110TH CONGRESS
2d Session
HOUSE OF REPRESENTATIVES
REPT. 110–576
Part 1

GREEN TRANSPORTATION INFRASTRUCTURE RESEARCH AND TECHNOLOGY TRANSFER ACT

APRIL 10, 2008.—Ordered to be printed

Mr. GORDON of Tennessee, from the Committee on Science and Technology, submitted the following

R E P O R T

[To accompany H.R. 5161]

[Including cost estimate of the Congressional Budget Office]

The Committee on Science and Technology, to whom was referred the bill (H.R. 5161) to provide for the establishment of Green Transportation Infrastructure Research and Technology Transfer Centers, and for other purpose, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

CONTENTS

69–006

I. AMENDMENT

The amendment is as follows:
Strike all after the enacting clause and insert the following:

SECTION 1. SHORT TITLE.

This Act may be cited as the "Green Transportation Infrastructure Research and Technology Transfer Act".

SEC. 2. FINDINGS.

Congress finds the following:

(1) Transportation infrastructure contributes to the pollution of surface and ground water because it is comprised of impervious surfaces that concentrate contaminants which are introduced into the water supply during storms.

(2) Scientists and engineers have developed numerous technologies that can be incorporated into transportation infrastructure which control stormwater and mitigate nonpoint source water pollution.

(3) There has not been widespread implementation of green transportation infrastructure by governments or private industry because of technical, regulatory, and social barriers, such as restrictive designs and lack of training and awareness for builders.

(4) The Federal Highway Administration, in partnership with the Environmental Protection Agency, has the technical expertise and capacity to promote the use of green transportation infrastructure technologies by State and local governments and private industry through education and outreach and technical assistance programs.

SEC. 3. REGIONAL GREEN TRANSPORTATION RESEARCH CENTERS.

(a) ESTABLISHMENT.—Subchapter I of chapter 55 of title 49, United States Code, is amended by inserting after section 5505 following new section:

"SEC. 5505A. REGIONAL GREEN TRANSPORTATION RESEARCH CENTERS.

"(a) GREEN TRANSPORTATION INFRASTRUCTURE RESEARCH AND TECHNOLOGY TRANSFER.—The Secretary of Transportation shall make grants to university transportation centers established pursuant to section 5505 or 5506, or to consortia consisting of such a center and one or more institutions of higher education, to carry out research and development and technology transfer activities in the field of green transportation infrastructure.

"(b) OBJECTIVES.—Grant funds provided under this section may be used to—

"(1) generate innovative and cost-effective approaches to mitigating environmental impacts throughout the lifecycle of transportation infrastructure;

"(2) develop holistic approaches to integrating green infrastructure into existing wastewater management systems;

"(3) promote adoption of innovative green transportation infrastructure systems by State and local governments and the private sector; and

"(4) manage technology transfer programs to disseminate information on best management practices in the area of green transportation infrastructure to State and local governments and the private sector.

"(c) SELECTION OF GRANT RECIPIENTS.—

"(1) APPLICATIONS.—In order to be eligible to receive a grant under this section, a university transportation center or consortium shall submit to the Secretary an application that is in such form and contains such information as the Secretary may require.

"(2) MERIT REVIEW; PRIORITY.—Grants shall be awarded under this section on a merit-reviewed competitive basis.

"(3) REGIONAL CENTERS.—To the greatest extent practicable, the Secretary shall ensure that there is at least one grant recipient from each of the 10 United States Government regions that comprise the Standard Federal Regional Boundary System.

"(4) SELECTION CRITERIA.—Except as otherwise provided by this section, the Secretary shall select each recipient of a grant under this section through a merit-reviewed competitive process on the basis of the following:

"(A) Demonstrated expertise in transportation research and environmental impacts of transportation infrastructure.

"(B) Demonstrated research capacity and technology transfer resources.

"(C) Existing or proposed partnerships with State and local governments and private industry involved in transportation-related construction, environmental impact mitigation, or other areas related to green transportation infrastructure research to help set research priorities and facilitate technology transfer.

"(D) Capability to provide leadership in developing national best management practices, regional best management practices, or both in the field of green transportation infrastructure.

"(E) Expertise in specific regional climate characteristics which impact the effectiveness of green transportation infrastructure technologies and practices.

"(F) Demonstrated ability to disseminate results of research and education programs through a statewide or regionwide continuing education program.

"(G) The strategic plan the recipient proposes to carry out under the grant.

"(d) ACTIVITIES.—The types of activities the Secretary may support under this section include the following:

"(1) Research and development of innovative technologies, construction techniques, or best management processes that mitigate the environmental impact of transportation infrastructure, including—

"(A) assessments of the lifecycle environmental impact of local existing or planned transportation infrastructure;

"(B) integration of green transportation infrastructure elements into existing transportation or waste water management systems; and

"(C) research, development, testing, and evaluation of new technologies or best management practices.

"(2) Establishment and operation of a regional technology transfer program to disseminate information on new technologies and best management practices to State and local governments, institutions of higher learning, and private industry in the region.

"(3) Study of the impact of State, local, and Federal regulations on the implementation of green transportation infrastructure technologies and practices. These studies shall include collaboration with appropriate Federal agencies and industries to evaluate the effect of and possible changes to Federal and State regulations that impede implementation of green transportation infrastructure.

"(4) Public education campaigns to raise awareness of the benefits of green transportation infrastructure technologies, including activities to raise awareness and foster collaboration among regional governments, private industry, and other public and private stakeholders.

"(e) ANNUAL MEETING.—The Secretary shall convene an annual meeting of the Centers and consortia receiving grants pursuant to this section in order to foster evaluation, collaboration, and communication among participants and disseminate best management practices.

"(f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary to carry out this section $6,000,000 for each of the fiscal years 2009 and 2010. Amounts appropriated pursuant to this section shall be in addition to amounts otherwise appropriated for university transportation centers established pursuant to section 5505 or 5506.

"(g) DEFINITION.—In this section, the term 'green transportation infrastructure' includes infrastructure that—

"(1) preserves and restores natural processes, landforms (such as floodplains), natural vegetated stream side buffers, wetlands, or other topographical features that can slow, filter, and naturally store stormwater runoff and floodwaters for future water supply and recharge of natural aquifers;

"(2) utilizes natural design techniques that infiltrate, filter, store, evaporate, and detain water close to its source;

"(3) minimizes the use of impervious surfaces in order to slow or infiltrate precipitation;

"(4) minimizes lifecycle energy consumption, including during construction, maintenance, use by vehicles, and destruction and recycling; and

"(5) minimizes lifecycle air pollution.".

(b) CONFORMING AMENDMENT.—The table of sections for such subchapter is amended by inserting after the item relating to section 5505 the following new item:

"5505A. Regional Green Transportation Research Centers.".

SEC. 4. GREEN TRANSPORTATION INFRASTRUCTURE AMENDMENTS.

Section 504 of title 23, United States Code, is amended—

(1) in subsection (a)(3)—

(A) in subparagraph (A)(ii)—

(i) by striking "and" at the end of subclause (V);

(ii) by striking the period at the end of subclause (VI) and inserting "; and"; and

(iii) by adding at the end the following new subclause:

"(VII) the use of green transportation infrastructure (as defined in section 5505A(g) of title 49) for environmental protection and mitigating environmental impacts of transportation construction."; and

(B) by adding at the end the following new subparagraph:

"(D) INTERAGENCY COORDINATION.—The Institute shall coordinate the development of curriculum and courses with other Federal agencies with expertise in the course subject areas."; and

(2) in subsection (b)(2)(A)(i) by striking "and traffic safety countermeasures" and inserting "traffic safety countermeasures, and options with respect to green transportation infrastructure (as defined in section 5505A(g) of title 49)".

II. PURPOSE

The purpose of this bill is to expand the use of green transportation infrastructure technologies through university research programs, public awareness campaigns, and training and technology transfer programs for builders and transportation policymakers. The programs authorized in this bill are carried out by the Research and Innovative Technology Administration and Federal Highway Administration of the U.S. Department of Transportation.

III. BACKGROUND AND NEED FOR LEGISLATION

ENVIRONMENTAL PROBLEMS ASSOCIATED WITH RUNOFF

Infrastructure, such as roads and parking lots, comprised of surfaces that are impervious to water, can have significant impacts on an area's natural hydrology, potentially resulting in flooding, pollution, or aquatic ecosystem destruction. Stormwater runoff washes over agricultural land, lawns, urban areas, and other types of human land-use areas, introducing chemicals like fertilizers, heavy metals, and harmful bacteria into water ecosystems such as streams, lakes, and rivers. Transportation infrastructure is a major contributor to this type of pollution. This type of non-localized pollution is responsible for over 80 percent of the contamination of the nation's surface water. Thus, development of new transportation infrastructure has a significant and far-ranging environmental impact.

GREEN TRANSPORTATION INFRASTRUCTURE

To be effective in countering the negative impact of rainfall runoff, mitigation measures must meet the goals of reducing the speed and volume of flow and treating or reducing pollutants. Green transportation infrastructure uses innovative materials, structural measures, and design techniques to address these goals. Structural measures are installations like infiltration basins and trenches, detention and retention ponds, constructed wetlands, vegetated swales and filter strips, and filtration systems. Stormwater managers generally choose a treatment by evaluating the amount of land available, the cost of implementation, operation and maintenance of the technology, and treatment objectives such as cleanliness. However, many local governments are also constrained by environmental regulations that stipulate specific methods for reducing water pollution, and are unable to include innovative green infrastructure technologies and techniques in their stormwater management plans.

CURRENT FEDERAL PROGRAMS

While most of the decisions regarding implementation of green transportation infrastructure are made at the state and local level, there are Federal programs addressing the issue of non-point source water pollution control in transportation infrastructure. The Green Highways Partnership (GHP) is the primary Federal vehicle for encouraging the use of green transportation infrastructure by state and local governments and private industry. EPA and FHWA are the main Federal participants in the partnership, which includes state departments of transportation, trade organizations, municipal governments, and non-profit organizations. The Partnership's activities focus on planning and design, construction, and operation and maintenance of green transportation infrastructure, and include pilot projects that demonstrate cost-effective, environmentally-sound, transportation infrastructure technologies that meet state performance requirements. There are also additional ongoing programs at the U.S. Department of Transportation and EPA in support of research, development, and transfer of green transportation infrastructure technologies.

REMAINING CHALLENGES

Though research has shown significant benefits in terms of stormwater management and control of non-point source water pollution, technologies such as bioswales and pervious pavement have not been adopted in many jurisdictions or by significant numbers of private entities. There are numerous barriers to full adoption of green infrastructure, including technical problems, regulatory challenges, and slow industry adoption of new practices. The installation of green transportation infrastructure can be impeded by problems of high cost and availability of space for technologies. Climate conditions can also present unique challenges to implementation; for example, in areas where very cold weather is common, technologies that retain water for slow filtration are susceptible to freezing. Also, the construction industry tends to be risk-averse, and hence reluctant to adopt technologies that may be considered experimental or unproven because of concerns about high cost, reliability, maintenance, or simply confusion about the best products to use. The slow adoption of these technologies has also led to a shortage of trained contractors who are able to properly design and install integrated systems, making implementation more difficult and costly.

Though Federal, state, and local government agencies have taken an active role in promoting the use of green transportation infrastructure, those same entities have often erected regulatory barriers which prevent widespread implementation. For example, though the Office of Water has been a strong advocate for green infrastructure projects, there are regulatory barriers internal to the EPA that prevents those projects from moving forward. The Clean Water Act, under the National Pollutant Discharge Elimination System (NPDES) permit program, gives EPA the authority to regulate sources of water that release pollutants into ground and surface water. The program is administered on a regional level, and regional administrators have discretion in classifying green infrastructure technologies that serve as sources of water covered by

NPDES. If technologies such as pervious pavement or bioswales, which filter runoff before it flows into the ground or surface water, are considered "point sources" then EPA regulations that require permitting procedures act as a significant disincentive to use these technologies.

State and local authorities can sometimes also be impediments to implementation of green transportation infrastructure. Unlike Federal laws that specifically disallow the use of green technologies without extensive permitting, state and local authorities tend to fail to explicitly allow their use. As a result, governments or private companies within the jurisdiction who propose the use of green transportation infrastructure are not given approval simply because the innovative technologies have not been previously considered by the regulating authority. The problem then becomes self-perpetuating, as these local governments block all potential demonstration projects, and continue to deny builders permits on the basis that there have been no successful demonstration projects. While many cities have acted as leaders in the green transportation infrastructure initiative, the challenge remains to greatly expand its acceptance by local jurisdictions.

OPTIONS FOR PROMOTING IMPLEMENTATION OF GREEN TRANSPORTATION INFRASTRUCTURE

One of the primary reasons policymakers and builders resist incorporating green transportation infrastructure technologies into their design plans is lack of understanding of the variety of uses and their effectiveness in local environments. Insufficient data and information about its effectiveness in mitigating pollution are disincentives for incorporating green infrastructure into stormwater management systems because of the need for accountability for expenditures of public funds. Also, there are still relatively few engineers trained in design, installation, and maintenance methods, which prevents even interested localities from implementing green infrastructure plans.

