addition, they can buy emission allowances from other emitters (if permitted in the scenario setup). The coal-fired power plants also have complete freedom of choice in the quality of coal to use. All coals are available to every coal-fired unit (except for coals that would be technically infeasible to burn in the unit). The delivered cost of coal is determined for each plant by a coal price that is drawn from the marginal point of production on a set of detailed mine cost supply curves and by a transportation cost estimate. Additional cost modules of the GEM® model are:

- cost of wheeling of power
- cost for constructing a new plant of a certain type
- generation cost
- cost for construction of new mining capacity (for each type of coal)

In addition to generating power with existing power plant capacity, the model can also build new or extend existing power plants and increase coal mining capacity to satisfy growing energy demand. However, new capacity of either type must meet economic criteria, which are inputs to the model before it can be built. If the economic criteria are not met, then the additional capacity is not built, and energy commodity prices keep rising until the economics favor building new capacity. No other energy model allows so many variables to freely float in a simultaneous solution (instead of looping back and forth between separate models or modules) to achieve a fully integrated solution with all variables being instantaneously dependent on each other and reaching economic market equilibrium at the same time.

The GEM® model also solves the classic problem of needing to continually re-estimate individual coal transportation costs from coal source to the electric plant. It does this with an innovative network approach that dynamically determines coal transportation cost. Thus, the problem of using transportation estimates that are sometimes several years old is alleviated since the model refreshes its transportation costs via the innovative network.

Typical Inputs

- Electricity demand by generation area
- Bidirectional transmission capabilities between generation areas
- Gas basis differential from the Henry Hub
- A gas price-elasticity curve based on Henry Hub prices
- Proprietary coal specific mine cost curves
- Coal Transportation Costing Module determining costs via network algorithms which allow all coals to be bid into all plants simultaneously and also allow quick and easy updating of transport mils/ton-mile rates
- Coal fired boiler level data
- All non-coal electric generating plants' data, included for both the U.S. and Canada
- User-determined discounted cash flow Internal Rate of Return (IRR) input as a minimum criterion for coal mine and electric plant new capacity additions
- Capital and Operating Cost assumptions for new generation by plant type (CC, GT, PC, IGCC, Nuclear and Renewables – Based on Wind Power costs)
- Multi-pollutant allowance trading capability for any number of pollutants and/or trading region
- NO_x SIP call, CAIR, CAMR (or the new Transport Rule plus Mercury MACT) and CO_2 restrictions at annual and strict ozone season levels (i.e. SO_2, NOx, Mercury and CO_2 limits by region, by year and/or by season)
- Coal plant turn down rate at unit level
- Capital and Operating Cost of Clean-up Equipment
- Current and announced clean-up equipment installations at existing plants for all pollutants
- 104 modeled coal types reflecting both Domestic and International coals plus the ability to co-fire natural gas in each coal-fired boiler
- 123 modeled Generation Areas
- Specific mine capacity, cash mining cost estimate, reserves and expandability

Typical Outputs

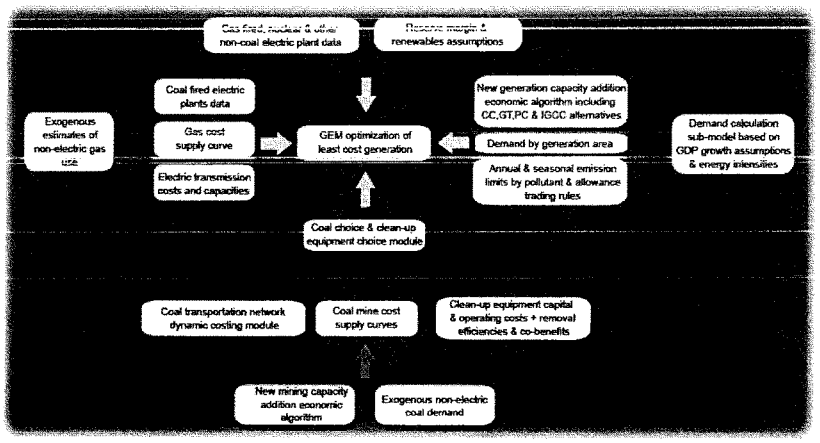
- Dispatch curves by generation area from unit level costs, by year
- Electricity generation by coal-fired unit and by plant for all U.S. and Canadian plants by year
- Electricity wholesale prices by time of day, season and generation area

- Projected annual new generation capacity by plant type and location
- Projected FOB Mine Coal Prices by specific coal and year
- Projected coal production by specific coal and year

- Coal choices by unit by year

- Projected gas prices and volume used for electric generation
- Projected SO_2, NO_x, Hg, CO_2 allowances priced by year
- Optimized clean-up equipment installations by unit and year of installation
- Generation capacity using each type of clean-up equipment by year