The U.S. Department of Transportation's University Transportation Centers, authorized under the Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users (SAFETEA–LU), are uniquely suited to meet the research needs to fill the gaps in data and engineering information that prevent the widespread implementation of green transportation infrastructure projects. This program funds university research centers around the country to focus on state of the art transportation research and workforce development. These Centers bring together experts in multidisciplinary fields to address transportation challenges including congestion, safety issues, and energy efficiency. A number of Centers currently highlight sustainability as the theme of their research projects, and green transportation infrastructure is a natural component of a sustainability portfolio.

The National Highway Institute (NHI), part of the Federal Highway Administration, is a key resource for transportation workers to learn about new construction and design concepts, and as such is an excellent partner for technology transfer from the University Transportation Centers. NHI has provided training for transportation workers in diverse subjects, including improving road safety for pedestrians and bicyclists, managing roads in inclement weath-

er, and traffic management. Green transportation infrastructure curriculum would augment NHI's excellent course offerings by providing builders with guidance on design, construction, and maintenance of green infrastructure from a trusted source. Using NHI to deliver information on green infrastructure technology and processes would help overcome some of the biases against this type of design and ensure that all localities are able to implement the most effective green infrastructure systems for their unique needs.

IV. Hearing Summary

On Thursday, May 10, 2007, the Subcommittee on Technology and Innovation held a hearing to examine options for construction technologies and materials available for transportation infrastructure that contribute to stormwater management and control of nonpoint source water pollution. Witnesses testified on the barriers to widespread implementation of green transportation infrastructure and made recommendations for Federal action to promote its use.

The Subcommittee heard from Ms. Gloria Shepherd, Associate Administrator for Planning, Environment, and Realty at the Federal Highway Administration (FHWA) of the U.S. Department of Transportation (DOT); Mr. Benjamin Grumbles, Assistant Administrator for the Office of Water at the U.S. Environmental Protection Agency (EPA); Mr. Sam Adams, Commissioner of Public Utilities for the City of Portland, Oregon; Mr. Dan Huffman, managing director for national resources for the National Ready Mixed Concrete Association (NRMCA); and Mr. Hal Kassoff, senior vice president for sustainable development at Parsons Brinckerhoff. The witnesses discussed the various types of green infrastructure available for use in the transportation sector and the environmental and cost benefits that infrastructure provides. They also noted the various technical, regulatory, and social barriers to implementation of green transportation infrastructure systems and suggested Federal support for research and development to provide better data and best practices for designing and building these systems.

V. Committee Actions

The Subcommittee on Technology and Innovation heard testimony in the 110th Congress relevant to the programs authorized in H.R. 5161 at a hearing held May 10, 2007. During those hearings, the Subcommittee heard testimony from the Associate Administrator for Planning, Environment and Realty at the Federal Highway Administration; the Assistant Administrator for Water at the Environmental Protection Agency, and representatives of local government and industry.

On January 29, 2008, Representative David Wu, Chairman of the Subcommittee on Technology and Innovation of the Committee on Science and Technology, introduced H.R. 5161, the Green Transportation Infrastructure Research and Technology Transfer Act, a bill to provide for the establishment of Green Transportation Infrastructure Research and Technology Transfer Centers, and for other purpose.

The Subcommittee on Technology and Innovation met to consider H.R. 5161 on Thursday, February 7, 2008 and considered the following amendment to the bill:

1. Mr. Ehlers offered an amendment to Section 3 to limit eligibility for grants under that section to existing University Transportation Centers receiving grants under section 5505 or 5506 of the U.S. Code, and to authorize $6 million in appropriations for fiscal years 2009 and 2010. The amendment was agreed to by voice vote.

Mr. Hall moved that the Subcommittee favorably report the bill, H.R. 5161, as amended, to the full Committee. The motion was agreed to by a voice vote.

The Committee on Science and Technology met to consider H.R. 5161 on February 27, 2008 and considered the following amendments to the bill:

1. Mr. Wu offered an amendment to Section 3 to allow universities that are not current University Transportation Center (UTC) program participants to form consortia with existing UTCs to apply for university research grants. The amendment was agreed to by voice vote.

2. Mr. Inglis offered an amendment to authorize the Secretary of Transportation to require cost-sharing by industry and consortia partners for research as part of the green transportation infrastructure component of the University Transportation Centers program. The amendment was withdrawn.

3. Mr. Inglis offered an amendment to specify that design and building code restrictions can impede implementation of green transportation infrastructure, and to recommend that grant recipient conferences offer opportunities for peer review and evaluation. The amendment was agreed to by voice vote.

Mr. Baird moved that the Committee favorably report the bill, H.R. 5161, as amended to the House with the recommendation that the bill, as amended, do pass, and that the staff be instructed to make technical and conforming changes to the bill, as amended, and prepare the legislative report and that the Chairman take all necessary steps to bring the bill before the House for consideration. The motion was agreed to by voice vote.

VI. Summary of Major Provisions of the Bill

H.R. 5161 authorizes the U.S. Department of Transportation to provide grants to national and regional university transportation centers to carry out research and technology transfer in the field of green transportation infrastructure. Applicants are limited to existing centers receiving grants under section 5505 or 5506 of the U.S. Code or consortia of universities including at least one previously authorized university transportation center. Grant recipients are selected via a merit-based competition with preference given to those institutions demonstrating expertise in the environmental effects of transportation infrastructure; research capacity and technology transfer resources; partnerships with government and industry; and other attributes. Authorized activities include research and development of innovative infrastructure technologies; establishment of regional technology transfer programs; studies of the impact of government regulations on implementation of green infrastructure programs; and public education campaigns aimed at public and private stakeholders. The bill requires the Secretary of Transportation to convene an annual meeting of Centers to foster collaboration and dissemination of findings. H.R. 5161 authorizes $6 million per fiscal year for fiscal years 2009 and 2010 for grants

to the university transportation centers. To promote technology transfer, the bill requires the Federal Highway Administration to incorporate education and training on green transportation infrastructure into its National Highway Institute curriculum which is offered to transportation workers nationwide. Finally, the bill defines green transportation infrastructure as infrastructure that preserves and restores natural processes and landforms, uses natural design techniques to manage stormwater; and minimizes lifecycle energy consumption and air pollution.

VII. SECTION-BY-SECTION ANALYSIS OF THE BILL (BY SECTION)

Sec. 1: Short title

"Green Transportation Infrastructure Research and Technology Transfer Act."

Sec. 2: Findings

Finds that innovative transportation infrastructure can be used to mitigate water pollution, and that technical and social barriers to implementing these technologies can be overcome with research and technology transfer assistance from the U.S. Department of Transportation.

Sec. 3: Regional Green Transportation Research Centers

Amends the existing authorization for university transportation centers or consortia to provide grants focusing on green transportation infrastructure in regions around the U.S. The objectives of these grants include developing innovative transportation infrastructure technologies that mitigate environmental damage from runoff, and encouraging governments to adopt these technologies and integrate them into existing infrastructure through technology transfer programs.

Activities will include: 1) research and development of green infrastructure technologies, techniques and best management practices; 2) establishment of a technology transfer program; 3) assessment of the impact of regulations on the adoption of green transportation infrastructure locally; and 4) public education efforts for local decision makers.

Grant recipients will be selected on a competitive basis with preference given to those applicants demonstrating expertise in transportation and green infrastructure research, existing partnerships with state and local governments, and technology transfer programs. Only those applicants currently receiving University Transportation Center funding, or consortia including at least one existing University Transportation Center, will be eligible for grants.

Defines green transportation infrastructure as infrastructure that preserves and restores natural processes and landforms, uses natural design techniques to manage stormwater; and minimizes lifecycle energy consumption and air pollution.

Authorizes $6 million per year for fiscal years 2009 and 2010 to carry out this section.

Sec. 4: Green transportation infrastructure amendments

Amends authorization of the Federal Highway Administration's National Highway Institute (NHI) to include green transportation

infrastructure as a course topic. Instructs NHI to collaborate with other federal agencies with expertise in this field when designing curriculum.

VIII. COMMITTEE VIEWS

The Committee strongly believes that the Federal government must take an active role in promoting and supporting the use of low cost, energy efficient, innovative, green transportation infrastructure solutions for mitigating water pollution by state and local governments. Currently, while the U.S. Environmental Protection Agency (EPA) and U.S. Department of Transportation (DOT) are funding research and education and facilitating collaboration on green infrastructure projects among some stakeholders, there is not a coordinated effort by the Federal government to ensure that data and best practices are available to end users. Additionally, some Federal regulations impede the use of green transportation infrastructure, thereby providing strong disincentives to State and local government investments in these technologies by state and local governments.

Though additional research on the benefits of green transportation infrastructure is needed to identify appropriate systems for a variety of users, existing projects around the United States have demonstrated that these techniques and technologies have great promise for mitigating water pollution from roads and other paved surfaces. Low cost, green infrastructure installations in Portland, Oregon; Chicago, Illinois, and elsewhere have slowed runoff and cut down on pollution while maintaining the surrounding aesthetic characteristics.

University-based research is an essential component of any Federal effort to encourage the adoption of green transportation infrastructure by state and local governments. Local policymakers and industry representatives agree that a major impediment to implementing green infrastructure projects is the lack of data about effectiveness in mitigating pollution, as well as a lack of region-specific engineering and design guidance. The Committee believes that University Transportation Centers (UTCs), which are skilled in both transportation-related R&D and technology transfer, are the most appropriate resource for users of green transportation infrastructure.

H.R. 5161 authorizes $6 million in annual funding to the Department of Transportation for research grants to existing UTCs and consortia of institutions that include at least one UTC. The Committee intends for the authorized funding to support research grants to approximately twelve awardees; ten regional Centers and two national Centers. The regional Centers will carry out research and technology transfer programs customized to the needs of State and local governments and industry. The grantees should involve government representatives, associations and coalitions of regional governments, and industry groups in their research planning to ensure that the Centers efforts will address the needs of end users.

The National Highway Institute (NHI) also has an important role in technology transfer to the transportation industry. Witnesses before the Committee noted that innovations in transportation are often slow to be adopted because of reticence within the industry to change long-standing practices. NHI has an established

relationship with the transportation industry, serving as a source of mandatory and elective education and training for officials and contractors. It can act as a trusted resource to promote and normalize the use of green transportation infrastructure through the addition of curriculum on design and installation.

IX. Cost Estimate

A cost estimate and comparison prepared by the Director of the Congressional Budget Office under section 402 of the Congressional Budget Act of 1974 has been timely submitted to the Committee on Science and Technology prior to the filing of this report and is included in Section X of this report pursuant to House Rule XIII, clause 3(c)(3).

H.R. 5161 does not contain new budget authority, credit authority, or changes in revenues or tax expenditures. Assuming that the sums authorized under the bill are appropriated, H.R. 5161 does authorize additional discretionary spending, as described in the Congressional Budget Office report on the bill, which is contained in Section X of this report.

X. Congressional Budget Office Cost Estimate

H.R. 5161 would direct the Federal Highway Administration (FHWA) to make grants to institutions of higher education to carry out research and development on green transportation infrastructure. Under the bill, the term green transportation infrastructure includes infrastructure that preserves natural processes, treats water close to its source, minimizes the use of impervious surfaces, and minimizes energy use and air pollution. Assuming appropriation of the specified amounts, CBO estimates that implementing H.R. 5161 would cost $12 million over the 2009–2013 period.

The bill would authorize the appropriations of $6 million for each of fiscal years 2009 and 2010. H.R. 5161 would direct FHWA to make grants to university transportation centers to carry out research and development regarding transportation infrastructure that has a limited impact on the natural environment. Under current law, there are 60 such centers, and H.R. 5161 would require that 10 of them receive such grants.

Enacting the legislation would not affect direct spending or revenues. The bill contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act and would impose no costs on state, local, or tribal governments.

The CBO staff contact for this estimate is Sarah Puro. This estimate was approved by Peter H. Fontaine, Assistant Director for Budget Analysis.

XI. Compliance With Public Law 104–4

H.R. 5161 contains no unfunded mandates.

XII. Committee Oversight Findings and Recommendations

The oversight findings and recommendations of the Committee on Science and Technology are reflected in the body of this report.

XIII. Statement on General Performance Goals and Objectives

Pursuant to clause (3)(c) of House rule XIII, the goals of H.R. 5161 are to promote the use of green transportation infrastructure for stormwater management and pollution mitigation through programs to carry out research and development, collect data, develop best practices, and support technology transfer to government and private stakeholders.

XIV. Constitutional Authority Statement

Article I, section 8 of the Constitution of the United States grants Congress the authority to enact H.R. 5161.

XV. Federal Advisory Committee Statement

H.R. 5161 does not establish nor authorize the establishment of any advisory committee.

XVI. Congressional Accountability Act

The Committee finds that H.R. 5161 does not relate to the terms and conditions of employment or access to public services or accommodations within the meaning of section 102(b)(3) of the Congressional Accountability Act (Public Law 104–1).

XVII. Earmark Identification

H.R. 5161 does not contain any congressional earmarks, limited tax benefits, or limited tariff benefits as defined in clause 9(d), 9(e), or 9(f) of rule XXI.

XVIII. Statement on Preemption of State, Local, or Tribal Law

This bill is not intended to preempt any state, local, or tribal law.

XIX. Changes in Existing Law Made by the Bill, As Reported

In compliance with clause 3(e) of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

TITLE 49, UNITED STATES CODE

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SUBTITLE III—GENERAL AND INTERMODAL PROGRAMS

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CHAPTER 55—INTERMODAL TRANSPORTATION

SUBCHAPTER I—GENERAL

SEC. 5505A. REGIONAL GREEN TRANSPORTATION RESEARCH CENTERS.

(a) GREEN TRANSPORTATION INFRASTRUCTURE RESEARCH AND TECHNOLOGY TRANSFER.—The Secretary of Transportation shall make grants to university transportation centers established pursuant to section 5505 or 5506, or to consortia consisting of such a center and one or more institutions of higher education, to carry out research and development and technology transfer activities in the field of green transportation infrastructure.

(b) OBJECTIVES.—Grant funds provided under this section may be used to—

(1) generate innovative and cost-effective approaches to mitigating environmental impacts throughout the lifecycle of transportation infrastructure;

(2) develop holistic approaches to integrating green infrastructure into existing wastewater management systems;

(3) promote adoption of innovative green transportation infrastructure systems by State and local governments and the private sector; and

(4) manage technology transfer programs to disseminate information on best management practices in the area of green transportation infrastructure to State and local governments and the private sector.

(c) SELECTION OF GRANT RECIPIENTS.—

(1) APPLICATIONS.—In order to be eligible to receive a grant under this section, a university transportation center or consortium shall submit to the Secretary an application that is in such form and contains such information as the Secretary may require.

(2) MERIT REVIEW; PRIORITY.—Grants shall be awarded under this section on a merit-reviewed competitive basis.

(3) REGIONAL CENTERS.—To the greatest extent practicable, the Secretary shall ensure that there is at least one grant recipient from each of the 10 United States Government regions that comprise the Standard Federal Regional Boundary System.

(4) SELECTION CRITERIA.—Except as otherwise provided by this section, the Secretary shall select each recipient of a grant under this section through a merit-reviewed competitive process on the basis of the following:

(A) Demonstrated expertise in transportation research and environmental impacts of transportation infrastructure.

(B) Demonstrated research capacity and technology transfer resources.

(C) Existing or proposed partnerships with State and local governments and private industry involved in transportation-related construction, environmental impact miti-

gation, or other areas related to green transportation infrastructure research to help set research priorities and facilitate technology transfer.

(D) Capability to provide leadership in developing national best management practices, regional best management practices, or both in the field of green transportation infrastructure.

(E) Expertise in specific regional climate characteristics which impact the effectiveness of green transportation infrastructure technologies and practices.

(F) Demonstrated ability to disseminate results of research and education programs through a statewide or regionwide continuing education program.

(G) The strategic plan the recipient proposes to carry out under the grant.

(d) ACTIVITIES.—The types of activities the Secretary may support under this section include the following:

(1) Research and development of innovative technologies, construction techniques, or best management processes that mitigate the environmental impact of transportation infrastructure, including—

(A) assessments of the lifecycle environmental impact of local existing or planned transportation infrastructure;

(B) integration of green transportation infrastructure elements into existing transportation or waste water management systems; and

(C) research, development, testing, and evaluation of new technologies or best management practices.

(2) Establishment and operation of a regional technology transfer program to disseminate information on new technologies and best management practices to State and local governments, institutions of higher learning, and private industry in the region.

(3) Study of the impact of State, local, and Federal regulations on the implementation of green transportation infrastructure technologies and practices. These studies shall include collaboration with appropriate Federal agencies and industries to evaluate the effect of and possible changes to Federal and State regulations that impede implementation of green transportation infrastructure.

(4) Public education campaigns to raise awareness of the benefits of green transportation infrastructure technologies, including activities to raise awareness and foster collaboration among regional governments, private industry, and other public and private stakeholders.

(e) ANNUAL MEETING.—The Secretary shall convene an annual meeting of the Centers and consortia receiving grants pursuant to this section in order to foster evaluation, collaboration, and communication among participants and disseminate best management practices.

(f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary to carry out this section $6,000,000 for each of the fiscal years 2009 and 2010. Amounts appropriated pursuant to this section shall be in addition to amounts otherwise

appropriated for university transportation centers established pursuant to section 5505 or 5506.

(g) DEFINITION.—In this section, the term "green transportation infrastructure" includes infrastructure that—

(1) preserves and restores natural processes, landforms (such as floodplains), natural vegetated stream side buffers, wetlands, or other topographical features that can slow, filter, and naturally store stormwater runoff and floodwaters for future water supply and recharge of natural aquifers;

(2) utilizes natural design techniques that infiltrate, filter, store, evaporate, and detain water close to its source;

(3) minimizes the use of impervious surfaces in order to slow or infiltrate precipitation;

(4) minimizes lifecycle energy consumption, including during construction, maintenance, use by vehicles, and destruction and recycling; and

(5) minimizes lifecycle air pollution.

* * * * * * *

TITLE 23, UNITED STATES CODE

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CHAPTER 5—RESEARCH, TECHNOLOGY, AND EDUCATION

* * * * * * *

§ 504. Training and education

(a) NATIONAL HIGHWAY INSTITUTE.—

(1) * * *

* * * * * * *

(3) COURSES.—

(A) IN GENERAL.—The Institute shall—

(i) * * *

(ii) continually develop courses relating to the application of emerging technologies for—

(I) * * *

* * * * * * *

(V) expediting the planning and development of transportation projects; **[**and**]**

(VI) the intermodal movement of individuals and freight**[**.**]**; *and*

(VII) the use of green transportation infrastructure (as defined in section 5505A(g) of title 49) for environmental protection and mitigating environmental impacts of transportation construction.

* * * * * * *

(D) INTERAGENCY COORDINATION.—The Institute shall coordinate the development of curriculum and courses with other Federal agencies with expertise in the course subject areas.

* * * * * * *

(b) LOCAL TECHNICAL ASSISTANCE PROGRAM.—

(1) * * *

(2) GRANTS, COOPERATIVE AGREEMENTS, AND CONTRACTS.—The Secretary may make grants and enter into cooperative agreements and contracts to provide education and training, technical assistance, and related support services to—

(A) assist rural, local transportation agencies and tribal governments, and the consultants and construction personnel working for the agencies and governments, to—

(i) develop and expand expertise in road and transportation areas (including pavement, bridge, concrete structures, intermodal connections, safety management systems, intelligent transportation systems, incident response, operations, [and traffic safety countermeasures] *traffic safety countermeasures, and options with respect to green transportation infrastructure (as defined in section 5505A(g) of title 49)*);

* * * * * * *

XX. COMMITTEE RECOMMENDATIONS

On February 27, 2008, the Committee on Science and Technology favorably reported the Green Transportation Infrastructure Research and Technology Transfer Act by a voice vote, and recommended its enactment.

XXI: PROCEEDINGS OF THE MARKUP BY THE SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION ON H.R. 5161, THE GREEN TRANSPORTATION INFRASTRUCTURE RESEARCH AND TECHNOLOGY TRANSFER ACT

THURSDAY, FEBRUARY 7, 2008

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION,
COMMITTEE ON SCIENCE,
Washington, DC.

The Subcommittee met, pursuant to call, at 10:15 a.m., in Room 2318 of the Rayburn House Office Building, Hon. David Wu [Chairman of the Subcommittee] presiding.

Chairman WU. Good morning. The Subcommittee on Technology and Innovation will now come to order. Pursuant to notice, the Subcommittee on Technology and Innovation meets to consider the following measures: H.R. 4847, the *United States Fire Administration Reauthorization Act of 2007.* It appears to me that we are no longer in 2007. Is that going to be an administrative amendment? Terrific—as read, 2007; H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act,* and H.R. 3916, *To provide for the next generation of border and maritime security technologies.*

We will now proceed with the markup, beginning with opening statements, and the Chairman recognizes himself.

First of all, I would like to welcome everyone to the first Science and Technology Committee markup of 2008. We had a very productive first session in 2007, and I am looking forward to working with my colleagues to pass more good legislation this year. Today we will be considering three bills, each of which deals with protecting and enhancing our nation's critical infrastructure our environment. H.R. 4847, introduced by the Vice Chair of the Subcommittee, Representative Mitchell, the gentleman from Arizona, and with Subcommittee Ranking Member Gingrey as an original co-sponsor, reauthorizes the United States Fire Administration. USFA is an important resource for our nation's firefighters, providing training, fire safety awareness for the public, data collection services, and fire-suppression and prevention research and technology. I am pleased we are considering H.R. 4847 today, a bill worked on hard by both Republicans and Democrats, and will authorize USFA to continue its role as a leader and resource for the Nation's fire serv-

ice, and help enable firefighters to meet the dynamic and growing mission of the fire service in the 21st century.

We will also be considering H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act.* As you may remember, this past May, we heard from the Environmental Protection Agency, the U.S. Department of Transportation, as well as local governments and industry. They agreed that we have a great opportunity in this country to manage and protect our water resources through the use of innovative technologies and also serve as transportation infrastructure and as means for managing and filtering stormwater runoff.

The EPA witness, Assistant Administrator for Water, Ben Grumbles, is already making a great effort to promote the expanded use of such infrastructure around the U.S., but he and the other witnesses found a number of barriers, which this bill works to overcome through research and education programs at the U.S. Department of Transportation.

Finally, H.R. 3916, introduced by Ranking Member Hall, authorizes programs at the Department of Homeland Security to improve the technology used to protect the Nation's borders and ports of entry. Border security officers have an incredibly difficult job. It is part law enforcement, part first responder, part diplomat, and part detective. It is clear that these agents need the help of new technology to do their jobs better and to make our borders more secure. Technology can act as additional eyes and ears for Border Patrol agents.

This bill has special importance for me, as these technologies help reinforce security efforts at ports in addition to land borders. The Port of Portland processed more than fourteen million tons of cargo in 2007, and our international airport also screened in a number of people coming in from overseas. I know that the hard-working officers managing security at the Port of Portland could use the assistance of these innovative technologies.

These three bills share an important common theme: the use of research and technology to solve some of our nation's most pressing problems. I am eager to join my colleagues on both sides of the aisle in advancing these important objectives.

[The prepared statement of Chairman Wu follows:]

PREPARED STATEMENT OF CHAIRMAN DAVID WU

First of all, I'd like to welcome everyone to the first Science and Technology Committee markup of 2008. We had a very productive first session, and I'm looking forward to working with my colleagues to pass good legislation this year. Today we will be considering three bills, each of which deals with protecting and enhancing our nation's critical infrastructure and environment.

H.R. 4847, introduced by the Vice Chair of the Subcommittee, Representative Mitchell, and with Subcommittee Ranking Member Gingrey as an original co-sponsor, reauthorizes the U.S. Fire Administration. The U.S. Fire Administration is an important resource for our nation's firefighters, providing training, fire safety awareness for the public, data collection services, and fire suppression and prevention research and technology.

I am pleased we are considering H.R. 4847 today, a bipartisan piece of legislation that will authorize USFA to continue its role as a leader and resource for the Nation's firefighters, and help firefighters save lives and meet the dynamic mission of the fire service in the 21st century.

We will also be considering H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act.* This past May this subcommittee held a hearing that included witnesses from the Environmental Protection Agency, the

U.S. Department of Transportation, and representatives of local government and industry. The witnesses agreed that we have a great opportunity to manage and protect our nation's water resources by using of innovative techniques and technologies that simultaneously serve as transportation infrastructure and as means for managing and filtering stormwater.

The EPA witness, Assistant Administrator for Water Ben Grumbles, is already making great efforts to promote the expanded use of green infrastructure around the U.S. But he and the other witnesses described a number of barriers, which this bill works to overcome through research and education efforts at the U.S. Department of Transportation.

Finally, H.R. 3916, introduced by Ranking Member Hall, authorizes programs at the Department of Homeland Security to improve the technology used to protect the Nation's borders and ports of entry. Border security officers have an incredibly difficult job. It is part law enforcement, part first responder, part diplomat, and part detective. It is clear that these agents need the help of new technology to do their jobs better and to make our borders more secure. Technology can act as additional eyes and ears for Border Patrol agents.

This bill has special importance for me, as these technologies help reinforce security efforts at ports in addition to land borders. The Port of Portland processed more than fourteen million tons of cargo in 2007, and I know that the hardworking officers managing security there could use the assistance these innovative technologies would provide.

These three bills share an important common theme—the use of research and technology to solve some of our nation's most pressing problems. I'm eager to join my colleagues on both sides of the aisle in advancing this important legislation.

Chairman WU. And now, I recognize the Ranking Member of the Subcommittee, Dr. Gingrey, the gentleman from Georgia, to present his opening remarks.

Mr. GINGREY. Chairman Wu, I thank you for holding this subcommittee markup on the three pieces of legislation that address a wide range of issues under the jurisdiction of the Technology and Innovation Subcommittee. We have the privilege today to be conducting the Science Committee's first official business of the year, and the 2nd session of 110th Congress.

Today, we consider H.R. 4847, the *United States Fire Administration Reauthorization Act of 2007;* H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act;* and finally, H.R. 3916, a border-security technology bill.

As we consider each piece of legislation, we will reaffirm that the Technology and Innovation Subcommittee plays an important role in a number of issues urgently facing our country. Today, we will be examining issues facing first responders in local communities on a daily basis, the impact that our transportation infrastructure has on the contamination of our water supplies, and developing the next-generation technologies for the Federal Government to keep our borders secure.

Mr. Chairman, I want to also thank you for the way the Subcommittee has conducted the process by which each piece of legislation is being considered today. Each of the bills being marked up today has gone through a—what we all refer to and know as regular order. The Subcommittee held an individual hearing on each bill, last year in 2007, and that provided Members with the opportunity to ask questions of these experts, in order for us to be better informed as we crafted each bill to, hopefully, perfection or near-perfection.