GEM® Components



Testimony of

Mike Steenhoek, Executive Director
Soy Transportation Coalition

"How Reliability of the Inland Waterways System Impacts Economic Competitiveness"

House Committee on Transportation and Infrastructure
Subcommittee on Water Resources and Environment

Wednesday, April 18, 2012

Chairman Gibbs and Members of the Subcommittee:

My name is Mike Steenhoek, Executive Director of the Soy Transportation Coalition (STC). Established in 2007, the Soy Transportation Coalition is comprised of eleven state soybean boards, the American Soybean Association, and the United Soybean Board. The goal of the organization is to position the soybean industry to benefit from a transportation system that delivers cost effective, reliable, and competitive service. The STC is governed by a board of directors of soybean farmers from the sponsoring entities. We are therefore a farmer-funded and farmer-led organization.

Over the past few years, much of U.S. agriculture, in general, and the soybean industry, in particular, has been a silver lining in an overall cloudy economy. American farmers are increasingly productive in growing quality, abundant food. Customers, both domestic and, increasingly, overseas, are demanding this production. For the soybean industry, over half of what American farmers produce is destined to the international marketplace – one quarter of total production will be delivered to China alone. Not only do these transactions enhance the U.S. economy – particularly in rural America – it also serves the higher purpose of feeding millions of people who, for the first time in their family's history, are able to incorporate more protein into their diets. This pastoral, traditional industry has truly become one of the world's most dynamic and compelling.

One of the primary reasons U.S. agriculture is so viable and competitive is our expansive and efficient transportation network of roads, bridges, railroads, inland waterways, and ports. Figure 1 below provides an efficient snapshot of the role of transportation – particularly inland waterways – in ensuring the competitiveness of the U.S. soybean industry. The chart provides a cost comparison of producing and delivering a metric ton of soybeans from both the U.S. and Brazil – our primary competitor – to a customer in Shanghai. Both of the origination points – Davenport, Iowa, and North Mato Grosso, Brazil – are approximately 950 miles from their respective port regions. While the movement from North Mato Grosso to

the port relies on trucking, the movement from Davenport to the export terminals in Southern Louisiana enjoys the efficiency America's inland waterway system provides. As the chart validates, the main reason the U.S. soybean industry and many other agricultural products are the most economical choice for our customers on the international marketplace is due to our superior transportation system. Other countries can produce quality products at a lower price. However, it has been and continues to be our ability to deliver those products to our customers in a cost-effective manner that allows our industry to be so competitive. Transportation – particularly the inland waterway system – is not simply a contributing factor of agriculture's success, it is a predominant one.

Figure 1: Costs of transporting soybeans: U.S. vs. Brazil (per metric ton; 4th quarter, 2011)

Davenport, Iowa to Shanghai	North Mato Grosso, Brazil to Shanghai
Truck - $10.22	Truck - $115.05
Barge - $28.91	---------
Ocean - $55.33	Ocean – $49.65
Total Transportation - $94.46	**Total Transportation - $164.70**
Farm Value - $425.00	Farm Value - $358.24
Cost to Customer - $519.46	Cost to Customer - $522.94
Transportation as % of Customer Cost – 18.18%	Transportation as % of Customer Cost – 31.50%

Source: USDA

Unfortunately, while Brazil and other countries are aggressively investing in their infrastructure, we remain anemic in investing in ours. It can be accurately stated that the U.S. is more a spending nation, not an investing nation. A high percentage of taxpayer dollars are used to meet immediate wants and needs, rather than providing dividends to future generations.

According to our recent analysis funded by the soybean checkoff, the Upper Mississippi, Ohio, and Illinois Rivers accommodated the following volumes of grain and oilseeds in 2010:

- Upper Mississippi River: 236 million tons
- Ohio River: 49 million tons
- Illinois River: 24 million tons

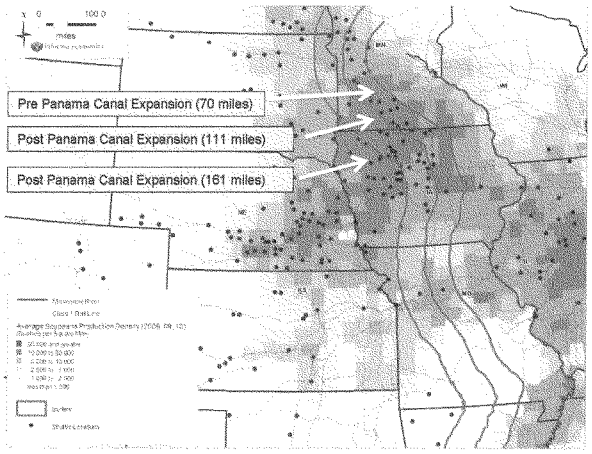
The U.S. Department of Agriculture reports that 58 percent of U.S. soybean exports in 2011 departed from the Mississippi Gulf port region. Approximately 90 percent of that volume arrived at the port region via barge.