Furthermore, Mr. Chairman, I want to thank you. I want to thank you for allowing us to work in a bipartisan manner on each piece of legislation. As these three bills demonstrate, we can accomplish more for the American people when Republicans and Demo-

crats work together. Mr. Chairman, I applaud you and your staff for working with me and my Republican staff on the Committee to balance all perspectives to make these bills sound policy.

So Mr. Chairman, I hope this markup is an indication of how we can expect the Technology and Innovation Subcommittee to continue to operate throughout the year 2008. I look forward to working with you on these issues that we will discuss and debate today, as well as other matters that will come before the Subcommittee for the rest of this year.

And with that, Mr. Chairman, I yield back the balance of my time.

[The prepared statement of Mr. Gingrey follows:]

PREPARED STATEMENT OF REPRESENTATIVE PHIL GINGREY

Chairman Wu, I want to thank you for holding this subcommittee mark-up on three pieces of legislation that address a wide range of issues under the jurisdiction of the Technology and Innovation Subcommittee. We have the privilege today to be conducting the Science Committee's first official business of this year and the 2nd Session of the 110th Congress.

Today, we consider H.R. 4847, the *United States Fire Administration Reauthorization Act of 2007;* H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act;* and H.R. 3916, a border security technology bill.

As we consider each piece of legislation, we will reaffirm that the Technology and Innovation Subcommittee plays an important role in a number of issues currently facing our country. Today, we will be examining issues facing first responders in local communities on a daily basis; the impact that our transportation infrastructure has on the contamination of our water supplies; and developing next generation technologies for the Federal Government to keep our borders secure.

Mr. Chairman, I want to also thank you for the way the Subcommittee has conducted the process by which each piece of legislation is being considered today. Each of the bills being marked up today has gone through regular order. The Subcommittee held an individual hearing on each bill in 2007, providing Members the opportunity to ask questions of the experts in order for us to be better informed as we crafted each bill. Furthermore Mr. Chairman, I also want to thank you for allowing us to work in a bipartisan manner on each piece of legislation. As these three bills demonstrate, we can accomplish more for the American people when Republicans and Democrats work together. Mr. Chairman, I applaud you and your staff for working with me and the Republican staff on the Committee to balance all perspectives to make these bills into sound policy. Mr. Chairman, I hope that this markup is an indication of how we can expect the Technology and Innovation Subcommittee to continue to operate throughout 2008. I look forward to working with you on these issues that we will discuss and debate today, as well as other matters that will come before the Subcommittee for the rest of the year.

With that Mr. Chairman, I yield back the balance of my time.

Chairman WU. Thank you very much, Dr. Gingrey, and without objection, Members may place statement may place statements in the record at this point.

We will now move to consider H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act.*

And I yield myself five minutes to describe this bill.

H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act,* authorizes research and education programs within the Federal Highway Administration and the Research and Innovative Technology Administration at university transportation centers.

Green infrastructure includes materials and design techniques that help mitigate water pollution by managing, reducing, and filtering runoff. These programs at the Department of Transportation will advance the understanding of the benefits of green transportation infrastructure and its impact on the environment and help

policy-makers and builders make smart decisions about where and how to include green infrastructure in their transportation systems.

The activities can include research and development of green infrastructure technologies, technology-transfer programs, assessment of the impact of regulations on the adoption of these green technologies at a local level, and education campaigns. The bill also authorizes FWHA to incorporate green infrastructure design-and-construction training in the National Highway Institute curriculum, which is offered to state and local highway contractors and workers.

The green transportation infrastructure is a simple, exciting, potentially cost-saving set of technologies that can help solve substantial pollution problems in our communities while increasing energy efficiency. I look forward to working with Members of the Committee and Subcommittee to pass this legislation. And I now recognize Dr. Gingrey to present any remarks he may have on this legislation.

[The prepared statement of Chairman Wu follows:]

PREPARED STATEMENT OF CHAIRMAN DAVID WU

This past May, the Technology and Innovation subcommittee held a hearing that included witnesses from the Environmental Protection Agency, the U.S. Department of Transportation, and representatives of local government and industry. The witnesses agreed that we have a great opportunity to manage and protect our nation's water resources through the use of innovative techniques and technologies that simultaneously serve as transportation infrastructure and as means for managing and filtering stormwater. Green infrastructure includes materials and design techniques that help mitigate water pollution by managing and filtering runoff. The EPA witness at the May hearing, Assistant Administrator for Water Ben Grumbles, is already making great efforts to promote the expanded use of green infrastructure around the U.S. But he and the other witnesses described a number of barriers to implementing green infrastructure programs around the United States; barriers which this bill works to overcome through research and education efforts at the U.S. Department of Transportation.

H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act,* authorizes research and education programs within the Federal Highway Administration (FHWA) and Research and Innovative Technology Administration (RITA)'s University Transportation Centers.

These new programs at the Department of Transportation will advance the understanding of the benefits of green transportation infrastructure and its impact on the environment, and help policy-makers and builders make smart decisions about where and how to include green infrastructure in their transportation systems. The bill authorizes grants to existing University Transportation Centers for research and development of green infrastructure technologies; technology transfer programs; assessment of the impact of regulations on the adoption of these green technologies at a local level; and education campaigns aimed at local officials and builders.

The bill also authorizes FWHA to incorporate green infrastructure design and construction training in the National Highway Institute (NHI) curriculum which is offered to State and local highway contractors and workers.

Green transportation infrastructure is a simple and exciting set of technologies that can help solve substantial pollution problems in our communities, while increasing energy efficiency and potentially decreasing total cost. I look forward to working with Members of the Committee to pass this bill.

Mr. GINGREY. Thank you, Mr. Chairman, and I commend you for bringing forward this legislation, the *Green Transportation Infrastructure Research and Technology Transfer Act,* that address an overlooked and important water contamination and pollution problem in our country, and I am glad to be working with you on this issue.

While we all know that the Nation's roads and highways are a vital part of our transportation infrastructure, few realize the persistent problem that can be created due to rainwater runoff from these asphalt and concrete pavements. As rainwater flows along the surface of our highways, it accumulates and carries pollutants, such as oil and grease from the vehicles that pass overhead. Left unchecked, this water, along with these pollutants, unfortunately finds its way into our freshwater lakes, our rivers, and our aquifers. This runoff is part of what is known as non-point-source pollution, and it is currently the leading cause of water quality problems. Additionally, these pollutants can have a tremendous impact on freshwater ecosystems and have the potential of becoming a part of drinking water supplies across the country.

Mr. Chairman, the importance of adequate freshwater supplies is not lost on me. The State of Georgia, as I think most of you know, is still suffering from the effects of last year's historic drought and more is predicted for this year. The most serious and immediate problem has been the dwindling water supply at our reservoirs, which are critical to the water supply of millions of people in North Georgia, metropolitan Atlanta, and yes, downstream in the States of Alabama and Florida, and their businesses.

Mr. Chairman, for the areas in the Northwest and Georgia and across the country that have been affected by severe drought over this past year, it is imperative to keep our precious freshwater supplies free from contamination, and I am happy to see that your legislation addresses these very serious issues. H.R. 5161 provides the direction and the means by which existing university transportation centers can develop the technologies and the methods needed to help mitigate water pollution caused by our roads and our highways. Additionally, this legislation provides for the dissemination of information through technology-transfer programs by using grants, partnerships, and collaboration between university transportation centers, this bill works to ensure clean freshwater supplies for our nation by limiting the presence of pollutants caused by runoff from our roads and our highways.

Mr. Chairman, thank you again for bringing forward this legislation, and I urge all of my colleagues on the subcommittee to support H.R. 5161. And I yield back.

Chairman WU. Thank you very much, Dr. Gingrey. Does anyone else wish to be recognized?

I ask unanimous consent that the bill is considered as read and open to amendment at any point and that Members proceed with amendments in the order of the roster. Without objection, so ordered.

The first amendment on the roster is an amendment offered by the gentleman from Michigan, Dr. Ehlers. Are you ready to proceed with your amendment?

Mr. EHLERS. Yes, I have an amendment at the desk.

Chairman WU. The Clerk will report the amendment.

The CLERK. An amendment to H.R. 5161, offered by Mr. Ehlers of Michigan.

Chairman WU. I ask unanimous consent to dispense with the reading. Without objection, so ordered.

I recognize the gentleman from Michigan for five minutes to explain his amendment.

Mr. EHLERS. I thank you, Mr. Chairman, and I do want to indicate my support for the bill and list, in addition to the list of pollutants offered by Mr. Gingrey, who represents the South. I speak on behalf of the frozen North, and we have other pollutants which are used to try to melt the ice, sometimes salt, sometimes other combinations of chemicals, and these also do end up getting into the environment in various ways, so that's an additional reason to support the bill.

My amendment is a relatively minor one, having to do with the technical aspects of the bill, and having the research done, instead of having it open to all universities, my bill would provide that it be done through the 60 university transportation centers which we already have throughout the country. They have been established to perform transportation-related research, and by using the funds from this bill at the transportation centers, you actually can save money because the grants, instead of going to centers which would have to use part of the grant money to establish the mechanisms for research, by sending it to current University Technology centers, you are eliminating some of the overhead that you might encounter if it were made available to all individuals. The university transportation centers have been established for a number of years in some cases, but there are a number of them which were developed just recently as a result of the safety legislation we passed.

I ask for the support of the amendment. I think it would make for the use of the funds from the bill more efficient, and would achieve better results, because it would go to people who are constantly dealing with transportation issues. Also as a Member of the Transportation Committee, I would say that I am sure that if this bill is jointly referred to the Transportation Committee, it would make it much more likely that this bill will zoom through the Transportation Committee without them making major changes to it, so I hope that this will help.

With that, I yield back.

Chairman WU. I thank the gentleman from Michigan, and it is my intention to support the amendment.

Is there any further discussion on the amendment? If not—I recognize the gentleman from Texas.

Mr. HALL. Mr. Chairman, I will be brief. I just want to express my support and the support of this side for the amendment offered by the gentleman from Michigan, Dr. Ehlers.

His amendment improves the legislation by directing the efforts to develop contaminated rainwater runoff mitigation techniques through existing university transportation centers, and that is where we already know the needed expertise exists. And additionally, Dr. Ehlers's amendment also authorizes reasonable funds to accomplish the task of these university transportation centers that are set forth in this bill.

Mr. Chairman, it is a good amendment, and I urge our colleagues on this side to support the amendment, and I yield back the balance of my time.

Chairman WU. Thank you very much, Mr. Hall, and actually, Mr. Hall would you care to yield some of your time before yielding it back to Dr. Ehlers. I believe Dr. Ehlers has——

Mr. HALL. I would be honored to yield. I reserve the balance of my time, and I yield at this time to Dr. Ehlers.

Mr. EHLERS. I thank the gentleman for yielding.

Just a few additional points, not directly relating to the bill, but it is important to recognize the difficulties that we face in what I earlier called the frozen North. There is a lot of news today about Wisconsin having had a big snowfall and freeways to a standstill and so forth. In Michigan, we deal with that amount of snow in a couple of weeks, and it brings unique problems to the North, and particularly unique environmental problems. Currently, as of this week—or as of yesterday, in fact—we received some more snow, and we are, I think, now up to 54 inches in my hometown of Grand Rapids for the season, and we expect to hit 80, perhaps 90. That creates unique demands and creates unique dangers for the environment in the way it is handled. And this is just an example. I am sure in Oregon, you have that in the mountainous areas; in Washington, even more so.

So I think this bill will really be very helpful to these states in dealing with the problem. In addition, Michigan has an incredible freeze/thaw cycle. We get snow, and it melts; we get snow; it melts. And that is murderous for the roads, and so a lot of repairs have to be done, which also have a chance for environmental pollution, because they involve just putting—because you can't lay asphalt in the middle of the winter, it involves putting the asphalt down in a way that means it gets into the environment pretty readily.

So there is a lot of work that needs to be done here, and I commend you for offering this bill, and I thank Mr. Hall for yielding and for his support of the amendment.

Mr. HALL. I really and truly yield back the balance of my time.

Chairman WU. Thank you very much, and I thank both gentleman, and particularly the gentleman from Michigan for this amendment, which I do support.

The weather at sea level in Oregon is one kind of weather. I have a different weather, where I am, about 800 or 1,000 feet up in the Portland Metropolitan area. I have a little freeze/thaw cycle demonstration going on in my driveway, and if you are 4,000 or 6,000 in Oregon, you have an entirely different climate at this time of year to deal with. And I think the gentleman from Michigan properly points out that the current transportation research centers are regionally distributed to deal with the differing problems of the different regions, but also interconnected in a way so that they can share data, so that folks in, say, Redmond Oregon can get the data that they need from, perhaps, a center in Michigan on freeze/thaw cycles, which may be similar.

Are there any other comments or statements on this amendment? Hearing none, the vote occurs on the amendment. All in favor, please, say aye. Those opposed, say no. The ayes have it, and the amendment is agreed to.

Are there any other amendments? Hearing none, the vote is on the bill H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act,* as amended. All of those in

favor will say aye. All those opposed will say no. In the opinion of the Chair, the ayes have it.

I will now recognize Mr. Hall to make a motion.

Mr. HALL. Mr. Chairman, I move that the Subcommittee favorably report H.R. 5161, as amended, to the Full Committee. Furthermore, I move that staff be instructed to prepare the Subcommittee legislative report and make necessary technical and conforming changes to the bill, as amended, in accordance with the recommendation of the Subcommittee. I yield back.

Chairman WU. The question is on the motion to report the bill favorably. Those in favor of the motion will signify by saying aye; opposed, no. The ayes have it, and the bill is favorably reported.

Without objection, the motion to reconsider is laid upon the table. Subcommittee Members may submit additional or Minority views on the measure.

I want to thank Members of the Committee and the Subcommittee for their attendance, and with our typical, across-the-aisle-workmanship is not the right term, but our work across the aisle, and our head-spinning efficiency. We have again moved multiple pieces of legislation and conclude this subcommittee markup. Thank you all very much.

[Whereupon, at 11:05 a.m., the Subcommittee was adjourned.]

Appendix:

H.R. 5161, SECTION-BY-SECTION ANALYSIS, AMENDMENT ROSTER

I

110TH CONGRESS
2D SESSION

H. R. 5161

To provide for the establishment of Green Transportation Infrastructure Research and Technology Transfer Centers, and for other purpose.

IN THE HOUSE OF REPRESENTATIVES

JANUARY 29, 2008

Mr. WU introduced the following bill; which was referred to the Committee on Transportation and Infrastructure, and in addition to the Committee on Science and Technology, for a period to be subsequently determined by the Speaker, in each case for consideration of such provisions as fall within the jurisdiction of the committee concerned

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A BILL

To provide for the establishment of Green Transportation Infrastructure Research and Technology Transfer Centers, and for other purpose.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Green Transportation Infrastructure Research and Technology Transfer Act".

SEC. 2. FINDINGS.

Congress finds the following:

(1) Transportation infrastructure contributes to the pollution of surface and ground water because it is comprised of impervious surfaces that concentrate contaminants which are introduced into the water supply during storms.

(2) Scientists and engineers have developed numerous technologies that can be incorporated into transportation infrastructure which control stormwater and mitigate nonpoint source water pollution.

(3) There has not been widespread implementation of green transportation infrastructure by governments or private industry because of technical, regulatory, and social barriers, such as lack of training and awareness for builders.

(4) The Federal Highway Administration, in partnership with the Environmental Protection Agency, has the technical expertise and capacity to promote the use of green transportation infrastructure technologies by State and local governments and private industry through education and outreach and technical assistance programs.

SEC. 3. REGIONAL GREEN TRANSPORTATION RESEARCH CENTERS.

(a) ESTABLISHMENT.—Subchapter I of chapter 55 of title 49, United States Code, is amended by inserting after section 5505 following new section:

"SEC. 5505A. REGIONAL GREEN TRANSPORTATION RESEARCH CENTERS.

"(a) GREEN TRANSPORTATION INFRASTRUCTURE RESEARCH AND TECHNOLOGY TRANSFER.—The Secretary of Transportation shall make grants to nonprofit institutions of higher learning or consortia thereof to establish and operate university transportation centers to carry out research and development and technology transfer activities in the field of green transportation infrastructure.

"(b) OBJECTIVES.—The purpose of Centers established pursuant to this section shall be to—

"(1) generate innovative and cost-effective approaches to mitigating environmental impacts throughout the lifecycle of transportation infrastructure;

"(2) develop holistic approaches to integrating green infrastructure into existing wastewater management systems;

"(3) promote adoption of innovative green transportation infrastructure systems by State and local governments and the private sector; and

"(4) manage technology transfer programs to disseminate information on best management practices in the area of green transportation infrastructure to State and local governments and the private sector.

"(c) SELECTION OF GRANT RECIPIENTS.—

"(1) APPLICATIONS.—In order to be eligible to receive a grant under this section, a nonprofit institution of higher learning or consortia thereof shall submit to the Secretary an application that is in such form and contains such information as the Secretary may require.

"(2) MERIT REVIEW; PRIORITY.—Grants shall be awarded under this section on a merit-reviewed competitive basis.

"(3) REGIONAL CENTERS.—To the greatest extent practicable, the Secretary shall ensure that there is at least one grant recipient from each of the 10 United States Government regions that comprise the Standard Federal Regional Boundary System.

"(4) SELECTION CRITERIA.—Except as otherwise provided by this section, the Secretary shall se-

lect each recipient of a grant under this section through a merit-reviewed competitive process on the basis of the following:

"(A) Demonstrated expertise in transportation research and environmental impacts of transportation infrastructure.

"(B) Demonstrated research capacity and technology transfer resources.

"(C) Existing or proposed partnerships with State and local governments and private industry involved in transportation-related construction, environmental impact mitigation, or other areas related to green transportation infrastructure research.

"(D) Capability to provide leadership in developing national best management practices, regional best management practices, or both in the field of green transportation infrastructure.

"(E) Expertise in specific regional climate characteristics which impact the effectiveness of green transportation infrastructure technologies and practices.

"(F) Demonstrated ability to disseminate results of research and education programs

through a statewide or regionwide continuing education program.

"(G) The strategic plan the recipient proposes to carry out under the grant.

"(d) ACTIVITIES.—The types of activities the Secretary may support under this section include the following:

"(1) Research and development of innovative technologies, construction techniques, or best management processes that mitigate the environmental impact of transportation infrastructure, including—

"(A) assessments of the lifecycle environmental impact of local existing or planned transportation infrastructure;

"(B) integration of green transportation infrastructure elements into existing transportation or waste management systems; and

"(C) research, development, testing, and evaluation of new technologies or best management practices.

"(2) Establishment and operation of a regional technology transfer program to disseminate information on new technologies and best management practices to State and local governments, institutions of higher learning, and private industry in the region.

"(3) Study of the impact of State, local, and Federal regulations on the implementation of green transportation infrastructure technologies and practices. These studies shall include collaboration with appropriate Federal agencies to evaluate the effect of and possible changes to Federal and State regulations that impede implementation of green transportation infrastructure.

"(4) Public education campaigns to raise awareness of the benefits of green transportation infrastructure technologies, including activities to raise awareness and foster collaboration among regional governments, private industry, and other public and private stakeholders.

"(e) ANNUAL MEETING.—The Secretary shall convene an annual meeting of the Centers established pursuant to this section in order to foster collaboration and communication among Center participants and disseminate best management practices.

"(f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary such sums as may be necessary to carry out this section.

"(g) DEFINITION.—In this section, the term 'green transportation infrastructure' includes infrastructure that—

"(1) preserves and restores natural processes, landforms (such as floodplains), natural vegetated stream side buffers, wetlands, or other topographical features that can slow, filter, and naturally store stormwater runoff and floodwaters for future water supply and recharge of natural aquifers;

"(2) utilizes natural design techniques that infiltrate, filter, store, evaporate, and detain water close to its source;

"(3) minimizes the use of impervious surfaces in order to slow or infiltrate precipitation;

"(4) minimizes lifecycle energy consumption, including during construction, maintenance, use by vehicles, and destruction and recycling; and

"(5) minimizes lifecycle air pollution.".

(b) CONFORMING AMENDMENT.—The table of sections for such subchapter is amended by inserting after the item relating to section 5505 the following new item:

"5505A. Regional Green Transportation Research Centers.".

SEC. 4. GREEN TRANSPORTATION INFRASTRUCTURE AMENDMENTS.

Section 504 of title 23, United States Code, is amended—

(1) in subsection (a)(3)—

(A) in subparagraph (A)(ii)—

(i) by striking ''and'' at the end of subclause (V);

(ii) by striking the period at the end of subclause (VI); and

(iii) by adding at the end the following new subclause:

''(VII) the use of green transportation infrastructure (as defined in section 5505A(g) of title 49) for environmental protection and mitigating environmental impacts of transportation construction.''; and

(B) by adding at the end the following new subparagraph:

''(D) INTERAGENCY COORDINATION.—The Institute shall coordinate the development of curriculum and courses with other Federal agencies with expertise in the course subject areas.''; and

(2) in subsection (b)(2)(A)(i) by striking ''and traffic safety countermeasures'' and inserting ''traffic safety countermeasures, and options with respect to green transportation infrastructure (as defined in section 5505A(g) of title 49)''.

○

SECTION-BY-SECTION ANALYSIS OF
H.R. 5161, THE GREEN TRANSPORTATION INFRASTRUCTURE
RESEARCH AND TECHNOLOGY TRANSFER ACT

Sec. 1. Short Title

"Green Transportation Infrastructure Research and Technology Transfer Act"

Sec. 2. Findings

Finds that innovative transportation infrastructure can be used to mitigate water pollution, and that technical and social barriers to implementing these technologies can be overcome with research and technology transfer assistance from the U.S. Department of Transportation.

Sec. 3. Regional Green Transportation Research Centers

Amends the existing authorization for university transportation centers to create centers focusing on green transportation infrastructure in regions around the U.S. The objectives of these centers include developing innovative transportation infrastructure technologies that mitigate environmental damage from runoff, and encouraging governments to adopt these technologies and integrate them into existing infrastructure through technology transfer programs.

Activities will include: 1) research and development of green infrastructure technologies, techniques and best management practices; 2) establishment of a technology transfer program; 3) assessment of the impact of regulations on the adoption of green transportation infrastructure locally; and 4) public education efforts for local decision-makers.

Grant recipients will be selected on a competitive basis, with preference given to those applicants demonstrating expertise in transportation and green infrastructure research, existing partnerships with State and local governments, and technology transfer programs.

Defines green transportation infrastructure as infrastructure that preserves and restores natural processes and landforms, uses natural design techniques to manage stormwater; and minimizes life cycle energy consumption and air pollution.

Authorizes such sums as may be necessary to carry out this section.

Sec. 4. Green transportation infrastructure amendments

Amends authorization of the Federal Highway Administration's National Highway Institute (NHI) to include green transportation infrastructure as a course topic. Instructs NHI to collaborate with other federal agencies with expertise in this field when designing curriculum.

COMMITTEE ON SCIENCE AND TECHNOLOGY
SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION
SUBCOMMITTEE MARKUP
February 7, 2008

AMENDMENT ROSTER

H.R. 5161, The Green Transportation Infrastructure Research and Technology Transfer Act.

No.	Sponsor	Description	Results
1.	Mr. Ehlers	Amends the bill to authorize $6 million in FY 2009 and FY 2010 to create a grant program available to current University Transportation Centers in place of the new centers contemplated under the original bill.	Accepted by voice vote.

AMENDMENT TO H.R. 5161

OFFERED BY MR. EHLERS OF MICHIGAN

Page 3, lines 10 through 12, strike "nonprofit institutions" and all that follows through "university transportation centers" and insert "university transportation centers established pursuant to section 5505 or 5506".

Page 3, lines 16 and 17, strike "The purpose of Centers established pursuant to this section shall be to" and insert "Grant funds provided under this section may be used to".

Page 4, lines 11 and 12, strike "nonprofit institution of higher learning or consortia thereof" and insert "university transportation center".

Page 7, line 16, strike "established" and insert "receiving grants".

Page 7, lines 21 and 22, strike "such sums as may be necessary to carry out this section" and insert "to carry out this section $6,000,000 for each of the fiscal years 2009 and 2010. Amounts appropriated pursuant to this section shall be in addition to amounts otherwise appropriated for university transportation centers established pursuant to section 5505 or 5506".

XXII: PROCEEDINGS OF THE FULL COMMITTEE MARKUP ON H.R. 5161, THE GREEN TRANSPORTATION INFRASTRUCTURE RESEARCH AND TECHNOLOGY TRANSFER ACT

WEDNESDAY, FEBRUARY 27, 2008

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE,
Washington, DC.

The Committee met, pursuant to call, at 10:06 a.m., in Room 2318 of the Rayburn House Office Building, Hon. Bart Gordon [Chairman of the Committee] presiding.

Chairman GORDON. The Committee will come to order pursuant to notice the Committee on Science and Technology meets to consider the following measures: H.R. 4847, the *United States Fire Administration Reauthorization Act of 2007;* H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act;* and H.R. 3916, *To provide for the next generation of border and maritime security technologies.*

I would like to welcome everyone to this morning's markup, the first Full Committee markup of 2008. Today we will consider the three bills reported out of the Technology and Innovation Subcommittee with unanimous support. These three bills deal with public safety, improving the environment and border security, addressing some of the Nation's most pressing issues.

H.R. 4847, introduced by the Vice Chair of the Subcommittee, Representative Mitchell, and co-sponsored by the Subcommittee Ranking Member Gingrey, reauthorizes the U.S. Fire Administration.

The U.S. Fire Administration is an important resource for our nation's firefighters, providing training, fire safety awareness for the public, data collection, and R&D on fire suppression and prevention research and technology.

This important bill will help ensure the continued success of the USFA in its mission to protect lives and property from fire.

We will also consider H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act,* introduced by Chairman Wu.

This bipartisan bill supports the development and use of green technology to protect our nation's water supply through innovative technologies and materials that can be integrated into transportation infrastructure such as roads and parking lots. By filtering stormwater and slowing runoff, green infrastructure mitigates pollution while saving money and energy.

The bill builds upon the good work going on now in the Department of Transportation to promote green infrastructure widespread use.

Finally, H.R. 3916, introduced by Ranking Member Hall, authorizes programs at the Department of Homeland Security to improve technology used to protect the Nation's borders and ports of entry.

Border Patrol agents are responsible for securing nearly 7,000 miles of land borders to the north and south, as well as 95,000 miles of shoreline. Technology can play a vital role in extending observational capabilities, helping Border Patrol agents locate suspects, and monitor the border more efficiently.