The widely advertised expansion of the Panama Canal has the potential to increase the commercial viability of the U.S. inland waterway system – provided that we make prudent investments in our ports and lock and dam inventory. According to our recent soybean checkoff-funded research, the greater efficiencies of maritime transportation resulting from the expanded Panama Canal will have a positive ripple effect on those who utilize the inland waterway system. Our research predicts that grain and oilseeds transiting the Panama Canal will increase 30 percent by 2020/2021. After the canal expansion in 2014, ocean vessels will be able to accommodate up to 13,300 additional metric tons of soybeans (approximately 500,000 bushels) per voyage, which amounts to an additional $6 million in cargo value. Customers will realize up to a 35 cent per bushel savings due to this greater efficiency of maritime transportation.

Figure 2 below highlights how sizable areas of the country will experience greater access to the efficiencies of barge transportation subsequent to the Panama Canal expansion. According to the soybean

checkoff-funded research, the draw area to our major navigable waterways could expand from 70 miles to 161 miles. As a result, there will be increased areas of the country that will be able to avail themselves of the safe, environmentally friendly, and economically competitive inland waterway system. From a shipper perspective, this will most likely have a favorable impact on area rail rates since there is wide evidence that transportation costs go down – and economic competitiveness goes up – when there is more than one shipping option in a particular region. However, these potential efficiency gains from the Panama Canal expansion will only occur if the U.S. sufficiently invests in our links in the logistics chain that connects with the Panama Canal. If we fail to do so, we will simply shift the bottleneck from Panama to the United States.

Figure 2: Increased draw area for inland waterways transportation following the Panama Canal expansion



Source: "Panama Canal Expansion: Impact on U.S. Agriculture." Funded by the soybean checkoff

The soybean checkoff recently completed a study, "America's Locks and Dams: A Ticking Time Bomb for Agriculture?". The research, conducted by the Texas Transportation Institute at Texas A&M University, projected the impact of potential lock and dam failures on the competitiveness of our industry. Unfortunately, there is an established and growing consensus that such failures are not a matter of if they occur, they are a matter of when.

Figure 3 highlights the cost to U.S. agricultural producers of various lock closures of various durations along the inland waterway system. American farmers are demonstrating the ability to increase supply and customers are expressing a growing appetite for this production. However, the below figure illustrates that failing to connect supply and demand can have a pernicious impact on our economic competitiveness.

Figure 3: Cost to Agricultural Producers of Lock Closures ($ millions):

Lock	2 Weeks	1 Month	3 Months	1 Year
LaGrange	$2.7	$4.8	$21.2	$30.4
Lock 20	$2.8	$4.9	$15.4	$44
Lock 25	$2.8	$4.9	$15.4	$44.1
Markland	$0.89	$1.02	$3.8	$4.9
Lock 52	$2.9	$3.1	$11.9	$13.9

Source: "America's Locks and Dams: A Ticking Time Bomb for Agriculture?" Funded by the soybean checkoff

One of the primary deliverables of this analysis was to evaluate the impact of these likely lock failures on a local level, rather than simply the national level. Both our elected leaders and constituent groups repeatedly demonstrate how issues have more resonance when understanding the local impact rather than the aggregate impact. The micro argument is more persuasive than the macro argument. The analysis documents how many Congressional districts in this nation have negative exposure to a potential lock and dam failure. America's economic competitiveness is not simply impacted by our increasingly unreliable inland waterway system, the economic health of our local communities will be impacted as well.

Our dilapidated lock and dam inventory is increasingly plagued by unscheduled maintenance and mechanical breakdowns. According to the Army Corps of Engineers, navigation outages on the Ohio River alone have increased more than three-fold since 2000, increasing from 25,000 hours to 80,000 hours. This unfortunately results in discouraging further investment by those who utilize the inland waterway system toward modernization of river terminals, towing equipment, or barge fleets. Our nation has the lofty and laudable goal of doubling exports by 2015. However, our nation – by not sufficiently maintaining our lock and dam inventory – is perpetuating a major impediment to this worthwhile goal being ultimately achieved.

Compounding the frustration due to having to depend on an increasingly unreliable inland waterway system is widespread discouragement due to our inability as a nation to adequately address this challenge. Those who utilize our inland waterway system have long recognized and articulated the alarming condition of our locks and dams. Unfortunately, this recognition and communication have not been met with tangible solutions.