Mr. Hall's bill authorizes important programs to enhance the Border Patrol's ability to carry out its mission by supporting short- and long-term research priorities. It also ensures that new technologies will be useful to Border Patrol agents by mandating that DHS work to meet cost and training needs to end-users when developing these technologies.

I want to commend the T&I Subcommittee for bringing these issues to the Committee's attention. All three of these bills were developed via a regular order process of identifying the problem, holding a hearing, and then developing legislation.

I strongly support each of these bills and look forward to working with my colleagues on the Committee to advance this important legislation.

[The prepared statement of Chairman Gordon follows:]

PREPARED STATEMENT OF CHAIRMAN BART GORDON

Full Committee Mark-Up:

- H.R. 4847, the *United States Fire Administration Reauthorization Act of 2007;*
- H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act;*
- H.R. 3916, *To provide for the next generation of border and maritime security technologies*

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H.R. 4847, introduced by the Vice Chair of the Subcommittee, Representative Mitchell, and co-sponsored by Subcommittee Ranking Member Gingrey, reauthorizes the U.S. Fire Administration. The U.S. Fire Administration is an important resource for our nation's firefighters, providing training, fire safety awareness for the public, data collection, and R&D on fire suppression and prevention research and technology. This important bill will help ensure the continued success of the USFA in its mission to protect lives and property from fire.

We will also consider H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act,* introduced by Chairman Wu. This bipartisan bill supports the development and use of green technology to protect our nation's water supply through innovative techniques and materials that can be integrated into transportation infrastructure such as roads and parking lots. By filtering stormwater and slowing runoff, green infrastructure mitigates pollution while saving money and energy. This bill builds upon the good work going on at the Department of Transportation to promote green infrastructure's widespread use.

Finally, H.R. 3916, introduced by Ranking Member Hall, authorizes programs at the Department of Homeland Security to improve the technology used to protect the Nation's borders and ports of entry. Border Patrol agents are responsible for securing nearly seven thousand miles of land borders to the North and South, as well as ninety-five thousand miles of shoreline. While our current corps of Border Patrol agents is doing a commendable job, their job is daunting. Technology can play a vital role in extending observational capabilities, helping Border Patrol agents locate suspects and monitor the border more effectively.

Mr. Hall's bill authorizes important programs to enhance the Border Patrol's ability to carry out its mission by supporting short- and long-term research priorities. It also ensures that new technologies will be useful to Border Patrol agents by man-

dating that DHS work to meet cost and training needs of end-users when developing these technologies.

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I strongly support each of these bills, and look forward to working with my colleagues on the Committee to advance this important legislation.

Chairman GORDON. I now recognize Mr. Hall to present his opening remarks.

Mr. HALL. I thank you, Chairman Gordon. I am looking forward to a productive start for the Committee in this second session of the 110th Congress.

Today the Full Committee is considering three bills previously considered by the Technology and Innovation Subcommittee. As you have said to begin with, we will be considering the reauthorization for the United States Fire Administration. USFA provides critical support to our nation's firefighters through training, through research and development, and logistical support. This is an extremely important agency in this committee's jurisdiction, and I would like to thank Mr. Mitchell and Dr. Gingrey for their hard work over the past few months on this matter.

Now, we will be considering Mr. Wu's Green Transportation Infrastructure Bill, which provides funding for the Department of Transportation's University Transportation Centers to examine and hopefully implement technologies that significantly reduce non-point source water pollution from our roadways and other paved surfaces.

Finally, H.R. 3916, a bill near and dear to me, focuses on the technology needs for the Border Patrol and the U.S. Coast Guard. I started writing this bill last year in response to a real need to develop and employ next generation technologies to help secure our border. I am pleased that many Members of the Committee on both sides of the aisle have co-sponsored this bill, and I would like to thank all of you for supporting my bill. I thank you, Chairman Gordon, specifically for your support and guidance.

These are all significant pieces of legislation that the Committee can be proud of advancing. I look forward to working with Chairman Gordon to ensure that these bills continue to progress through their other committee referrals and onto the House Floor.

I yield back.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

Thank you Chairman Gordon, I'm looking forward to a productive start for the Committee in this second session of the 110th Congress. Today the Full Committee is considering three bills previously considered by the Technology and Innovation Subcommittee. To begin we'll be considering the reauthorization for the United States Fire Administration (USFA). USFA provides critical support to our nation's firefighters through training, research and development, and logistical support. This is an extremely important agency in this committee's jurisdiction and I'd like to thank Mr. Mitchell and Dr. Gingrey for their hard work over the past few months on this matter.

Next we'll be considering Mr. Wu's green transportation infrastructure bill, which provides funding for the Department of Transportation's University Transportation Centers to examine and hopefully implement technologies that significantly reduce non-point source water pollution from our roadways and other paved surfaces.

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response to a real need to develop and employ next generation technologies to help secure our border. I'm pleased that many Members of this committee on both sides of the aisle have co-sponsored the bill and I'd like to thank all of you for supporting my bill.

These are all significant pieces of legislation that the Committee can be proud of advancing. I look forward to working with Chairman Gordon to ensure that these bills continue to progress through their other Committee referrals and onto the House Floor.

Chairman GORDON. Thank you, Mr. Hall. You can be assured that we will all be working together to see these bills go to the Floor and then find a way to the Senate.

We will now consider H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act.*

I yield to the Chairman of the Technology and Innovation Subcommittee, Mr. Wu, five minutes to describe his bill.

Mr. WU. Thank you, Mr. Chairman.

In May of last year, the Technology and Innovation Subcommittee held a hearing on Green Transportation Infrastructure, challenges to access and implementation. It includes witnesses from the Environmental Protection Agency, the U.S. Department of Transportation, and representatives from local government and private industry.

The witnesses agreed that we have a great opportunity to manage and protect our nation's water resources through the use of innovative techniques and technologies that are simultaneously a part of transportation infrastructure and a means for managing and filtering stormwater. Green infrastructure includes materials and design techniques that help mitigate water pollution by managing and filtering runoff.

The EPA witness at the May hearing, Assistant Administrator for Water, Ben Grumbles, is already making great efforts to promote the use of green infrastructure around the United States. But he and the other witnesses described a number of barriers to implementation of green programs; barriers which this bill works to overcome through research and education efforts at the U.S. Department of Transportation.

H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act,* authorizes research and education programs within the Federal Highway Administration and Research and Innovative Technology Administration's University Transportation Centers.

These new programs at the Department of Transportation will advance the understanding of the benefits of green transportation infrastructure and its impact on the environment and help policymakers and builders make informed decisions about where and how to include green infrastructure in their transportation systems.

The bill authorizes grants to existing University Transportation Centers for research and development of green infrastructure technologies, technology transfer programs, assessment of the impact of regulations on the adoption of these green technologies at a local level, and education campaigns aimed at local officials and builders.

I will offer a manager's amendment today that will allow other universities with existing expertise in green infrastructure to form consortia with University Transportation Centers.

The bill also authorizes FWHA to incorporate green infrastructure design and construction training in the National Highway Institute curriculum, which is offered to State and local highway contractors and workers.

Green transportation infrastructure is a simple and exciting set of technologies that can help solve substantial pollution problems in our communities while increasing energy efficiency and potentially decreasing total costs.

I look forward to working with Members of the Committee to pass this bill. I greatly appreciate the cooperation of Members on both sides of the aisle, and I strongly urge every Committee Member to support this commonsense legislation.

I yield back the balance of my time.

[The prepared statement of Chairman Wu follows:]

PREPARED STATEMENT OF CHAIRMAN DAVID WU

Thank you, Mr. Chairman.

This past May, the Technology and Innovation Subcommittee held a hearing entitled *"Green Transportation Infrastructure: Challenges to Access and Implementation"* that included witnesses from the Environmental Protection Agency, the U.S. Department of Transportation, and representatives of local government and industry.

The witnesses agreed that we have a great opportunity to manage and protect our nation's water resources through the use of innovative techniques and technologies that are simultaneously a part of transportation infrastructure and as means for managing and filtering stormwater.

Green infrastructure includes materials and design techniques that help mitigate water pollution by managing and filtering runoff.

The EPA witness at the May hearing, Assistant Administrator for Water Ben Grumbles, is already making great efforts to promote the use of green infrastructure around the U.S. But he and the other witnesses described a number of barriers to implementing green infrastructure programs; barriers which this bill works to overcome through research and education efforts at the U.S. Department of Transportation.

H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act* authorizes research and education programs within the Federal Highway Administration (FHWA) and Research and Innovative Technology Administration (RITA)'s University Transportation Centers.

These new programs at the Department of Transportation will advance the understanding of the benefits of green transportation infrastructure and its impact on the environment, and help policy-makers and builders make informed decisions about where and how to include green infrastructure in their transportation systems.

The bill authorizes grants to existing University Transportation Centers for research and development of green infrastructure technologies; technology transfer programs; assessment of the impact of regulations on the adoption of these green technologies at a local level; and education campaigns aimed at local officials and builders.

I will offer a manager's amendment today that will allow other universities with expertise in green infrastructure to form consortia with University Transportation Centers.

The bill also authorizes FWHA to incorporate green infrastructure design and construction training in the National Highway Institute (NHI) curriculum which is offered to State and local highway contractors and workers.

Green transportation infrastructure is a simple and exciting set of technologies that can help solve substantial pollution problems in our communities, while increasing energy efficiency and potentially decreasing total cost. I look forward to working with Members of the Committee to pass this bill. I strongly urge every Committee Member to support this common sense bill.

Chairman GORDON. Thank you, Mr. Wu. It is my understanding we are going to be having votes in about 10 or 15 minutes, but I think we have time to complete these important bills.

Mr. Hall, you are recognized.

Mr. HALL. That is the Chairman's instructions to be brief.

This bill provides direction exactly as Mr. Wu indicated. It provides for dissemination additionally of information through Technology Transfer Programs and also encourages State and local governments and private industry to adopt green infrastructure systems and construction techniques.

I would have preferred to stick with the language of the Ehlers amendment that was agreed to in Subcommittee. It was, but I understand the Majority's desire to ensure that relevant expertise at other institutions may be included at the discretion of current UTCs.

So I don't oppose the gentleman's amendment. I support his amendment, and I thank you, again, for bringing this legislation.

[The prepared statement of Mr. Hall follows:]

PREPARED STATEMENT OF REPRESENTATIVE RALPH M. HALL

Statement on H.R. 5161 and Manager's Amendment

Mr. Chairman, thank you for bringing forward this legislation—the *Green Transportation Infrastructure Research and Technology Transfer Act*—that provides a way to develop more ecologically friendly highways and other transportation infrastructure.

H.R. 5161 provides the direction and means by which existing university transportation centers can develop the technologies and methods needed to help mitigate water pollution due to rainwater runoff from our roads and highways, reduce the impact of our transportation infrastructure on the environment, and decrease the energy needed to construct and maintain our transportation infrastructure.

Additionally, this legislation provides for the dissemination of information through technology transfer programs and also encourages State and local governments, and private industry to adopt green infrastructure systems and construction techniques. By using grants, partnerships and collaboration between university transportation centers, this bill works to ensure that our nation's transportation system will become more environmentally friendly.

Mr. Wu will be proposing an amendment to ensure that university transportation centers have flexibility to include additional institutions of higher education. I would prefer to stick to the language in the Ehlers amendment that was agreed to in Subcommittee, but understand the Majority's desire to ensure that relevant expertise at other institutions may be included at the discretion of current UTCs. Therefore, I will not oppose the gentleman's amendment.

Mr. Chairman, thank you again for bringing this legislation before us. I urge all of my colleagues on the Committee to support H.R. 5161 and the amendment, and I yield back the balance of my time.

Chairman GORDON. Thank you, Mr. Hall.

Does anyone else wish to be recognized?

Ms. Johnson, who is an important lady, because she is going to be dealing with this in the Transportation Committee.

Ms. JOHNSON. Thank you, Mr. Chairman. I simply want to thank you and Mr. Wu and Mr. Hall. Thank you.

Chairman GORDON. Thank you, Ms. Johnson.

Mr. Ehlers is recognized.

Mr. EHLERS. Thank you, Mr. Chairman. Just a brief comment on the one amendment by Mr. Wu.

As you recall, during the Subcommittee markup, I added an amendment to require that the funding go to the University Transportation Center Program, which is a well-established program. I notice Mr. Wu has an amendment to expand that slightly to allow

the University Transportation Centers to develop consortia with other universities with particular expertise in the topic before them. And I just want the Committee to know that I have no objection to that amendment. I think it actually, if the other universities involved have the appropriate expertise, it, in fact, could strengthen the program and still maintain the requirement that the funding go through the UTCs.

So thank you.

Chairman GORDON. Thank you, Dr. Ehlers.

Does anyone else wish to be recognized?

If not, then I ask unanimous consent that the resolution is considered as read and open to amendment at any point and that the Members proceed with the amendments in the order of the roster.

Without objection, so ordered.

The first amendment on the roster is the manager's amendment offered by the gentleman from Oregon, Mr. Wu. Are you ready to proceed?

Mr. WU. Mr. Chairman, I have an amendment at the desk.

Chairman GORDON. The Clerk will report the amendment.

The CLERK. Amendment number 001, amendment to H.R. 5161, offered by Mr. Wu of Oregon.

Chairman GORDON. I ask unanimous consent to dispense with the reading.

Without objection, so ordered.

I recognize the gentleman from Oregon for five minutes to explain his amendment.

Mr. WU. Thank you, Mr. Chairman.

This amendment makes a minor change to H.R. 5161, and the current language limits eligibility for green transportation infrastructure research grants to those universities already participating in the University Transportation Center Program. And this would allow more additional funding authorized by this bill to go towards research instead of additional overhead and administrative costs.

My amendment makes a small change to H.R. 5161 to allow other universities, which may have existing expertise in related topics, to form consortia with existing UTCs in order to apply for grants.

This amendment preserves the benefits of the earlier limitation but allows UTCs to take advantage of the expertise of researchers at other institutions.

This amendment also clarifies that universities receiving grants must have strong relationships with local and State governments in discussing research priorities. As we heard during our May hearing and during our recent Subcommittee markup, the types of green transportation infrastructure that are most effective vary strongly from region to region, and the bill deliberately provides grants to universities in different parts of the country to address this regional variability, ensuring that State and local transportation officials who are intimately familiar with how their regional climate affects transportation infrastructure, that they are involved in research planning as another way to ensure that end-user needs are met by the research performed by UTCs.

[The prepared statement of Chairman Wu follows:]

PREPARED STATEMENT OF CHAIRMAN DAVID WU

Mr. Chairman, this amendment makes minor changes to H.R. 5161 which improve the Department of Transportation's ability to encourage the implementation of innovative, cost effective green transportation infrastructure.

The current language limits eligibility for green transportation infrastructure research grants to those universities already participating in the University Transportation Center program, thus allowing more of the additional funding authorized in H.R. 5161 to go towards research instead of overhead and administrative costs.

This amendment makes a small change to H.R. 5161, as amended, to allow other universities which may have expertise in related topics to form consortia with existing UTCs in order to apply for grants. This amendment preserves the benefits of the earlier limitation, but allows UTCs to take advantage of the expertise of researchers at other institutions with backgrounds in materials, engineering, design, and other fields related to green transportation infrastructure.

This amendment also clarifies that universities receiving grants must have strong relationships with local and State governments for the purpose of discussing research priorities.

As we heard during our May hearing and during our recent Subcommittee markup, the types of green transportation infrastructure that work most effectively vary from region to region.

The bill deliberately provides grants to universities in different parts of the country to address this regional variability. Ensuring that State and local transportation officials, who are intimately familiar with how their regional climate affects transportation infrastructure, are involved in research planning is another way to ensure that end-user needs are met by the research performed by the UTCs.

I have worked with the Republican Members of the Committee and appreciate their assistance and input. I encourage the Members to adopt this amendment.

Chairman GORDON. Thank you, Mr. Wu.

Mr. WU. Thank you, Mr. Chairman.

Chairman GORDON. Is there further discussion on the amendment?

If no, the vote occurs on the amendment. All in favor say, aye. Opposed, no. The amendment, the ayes have it. The amendment is agreed to.

The second amendment on the roster is an amendment offered by the gentleman from South Carolina, Mr. Inglis. Are you ready to commence?

Mr. INGLIS. I am, Mr. Chairman.

Chairman GORDON. The Clerk will report the amendment.

The CLERK. Amendment number 041, amendment to H.R. 5161, offered by Mr. Inglis of South Carolina.

Chairman GORDON. I ask unanimous consent to dispense with the reading.

Without objection, so ordered.

I recognize the gentleman from South Carolina for five minutes to explain his amendment.

Mr. INGLIS. And I will be briefer than that, Mr. Chairman, to say this, that we have, this amendment would make it so that industry and others in private sector could participate in the centers, both in the funding and in the progress of the research.

As I understand it, that concept is best considered under safety reauthorization and so with the Chairman's commitment to work toward that end, to allow a cooperation between the private sector and the public sector, I would be happy to withdraw my amendment.

Chairman GORDON. Thank you, Mr. Inglis. Oh, I am sorry. Okay. Excuse me. What was it?

Mr. INGLIS. What I was saying, Mr. Chairman, is that I understand it is probably best to consider this in SAFETEA09LU reau-

thorization, and therefore if the Chairman would join with me in an effort to make it possible for the private sector to participate, set up a structure so the private sector could participate in the funding and the research at these centers, then perhaps we could take it up as part of the SAFETEA 09LU reauthorization.

Chairman GORDON. Certainly, Mr. Inglis. We welcome your suggestions, and we will continue to work through this, and we have a number of Members of the Transportation Committee on this committee also, and we will try to work with them.

Mr. INGLIS. I am happy to withdraw the amendment, Mr. Chairman.

Chairman GORDON. And did you, the amendment is withdrawn. Did you have a second amendment?

Mr. INGLIS. Yes, I do.

Chairman GORDON. Then the Clerk will report the amendment.

The CLERK. Amendment number 042, amendment to H.R. 5161, offered by Mr. Inglis of South Carolina.

Chairman GORDON. The third amendment on the roster is amendment offered by the—I ask unanimous—well, excuse me. I ask unanimous consent to dispense with the reading.

Without objection, so ordered.

And I recognize the gentleman from South Carolina for five minutes to explain his amendment.

Mr. INGLIS. And, Mr. Chairman, I believe these are some technical changes that your side has agreed to, so I hope in the interest of time we can proceed swiftly on these technical changes.

Chairman GORDON. Mr. Inglis, you have done good inventing these, and they are approved.

Is there further discussion?

If no, the vote occurs on the amendment. All in favor, say aye. Opposed, no. The ayes have it, and the amendment is agreed to.

Are there other amendments?

If no, then the vote is on the bill, H.R. 5161, as amended. All those in favor will say, aye. All opposed, no. In the opinion of the Chair the ayes have it.

I recognize Mr. Baird for a motion.

Mr. BAIRD. Mr. Chairman, I move that the Committee favorably report H.R. 5161, as amended, to the House with the recommendation that the bill do pass. Furthermore, I move that the staff be instructed to prepare the legislative report and make necessary technical and conforming changes, and that the Chairman take all necessary steps to bring the bill before the House for consideration.

Chairman GORDON. The question is on the motion to report the bill favorably. Those in favor of the motion will signify by saying aye. All opposed, aye. The ayes have it. The motion is favorably reported.

Without objection, the motion is reconsidered, to reconsider is laid upon the table. Members will have two subsequent calendar days in which to submit supplemental, Minority, or additional views on the measure, ending Monday, March the 3rd, at 9:00 a.m.

I move pursuant to Clause 1 of Rule 22 of the Rules of the House of Representatives that the Committee authorize the Committee to offer such motions as may be necessary in the House to adopt and

pass H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act,* as amended.

Without objection, so ordered.

Let me make this suggestion. We have one more bill. Mr. Hall has put a lot of work into this bill, and you know, I don't think we should give it shortchange here.

So we can either move forward, or we can move forward promptly, or we can go and have a vote.

Mr. HALL. It has been suggested we do opening statements and then do amendments. If we are going to do that, we might as well come back.

Chairman GORDON. Okay. And again, Mr. Hall has put a lot of time and effort into this important bill on——

Mr. HALL. It is not my time. It is your time and the Committee's time. They have really worked hard on it, and I think their input——

Chairman GORDON. I agree, and so this shouldn't be rushed. We have one vote. Let us go vote, and we will come back and proceed with this important amendment, important bill.

[Whereupon, at 10:49 a.m. the Committee recessed, to reconvene at 11:10 a.m. the same day.]

Let me thank the Members for coming back from the last vote. This was an important bill, and I appreciate your attendance. I want to thank the staff for the hard work that they have put in and the good work on doing this. I think we did a good day's work today, and I thank everyone.

The meeting is adjourned.

[Whereupon, at 11:32 a.m., the Committee was adjourned.]

Appendix:

SUBCOMMITTEE MARKUP REPORT, H.R. 5161 AS AMENDED, AMENDMENT ROSTER

COMMITTEE ON SCIENCE AND TECHNOLOGY
SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION
REPORT FROM SUBCOMMITTEE MARKUP
FEBRUARY 7, 2008

H.R. 5161, THE GREEN TRANSPORTATION INFRASTRUCTURE RESEARCH AND TECHNOLOGY TRANSFER ACT

I. Purpose

The purpose of this bill is to expand the use of green transportation infrastructure technologies through university research programs, public awareness campaigns, and training and technology transfer programs for builders and transportation policy-makers. The programs authorized in this bill are carried out by the Research and Innovative Technology Administration and Federal Highway Administration of the U.S. Department of Transportation.

II. Background and Need for Legislation

Environmental Problems Associated with Runoff

Development of infrastructure, such as roads and parking lots, that are comprised of surfaces that are impervious to water can have significant impacts on an area's natural hydrology, potentially resulting in flooding, pollution, or aquatic ecosystem destruction. Stormwater runoff washes over agricultural land, lawns, urban areas, and other types of human land-use areas, introducing chemicals like fertilizers, heavy metals, and harmful bacteria into water ecosystems such as streams, lakes, and rivers. Highway and other transportation installations are major contributors to this type of pollution. This type of non-localized pollution emission is responsible for over 80 percent of the degradation of the Nation's surface water. Thus, development of transportation infrastructure has a significant and far-ranging environmental impact.

Green Transportation Infrastructure

To be effective in countering the negative impact of rainfall runoff, mitigation measures must meet the goals of reducing the speed and volume of flow and treating or reducing pollutants. Green transportation infrastructure uses innovative materials, structural measures, and design techniques to address these goals. Structural measures are installations like infiltration basins and trenches, detention and retention ponds, constructed wetlands, vegetated swales and filter strips, and filtration systems. Stormwater managers generally choose a treatment by evaluating the amount of land available, the cost of implementation, operation and maintenance of the technology, and treatment objectives such as cleanliness. However, many local governments are also constrained by environmental regulations that stipulate specific methods for reducing water pollution, and are unable to include innovative green infrastructure technologies and techniques in their stormwater management plans.

Current Federal Programs

While most of the decisions regarding implementation of green transportation infrastructure are made at the State and local level, there are federal programs addressing the issue of non-point source water pollution control in transportation infrastructure. The Green Highways Partnership (GHP) is the primary federal vehicle for encouraging the use of green transportation infrastructure by State and local governments and private industry. EPA and FHWA are the main federal participants in the partnership, which includes State departments of transportation, trade organizations, municipal governments, and non-profit organizations. The Partnership's activities focus on planning and design, construction, and operation and maintenance of green transportation infrastructure, and include pilot projects that demonstrate cost-effective, environmentally-sound transportation infrastructure technologies that meet State performance requirements. There are also additional ongoing programs at the U.S. Department of Transportation and EPA in support of research, development, and transfer of green transportation infrastructure technologies.

Remaining Challenges

Though research has shown significant benefits in terms of stormwater management and control of non-point source water pollution, technologies such as bioswales and pervious pavement have not been adopted in many jurisdictions or by significant numbers of private entities. There are numerous barriers to full adoption of green infrastructure, including technical problems, regulatory challenges, and slow industry adoption of new practices. The installation of green transportation infrastructure can be impeded by problems of high cost and availability of space for technologies. Climate conditions can also present unique challenges to implementation; for example, in areas where very cold weather is common, technologies that retain water for slow filtration are susceptible to freezing. Also, the construction industry tends to be risk-averse, and hence reluctant to adopt technologies that may be considered experimental or unproven because of concerns about high cost, reliability, maintenance, or simply confusion about the best products to use. The slow adoption of these technologies has also led to a shortage of trained contractors who are able to properly design and install integrated systems, making implementation more difficult and costly.

Though Federal, State, and local government agencies have taken an active role in promoting the use of green transportation infrastructure, those same entities have often erected regulatory barriers which prevent widespread implementation. For example, though the Office of Water has been a strong advocate for green infrastructure projects, there are regulatory barriers internal to the EPA that prevents those projects from moving forward. The *Clean Water Act,* under the National Pollutant Discharge Elimination System (NPDES) permit program, gives EPA the authority to regulate sources of water that release pollutants into ground and surface water. The program is administered on a regional level, and regional administrators have discretion in classifying green infrastructure technologies that serve as sources of water covered by NPDES. If technologies such as pervious pavement or bioswales, which filter runoff before it flows into the ground or surface water, are considered "point sources" then EPA regulations that require permitting procedures act as a significant disincentive to use these technologies.

State and local authorities can sometimes also be impediments to implementation of green transportation infrastructure, unlike federal laws that specifically disallow the use of green technologies without extensive permitting, State and local authorities tend to fail to explicitly allow their use. As a result, governments or private companies within the jurisdiction who propose the use of green transportation infrastructure are not given approval simply because the innovative technologies have not been previously considered by the regulating authority. The problem then becomes self-perpetuating, as these local governments block all potential demonstration projects, and continue to deny builders permits on the basis that there have been no successful demonstration projects. However, many cities have acted as leaders in the green transportation infrastructure initiative, but the challenge remains to universalize its acceptance across local jurisdictions.

Options for Promoting Implementation of Green Transportation Infrastructure

One of the primary reasons policy-makers and builders resist incorporating green transportation infrastructure technologies into their design plans is lack of understanding of the different options. Insufficient data and information about its effectiveness in mitigating pollution are disincentives for incorporating green infrastructure into stormwater management systems because of the need for accountability for expenditures of public money. Also, there are still relatively few engineers trained in design, installation and maintenance methods, preventing even interested localities from implementing green infrastructure plans.