The Soy Transportation Coalition and many others who are gravely concerned with the condition of our inland waterway system are concluding that there is a need for fresh thinking to be incorporated into this important issue. Abiding by the same strategy will most assuredly yield the same results. We have continued working with the Texas Transportation Institute to examine some alternative approaches to managing our lock and dam system. The results of this additional analysis will be completed over the next month. It is our hope that we can complement the work of other advocates of the inland waterway system in determining solutions to this protracted problem.

One of the arguments our ongoing analysis is examining "how money is allocated is just as important as how much money is allocated." One of the deliverables in our research is comparing major maritime infrastructure projects in other countries and compare them to those in the U.S. – particularly in the ability to complete projects on time and within budget. It is discouraging to observe how many other countries are able to construct their major infrastructure projects much more efficiently than we can. The Panama Canal expansion project is a great example. This $5.25 billion project commenced in 2007 and is scheduled to be

completed in late 2014 or early 2015. The expansion project is more imposing and complex than any project we have underway or planned in our inland waterway system, yet all indications are that the project will be completed within budget and only a handful of months behind schedule. Compare this to our Olmsted Lock and Dam project that had an original cost estimate of $775 million and has recently been updated to over $3 billion with a significant time horizon remaining before it will be completed. When examining the various reasons for our repeated cost overruns and project delays, it quickly becomes evident that a major contributing factor is the piecemeal and unpredictable manner in which we finance these projects.

Major investments of any nature – particularly infrastructure investments – require a system of funding that provides the money up front in a lump sum, or at least provides certainty that the incremental installments will be allocated. Our current system provides neither. In fact, if I were to design a funding system for infrastructure projects that would guarantee repeated cost overruns and project delays, I would design the system we currently have. It is our hope that we can have a productive discussion with other stakeholders that will result in better stewardship of the scarce resources we have to allocate to these inland waterway projects.

The other argument in our ongoing analysis is "a predictably good inland waterway system is better than a hypothetically great one." During this period of fiscal scarcity, we are concerned that our nation is failing not only in providing new and expanded locks and dams, but also in maintaining and preserving our current inventory. Each lock and dam is a link in a larger logistics chain. If one fails, our ability to deliver on customer demands is greatly impaired.

Committing to many of these major investment projects and failing to deliver on them, while allowing our remaining locks and dams to fall further into disrepair is a recipe for disaster. A preferable approach may be to first demonstrate stewardship of current locks and dams by providing assurance to users that a lock and dam, in the event of a major failure, will be operational within 48 or 72 hours, for example. If we allocate our resources that way and can provide this degree of predictability to those who utilize our inland waterway system, we will provide a superior message to the one we are currently sending. The Soy Transportation Coalition looks forward to working with other stakeholders in examining this potential approach.

Thank you for the opportunity to testify and for exploring this important topic. I would be pleased to answer any questions.

Testimony of:

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Before the:

U.S. House of Representatives Committee on Transportation and Infrastructure
Subcommittee on Water Resources & Environment

Hearing on:

How Reliability of the Inland Waterway System Impact Economic Competiveness

April 18, 2012

Washington, DC

Mr. Chairman, Members of the Committee,

Good morning. I am Kristin Meira, and I serve as the Executive Director of the Pacific Northwest Waterways Association, or "PNWA". I am honored to participate in this panel, and appreciate the opportunity to highlight our unique river system in the Northwest. We are grateful to the Subcommittee for convening this hearing to focus on the needs of the nation's inland waterways.

Introduction to PNWA

Founded in 1934 as the Inland Empire Waterways Association (IEWA), PNWA led the way for Congressional authorization and appropriations to build the locks, dams, hydropower and irrigation projects on the Columbia Snake River System. PNWA now represents Columbia River, Puget Sound and Northwest coastal interests on navigation, transportation, energy, regulatory and environmental policies.

PNWA's membership includes over 115 public ports, towboat companies, steamship operators, agriculture and forest products producers, public utilities, manufacturers and others in Oregon, Washington, Idaho, and Northern California. A full list of our membership is attached to this testimony.

Columbia Snake River System

Our nation's economy relies on a safe, efficient and cost-effective multi-modal transportation system. That system includes road, rail, air and water.

The Columbia Snake River System is a critical piece of the nation's navigation portfolio, providing benefits not just to the Pacific Northwest, but far into the heartland of our country. The Columbia River is the nation's number one gateway for the export of wheat and barley, and when you consider the movement of soy and other grains, our river system is the third largest grain export gateway in the world. We are also tops on the West Coast for wood exports and mineral bulk exports. We are an export heavy system, and play an important role in balancing the nation's trade deficit.

The inland Columbia Snake River System is a water highway that stretches from Vancouver, Washington and Portland, Oregon inland 360 miles to Lewiston, Idaho and Clarkston, Washington. Our inland system is comprised of a 14-foot deep navigation channel and a series of eight locks on the Columbia and Snake Rivers. These are the highest lift locks in the United States, and are among the highest in the world, with the John Day lock topping out at 110 feet.

This inland system is part of a larger river highway that includes our 105-mile long deep draft Columbia River channel, which was recently deepened from -40' to -43', as well as jetties and a -55' entrance channel. Over 42 million tons of cargo is shipped annually on our deep draft channel, at a value of approximately $20 billion. In addition to our efforts on the inland system, we also strongly advocate for adequate funding to maintain our deep draft navigation channel, and prepare for eventual repairs to our jetties that protect the entrance to our river system.

Our inland system typically handles over 10 million tons of commercial cargo each year, with an average annual value of over $3 billion. I mentioned earlier that we are the top wheat export gateway in the nation. Roughly half of the wheat exported out of the deep-draft Lower Columbia River arrives at those export facilities by barge. Other major commodities that move on our inland system include petroleum products, containerized high-value agricultural products, forest products, and project cargo. The concept of container-on-barge shipments got its start on our river system in the 1970's.

Our system provides environmental as well as economic benefits. A typical barge on the Columbia Snake River System can carry 3,500 tons. That compares with 100 tons per rail car and 29 tons per truck. To handle the cargo moved by a typical 4-barge tow on our system, one would need over 140 rail cars or 538 trucks. We estimate that each year, barging on the Columbia Snake River System keeps 700,000 trucks off the highways that run through the sensitive airshed of the Columbia River Gorge National Scenic Area.

Planning & Executing Columbia Snake River System Major Repairs

Early in the last decade, our colleagues at the Portland and Walla Walla Districts of the U.S. Army Corps of Engineers recognized that our aging locks would require strategic repairs to remain operational and reliable. They also recognized that these projects would need to be planned and executed to have the least impact to our regional and national economy.

It is important to remember the scale of our navigation infrastructure projects. A catastrophic failure of one of our lock gates would translate to at least a one-year closure of that project. That is how long it takes to design, fabricate, and install a lock gate of that size. We also do not have any smaller, back-up locks at our projects. Allowing our locks to degrade to the point of failure simply is not an option. A closure of one of our projects creates a bottleneck for the entire system.

Beginning in 2006, the Portland and Walla Walla Districts, Northwestern Division, and PNWA partnered to discuss the highest priority repairs, funding estimates, and proposed timeline. The result of those partnering efforts was a 2007 plan for how repairs would be pursued, depending on funding. The goal: minimize planned and unplanned system closures.

This collaborative planning meant that our river system was well poised to execute funding made available through the 2009 American Recovery & Reinvestment Act (ARRA). The Corps began working with stakeholders to prepare for new downstream gates at three of our projects, and major repairs at three other locks. A tremendous amount of coordination went into what eventually was a 15-week complete closure of our inland navigation system. This type of long-term planned closure had never been done on any inland waterway in the United States.

We worked closely with the Corps for over a year to prepare growers, shippers, ports, towboaters, steamship operators, fuel companies, media, legislators, and the states of Oregon, Washington, and Idaho for this unprecedented closure. Special emphasis was placed on outreach to grain buyers overseas who were accustomed to sourcing U.S. wheat from the historically reliable Columbia Snake River System. Every moment of the 14 months leading up to the closure was necessary to ensure that both domestic and international stakeholders were prepared for the shutdown of our system.

I'm pleased to say that this effort was a complete success, and a project of which the Corps, stakeholders, and Congress can truly be proud. Because of the outstanding partnership between the Corps and stakeholders, impacts to our regional and national economy were minimized. The lock maintenance closure demonstrated how the Corps can efficiently deliver projects while having a minimal impact on the economy.

I want to note that the positive experience we had is not indicative of the economic impacts that would be suffered if there were an unplanned closure of our system. Because this was a very well-planned effort, shippers were able to decide whether to ship early, use alternate transport where available, or increase their storage locally with the intent to ship after the system reopened. The Freight Policy Transportation Institute (FPTI) at Washington State University has extensively studied the closure, and noted that as soon as our system reopened last March, the "surge in shipments during the two months after the lock outage is evidence that industries waited to transport their goods until after the lock outage rather than during; traffic immediately and heavily took advantage of the river reopening and this mode of transportation being available." The lock closure demonstrated that the Columbia Snake River System is key to the international competitiveness of many producers in our region, and is the preferred mode of transportation for many goods produced in our heartland.

Conclusion

Last year's lock closure addressed the most immediate needs on the Columbia Snake River System. But we know that our projects continue to age, meaning more components will reach the end of their design lives. We continue to partner with our Corps districts and division to plan for future repairs. Our joint goal is to identify major maintenance needs between now and 2020, and predict system closures years in advance. We are focused on pursuing projects that protect the reliability of our system.

Despite declining budgets, we believe the Portland and Walla Walla Districts have done a tremendous job for years in using limited funding to maintain our system. However, funding the bare minimum of maintenance will eventually lead to more costly repairs in the future and reduced project reliability. We will continue to work with them on how to best maintain and operate our inland navigation projects within current fiscal constraints.

We respectfully urge the Subcommittee to recognize the need to maintain the significant navigation infrastructure investments made by previous generations. Though we realize every agency is facing funding shortfalls, it is imperative that our country continue to provide the infrastructure that makes commerce possible. It is our belief that future regional and national economic competitiveness hinges on the availability of reliable navigation infrastructure - our water "highways".

Thank you again for this opportunity to testify. I am happy to answer any questions you may have.

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TESTIMONY OF
THE AMERICAN SOCIETY OF CIVIL ENGINEERS
BEFORE THE
SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT
U.S. HOUSE OF REPRESENTATIVES
ON
HOW RELIABILITY OF THE INLAND WATERWAY SYSTEM IMPACTS ECONOMIC COMPETITIVENESS
APRIL 18, 2012

Mr. Chairman, Congressman Bishop, and Members of the Subcommittee:

The American Society of Civil Engineers (ASCE) is pleased to provide our views on how the reliability of the nation's inland waterways impacts the economic competitiveness of the United States.

We can sum up the present situation concisely: Efforts by the administration and Congress to address the growing investment deficit in waterways infrastructure have been largely ineffectual due to political considerations that give precedence to deficit reduction and tax cuts over the badly needed (and concededly expensive) restoration of critical infrastructure. These policy failures at the White House and in Congress threaten the nation's economic competitiveness in a global economy.

A. The Inland Waterways

In 2009, ASCE's *Report Card for America's Infrastructure* gave the nation's inland waterways a grade of D –, an indication that the system is near failure. Neither president nor Congress has done anything in the years since to improve upon that extremely dismal assessment by adopting a long-term, systematic approach to improve the performance and condition of our national waterways.

The United States has more than 25,000 miles of inland, intra-coastal, and coastal waterways. The federal government improves and maintains almost 11,000 miles or about 45 percent of the total channel length. This includes the installation and maintenance of navigation structures such as locks and dams, dikes and revetments, groins, and dredging.[1] The federal and state governments, port authorities, and carriers share responsibility for the nation's waterway transportation system. The inland waterway transportation industry involves public and private interaction between commercial fleets or towboats, barges, lake vessels, wharves and other waterfront facilities, and the waterway navigation projects built and maintained by the Corps.[2]

Because of their ability to move large amounts of cargo, the nation's inland waterways are a strategic economic and military resource. An analysis by the U.S. Army War College concluded that "the strategic contributions of these inland waterways are not well understood. The lack of adequate understanding impacts decisions contributing to efficient management, adequate funding, and effective integration with other modes of transportation at the national level. Recommendations demonstrate that leveraging the strategic value of U.S. inland waterways will contribute to building an effective and reliable national transportation network for the 21st century."

B. Losing Ground

The Corps of Engineers Civil Works program suffers from chronic under funding for essential infrastructure systems. If allowed to continue, this trend likely will result in ever greater system failures and the consequent expenditure of tens of billions of dollars to rebuild what could have been built more economically in the first instance. "Deferred costs of maintenance of the nation's aging flood and hurricane protection, and navigation, infrastructure are considerable," the National Research Council concluded recently.[3] A process by which the nation's waterways infrastructure is always maintained by "future" investments can lead to disastrous results.

Following Hurricane Katrina in 2005, an ASCE investigation (commissioned by the Corps of Engineers) reported in 2007 that chronic under funding and indifference to maintenance were the principal causes of the levee failures after Katrina.

> Because of the congressional budgeting process, the stream of funding for the New Orleans hurricane protection system was irregular at best. If a project was not sufficiently funded, the USACE was often required to delay implementation or to scale back the project.
>
> This push-pull mechanism for the funding of critical life-safety structures such as the New Orleans hurricane protection system is essentially flawed. The process creates a disconnect between those responsible for design and construction decisions and those responsible for managing the purse-strings. Inevitably, the pressure for tradeoffs and low-cost solutions compromised quality, safety, and reliability.

> The project-by-project approach—in which projects are built over time based on the availability of funding—resulted in the hurricane protection system being constructed piecemeal with an overall lack of attention to "system" issues. The project-by-project approach appears to be associated with congressional limitations. The USACE was forced into a "reductionist's" way of thinking: reduce the problem into one that can be solved within the given authority and budget. Focus only on the primary problem to be solved, inevitably making the issues of risk, redundancy, and resilience a lower priority.[4]

The piecemeal process of authorizing and funding infrastructure projects has not changed in the years since that report. And in the face of the need to upgrade the Corps' aging infrastructure, the trends are all bad. The president's budget for the Civil Works Program in FY 2013 and the House Budget Resolution would further reduce federal investments in essential national civil works systems.

Moreover, the downhill slide in Civil Works budgets is not likely to improve in future years. The pie is shrinking every year, and the Corps estimates that its budget proposals will continue to decline at least through FY 2015. The Corps expects that inflation will reduce actual spending on key infrastructure programs by a further $3 billion. ASCE believes that these levels of spending are inadequate to meet the national security, economic, and environmental demands of the United States in the 21st century.

The administration's Fiscal Year 2013 budget proposal for the Corps would provide $4.7 billion, a decrease of more than five percent from the FY 2012 enacted level of $5 billion. The president's budget for FY 2013 is inadequate to meet the needs of an aging waterways infrastructure and must be increased. Congress must increase funding for the Corps in the coming fiscal year in order to protect an essential economic asset and ensure American competitiveness in the 21st century.

The administration proposal for FY 2013 would reduce construction funding from $1.694 billion to $1.471 billion, a reduction of 13 percent. Operations and maintenance funding would be down slightly from $2.412 billion to $2.398. The Mississippi River and Tributaries account would decline from $252 million to $234 million or seven percent. Investigations—the money used to complete project feasibility studies—would go from $125 million to $102 million, a decline of 18 percent. In all, the Civil Works program budget for FY 2013 would be cut from $5.002 billion in FY 2012 to $4.731 billion in FY 2013, an overall reduction of 5.4 percent.

The House would shrink the pool of funds available to the Corps as well. The House Budget Resolution for FY 2013 proposes to reduce new budget authority for Function 300 (Natural Resources and Environment), which includes the civil works programs of the Corps, from the FY 2012 enacted level of $32 billion to $30.6 billion.

Under the Budget Control Act of 2011, Congress has $1.047 trillion in new discretionary budget authority for FY 2013, with $686 billion set aside for security

programs (defense, intelligence, and homeland security) and $361 billion for all domestic discretionary spending. ASCE has recommended $5.2 billion in new budget authority for the Corps of Engineers in FY 2013 to account for inflation and to halt the unfortunate continuing decline in budget authority for the Corps in order to ensure safe infrastructure and a sound economy.

C. Inland Waterways Today

Inland and intracoastal waterways directly serve 38 states as well as the states on the Atlantic seaboard, the Gulf Coast, and the Pacific Northwest. Shippers and consumers in these states depend on the inland waterways to move approximately 630 million tons of cargo valued at more than $73 billion annually.[5]

States on the Gulf Coast and throughout the Midwest and Ohio Valley especially depend on the inland and intracoastal waterways. Texas and Louisiana each ship more than $10 billion worth of cargo annually, while Illinois, Pennsylvania, West Virginia, Kentucky, Mississippi, Alabama, and Washington State each ship between $2 billion and $10 billion annually. Another eight states ship at least $1 billion annually.

This system provides an average transportation savings of $10.67 per ton over the cost of shipping by alternative modes. This translates into more than $7 billion annually in transportation savings to the U.S. economy. Future investment must focus on life-cycle maintenance, system interdependencies, redundancy, security, and recovery from natural and man-made hazards.

Forty-one states, including all states east of the Mississippi River and 16 state capitals, are served by commercially navigable waterways. The U.S. inland waterway system consists of navigable waterways in four systems—the Mississippi River, the Ohio River Basin, the Gulf Intercoastal Waterway, and the Pacific Coast systems—that connect with most states in the U.S. The system comprises 257 locks, which raise and lower river traffic between stretches of water of different levels.

Forty-seven percent of all locks maintained by the U.S. Army Corps of Engineers were classified as functionally obsolete in 2006. Assuming that no new locks are built within the next 20 years, by 2020, another 93 existing locks will be obsolete—rendering more than 8 out of every 10 locks now in service outdated. Most locks now are anywhere from 50 to 70 years old.

The current system of inland waterways lacks resilience. Waterway usage is increasing, but facilities are aging and many are well past their design life of 50 years. Recovery from any event of significance would be negatively impacted by the age and deteriorating condition of the system, posing a direct threat to the American economy.

D. The Inland Waterways Trust Fund

The construction and major rehabilitation of inland waterways transportation projects is funded 50 percent from the Inland Waterways Trust Fund (IWTF), with the balance from general revenues. This trust fund receives dedicated revenues from a tax on inland waterways fuel. The tax has been 20 cents a gallon since January 1, 1995. Operation and maintenance of the inland waterways system are entirely funded by general federal revenues.

The estimated cost of repairing and modernizing the assets of the inland system is approximately $8 billion. Despite the obvious needs, the balance in the Trust Fund has been declining for more than a decade. The Treasury Department reported in November 2010 that the IWTF had a balance of only $5.5 million as of September 30, 2010.[6] In contrast, the balance on September 30, 1999, was $288 million.[7]

In April 2010, the Inland Waterways Users Board (IWUB), a consortium of waterways users created by Congress, released a proposed investment strategy for the inland waterways system that would increase the 20-cent diesel fuel tax to 26 cents or 29 cents. In FY 2011 $83.9 million was collected in taxes at the 20 cents-per-gallon rate, suggesting that approximately 419.7 million gallons of fuel were purchased, according to Corps estimates. Applying a tax of 26 cents to each gallon sold to the estimated FY 2011 fuel sales would generate about $109 million annually, or an additional $1.09 billion over 10 years.

The plan also recommended that Congress retain the 50 percent federal-local cost share for major projects—those costing more than $100 million—and require the federal government to pay the full cost of all projects costing less than $100 million. The plan would provide an estimated $7.6 billion in new revenues for the IWTF over 20 years.

E. Reversing the Disinvestment Trend

ASCE endorses the IWUB's recommendations in the Inland Marine Transportation System (IMTS) Capital Investment Strategy Team announced in 2010. The tax rate for the trust fund has been 20 cents per gallon since January 1, 1995. We believe that an increase in the waterways user fee is long overdue, and we concur in the recommendation that the current fee be increased between six and nine cents a gallon.

ASCE's support for the IWUB plan, however, is contingent on two important considerations.

- Any increase in the Inland Waterways User fee also should include a provision to index that fee to the consumer price index (CPI) and be adjusted every two years.

- Any diesel fuel tax revenues received by the IWTF should be "firewalled" to establish discretionary spending limits in the same manner used for Highway Trust

Fund and the Aviation Trust Fund to reserve the IWTF revenues exclusively for the reconstruction of the system's aging infrastructure.

F. Conclusions

We come to these judgments because it is not clear how the Corps will continue to pay for essential infrastructure systems with greatly reduced budgets adopted in the Budget Control Act of 2011 well into the future.

"Doing more with less" is not a solution; it is a political slogan that ignores the consequences of continuing to under invest is essential infrastructure, and it contains the seeds of future disasters. It is obvious that recent drastic budget cuts or the complete elimination of funding mean that little or nothing will be done to maintain these vital programs. America cannot compete in the world marketplace with one-hundred-year-old locks, too-shallow harbors, impoverished investments in key infrastructure systems, and a seeming blindness on the part of policymakers to the economic peril we face.

Enabling the eventual failure of the nation's essential public infrastructure through arbitrary budget-cutting is deeply troubling. Placing abstract notions of budget deficits above the primary duty of the federal government to protect human life and promote economic growth is a dubious policy choice—a choice whose lethal consequences were amply demonstrated in New Orleans in the wake of Hurricane Katrina and the failure of that city's inadequately budgeted and constructed levee system. Congress must never be able to escape the knowledge that it was complicit in the failure. Congress and the president can never say: we weren't told.

Thank you, Mr. Chairman. That concludes my testimony. I would be pleased to answer any questions at this time.

ENDNOTES

[1] U.S. Army Corps of Engineers, Great Lakes and Ohio River Navigation Systems Commerce Report, 2008, 3 (2008).

[2] Id. at 1.

[3] National Research Council, National Water Resources Challenges Facing the U.S. Army Corps of Engineers 13 (2011).

[4] American Society of Civil Engineers, The New Orleans Hurricane Protection System 71-72 (2007).

[5] The Atlantic Intracoastal Waterway (AIWW) also is funded through the Inland Waterways Trust Fund. The commercial users on the AIWW have been paying into the fund since its inception while receiving very little in return for the AIWW system. As there are no new construction activities or major rehabilitation projects planned for the AIWW, there is little likelihood any of the fees collected on the Intracoastal Waterway will be used to improve or maintain the AIWW. This inequity for the AIWW needs to be addressed.

[6] Department of the Treasury, Audit Report 6 (2010), http://www.treasury.gov/about/organizational-structure/ig/Documents/oig10017.pdf.

[7] Department of the Treasury, Audit Report D-1 (2000).

ASCE was founded in 1852 and is the country's oldest national civil engineering organization. It represents 140,000 civil engineers individually in private practice, government, industry, and academia who are dedicated to the advancement of the science and profession of civil engineering. ASCE is a non-profit educational and professional society organized under Part 1.501(c) (3) of the Internal Revenue Code.

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