The U.S. Department of Transportation's University Transportation Centers, authorized under the *Safe, Accountable, Flexible, Efficient Transportation Equity Act—A Legacy for Users* (SAFETEA09LU), are uniquely suited to meet the research needs to fill the gaps in data and engineering information that prevent the widespread implementation of green transportation infrastructure projects. This program funds university research centers around the country to focus on state-of-the-art transportation research and workforce development. These Centers bring together experts in multi-disciplinary fields to address transportation challenges including congestion, safety issues, and energy efficiency.

A number of Centers currently highlight sustainability as the theme of their research projects, and green transportation infrastructure is a natural component of a sustainability portfolio.

The National Highway Institute (NHI), part of the Federal Highway Administration, is a key resource for transportation workers to learn about new construction

and design concepts, and as such is an excellent partner for technology transfer from the University Transportation Centers. NHI has provided training for transportation workers in diverse subjects, including improving road safety for pedestrians and bicyclists, managing roads in inclement weather, and traffic management. Green transportation infrastructure curriculum would augment NHI's excellent course offerings by providing builders with guidance on design, construction, and maintenance of green infrastructure from a trusted source. Using NHI to deliver information on green infrastructure technology and processes would help overcome some of the biases against this type of design and ensure that all localities are able to implement the most effective green infrastructure systems for their unique needs.

III. Subcommittee Actions

The Subcommittee on Technology and Innovation heard testimony in the 110th Congress relevant to the programs authorized in H.R. 5161 at a hearing held May 10, 2007. During those hearings, the Subcommittee heard testimony from the Associate Administrator for Planning, Environment and Realty at the Federal Highway Administration; the Assistant Administrator for Water at the Environmental Protection Agency, and representatives of local government and industry.

On January 29, 2008, Representative David Wu, Chairman of the Subcommittee on Technology and Innovation of the Committee on Science and Technology, introduced H.R. 5161, the *Green Transportation Infrastructure Research and Technology Transfer Act,* a bill to provide for the establishment of Green Transportation Infrastructure Research and Technology Transfer Centers, and for other purposes.

The Subcommittee on Technology and Innovation met to consider H.R. 5161 on Thursday, February 7, 2008 and considered the following amendment to the bill:

grants under that section to existing University Transportation Centers receiving grants under section 5505 or 5506 of the U.S. Code, and to authorize $6 million in appropriations for fiscal years 2009 and 2010. The amendment was agreed to by voice vote.

Mr. Gingrey moved that the Subcommittee favorably report the bill, H.R. 5161, as amended, to the Full Committee. The motion was agreed to by a voice vote.

IV. Summary of Major Provisions of the Bill

H.R. 5161 authorizes the U.S. Department of Transportation to provide grants to national and regional university transportation centers to carry out research on and technology transfer in the field of green transportation infrastructure. Applicants are limited to existing centers receiving grants under section 5505 or 5506 of the U.S. Code. Grant recipients are selected via a merit-based competition, with preference given to those institutions demonstrating expertise in the environmental effects of transportation infrastructure; research capacity and technology transfer resources; partnerships with government and industry; and other attributes. Authorized activities include research and development of innovative infrastructure technologies; establishment of regional technology transfer programs; studies of the impact of government regulations on implementation of green infrastructure programs; and public education campaigns aimed at public and private stakeholders. The bill requires the Secretary of Transportation to convene an annual meeting of Centers to foster collaboration and dissemination of findings. H.R. 5161 authorizes $6 M per fiscal year for fiscal years 2009 and 2010 for grants to the university transportation centers. To promote technology transfer, the bill requires the Federal Highway Administration to incorporate education and training on green transportation infrastructure into its National Highway Institute curriculum which is offered to transportation workers nationwide. Finally, the bill defines green transportation infrastructure as infrastructure that preserves and restores natural processes and landforms, uses natural design techniques to manage stormwater; and minimizes life cycle energy consumption and air pollution.

V. Section-by-Section Analysis of the Bill, as reported by the Subcommittee

Sec. 1. Short Title

"Green Transportation Infrastructure Research and Technology Transfer Act"

Sec. 2. Findings

Finds that innovative transportation infrastructure can be used to mitigate water pollution, and that technical and social barriers to implementing these technologies

can be overcome with research and technology transfer assistance from the U.S. Department of Transportation.

Sec. 3. Regional Green Transportation Research Centers

Amends the existing authorization for university transportation centers to create centers focusing on green transportation infrastructure in regions around the U.S. The objectives of these centers include developing innovative transportation infrastructure technologies that mitigate environmental damage from runoff, and encouraging governments to adopt these technologies and integrate them into existing infrastructure through technology transfer programs.

Activities will include: 1) research and development of green infrastructure technologies, techniques and best management practices; 2) establishment of a technology transfer program; 3) assessment of the impact of regulations on the adoption of green transportation infrastructure locally; and 4) public education efforts for local decision-makers.

Grant recipients will be selected on a competitive basis, with preference given to those applicants demonstrating expertise in transportation and green infrastructure research, existing partnerships with State and local governments, and technology transfer programs. Only those applicants currently receiving University Transportation Center funding will be eligible for grants.

Defines green transportation infrastructure as infrastructure that preserves and restores natural processes and landforms, uses natural design techniques to manage stormwater; and minimizes life cycle energy consumption and air pollution.

Authorizes $6 M per year for fiscal years 2009 and 2010 to carry out this section.

Sec. 4: Green transportation infrastructure amendments

Amends authorization of the Federal Highway Administration's National Highway Institute (NHI) to include green transportation infrastructure as a course topic. Instructs NHI to collaborate with other federal agencies with expertise in this field when designing curriculum.

H.R. 5161, AS AMENDED BY THE SUBCOMMITTEE ON TECHNOLOGY AND INNOVATION ON FEBRUARY 7, 2008

SECTION 1. SHORT TITLE.

This Act may be cited as the "Green Transportation Infrastructure Research and Technology Transfer Act".

SEC. 2. FINDINGS.

Congress finds the following:

(1) Transportation infrastructure contributes to the pollution of surface and ground water because it is comprised of impervious surfaces that concentrate contaminants which are introduced into the water supply during storms.

(2) Scientists and engineers have developed numerous technologies that can be incorporated into transportation infrastructure which control stormwater and mitigate nonpoint source water pollution.

(3) There has not been widespread implementation of green transportation infrastructure by governments or private industry because of technical, regulatory, and social barriers, such as lack of training and awareness for builders.

(4) The Federal Highway Administration, in partnership with the Environmental Protection Agency, has the technical expertise and capacity to promote the use of green transportation infrastructure technologies by State and local governments and private industry through education and outreach and technical assistance programs.

SEC. 3. REGIONAL GREEN TRANSPORTATION RESEARCH CENTERS.

(a) ESTABLISHMENT.—Subchapter I of chapter 55 of title 49, United States Code, is amended by inserting after section 5505 following new section:

"SEC. 5505A. REGIONAL GREEN TRANSPORTATION RESEARCH CENTERS.

''(a) GREEN TRANSPORTATION INFRASTRUCTURE RESEARCH AND TECHNOLOGY TRANSFER.—The Secretary of Transportation shall make grants to university transportation centers established pursuant to section 5505 or 5506 to carry out research and development and technology transfer activities in the field of green transportation infrastructure.

''(b) OBJECTIVES.—Grant funds provided under this section may be used to—

''(1) generate innovative and cost-effective approaches to mitigating environmental impacts

throughout the lifecycle of transportation infrastructure;

"(2) develop holistic approaches to integrating green infrastructure into existing wastewater management systems;

"(3) promote adoption of innovative green transportation infrastructure systems by State and local governments and the private sector; and

"(4) manage technology transfer programs to disseminate information on best management practices in the area of green transportation infrastructure to State and local governments and the private sector.

"(c) SELECTION OF GRANT RECIPIENTS.—

"(1) APPLICATIONS.—In order to be eligible to receive a grant under this section, a university transportation center shall submit to the Secretary an application that is in such form and contains such information as the Secretary may require.

"(2) MERIT REVIEW; PRIORITY.—Grants shall be awarded under this section on a merit-reviewed competitive basis.

"(3) REGIONAL CENTERS.—To the greatest extent practicable, the Secretary shall ensure that there is at least one grant recipient from each of the

10 United States Government regions that comprise the Standard Federal Regional Boundary System.

"(4) SELECTION CRITERIA.—Except as otherwise provided by this section, the Secretary shall select each recipient of a grant under this section through a merit-reviewed competitive process on the basis of the following:

"(A) Demonstrated expertise in transportation research and environmental impacts of transportation infrastructure.

"(B) Demonstrated research capacity and technology transfer resources.

"(C) Existing or proposed partnerships with State and local governments and private industry involved in transportation-related construction, environmental impact mitigation, or other areas related to green transportation infrastructure research.

"(D) Capability to provide leadership in developing national best management practices, regional best management practices, or both in the field of green transportation infrastructure.

"(E) Expertise in specific regional climate characteristics which impact the effectiveness of

green transportation infrastructure technologies and practices.

"(F) Demonstrated ability to disseminate results of research and education programs through a statewide or regionwide continuing education program.

"(G) The strategic plan the recipient proposes to carry out under the grant.

"(d) ACTIVITIES.—The types of activities the Secretary may support under this section include the following:

"(1) Research and development of innovative technologies, construction techniques, or best management processes that mitigate the environmental impact of transportation infrastructure, including—

"(A) assessments of the lifecycle environmental impact of local existing or planned transportation infrastructure;

"(B) integration of green transportation infrastructure elements into existing transportation or waste management systems; and

"(C) research, development, testing, and evaluation of new technologies or best management practices.

"(2) Establishment and operation of a regional technology transfer program to disseminate information on new technologies and best management practices to State and local governments, institutions of higher learning, and private industry in the region.

"(3) Study of the impact of State, local, and Federal regulations on the implementation of green transportation infrastructure technologies and practices. These studies shall include collaboration with appropriate Federal agencies to evaluate the effect of and possible changes to Federal and State regulations that impede implementation of green transportation infrastructure.

"(4) Public education campaigns to raise awareness of the benefits of green transportation infrastructure technologies, including activities to raise awareness and foster collaboration among regional governments, private industry, and other public and private stakeholders.

"(e) ANNUAL MEETING.—The Secretary shall convene an annual meeting of the Centers receiving grants pursuant to this section in order to foster collaboration and communication among Center participants and disseminate best management practices.

"(f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary to carry out this section $6,000,000 for each of the fiscal years 2009 and 2010. Amounts appropriated pursuant to this section shall be in addition to amounts otherwise appropriated for university transportation centers established pursuant to section 5505 or 5506.

"(g) DEFINITION.—In this section, the term 'green transportation infrastructure' includes infrastructure that—

"(1) preserves and restores natural processes, landforms (such as floodplains), natural vegetated stream side buffers, wetlands, or other topographical features that can slow, filter, and naturally store stormwater runoff and floodwaters for future water supply and recharge of natural aquifers;

"(2) utilizes natural design techniques that infiltrate, filter, store, evaporate, and detain water close to its source;

"(3) minimizes the use of impervious surfaces in order to slow or infiltrate precipitation;

"(4) minimizes lifecycle energy consumption, including during construction, maintenance, use by vehicles, and destruction and recycling; and

"(5) minimizes lifecycle air pollution.".

(b) CONFORMING AMENDMENT.—The table of sections for such subchapter is amended by inserting after the item relating to section 5505 the following new item:

"5505A. Regional Green Transportation Research Centers.".

SEC. 4. GREEN TRANSPORTATION INFRASTRUCTURE AMENDMENTS.

Section 504 of title 23, United States Code, is amended—

(1) in subsection (a)(3)—

(A) in subparagraph (A)(ii)—

(i) by striking "and" at the end of subclause (V);

(ii) by striking the period at the end of subclause (VI); and

(iii) by adding at the end the following new subclause:

"(VII) the use of green transportation infrastructure (as defined in section 5505A(g) of title 49) for environmental protection and mitigating environmental impacts of transportation construction."; and

(B) by adding at the end the following new subparagraph:

"(D) INTERAGENCY COORDINATION.—The Institute shall coordinate the development of

curriculum and courses with other Federal agencies with expertise in the course subject areas.''; and

(2) in subsection (b)(2)(A)(i) by striking ''and traffic safety countermeasures'' and inserting ''traffic safety countermeasures, and options with respect to green transportation infrastructure (as defined in section 5505A(g) of title 49)''.

COMMITTEE ON SCIENCE AND TECHNOLOGY
FULL COMMITTEE MARKUP
FEBRUARY 27, 2007

AMENDMENT ROSTER

H.R. 5161, The Green Transportation Infrastructure Research and Technology Transfer Act.

No.	Sponsor	Description	Results
1	Mr. Wu	Amends section 3 to allow universities that currently do not receive grants under the University Transportation Center program to form consortia with existing UTCs and apply for green transportation research center grants. Specifies that green transportation research centers should involve state and local governments and transportation officials in research planning and prioritization.	Agreed to by voice vote.
2	Mr. Inglis	Amends Section 3 to authorize the Secretary of Transportation to require cost-sharing by industry and consortia partners for research as part of the green transportation infrastructure component of the University Transportation Centers program.	Offered and withdrawn.
3	Mr. Inglis	Amends the bill to specify that design and building code restrictions can impede implementation of green transportation infrastructure, in addition to technical, regulatory, and social barriers. Recommends that grant recipient conferences offer opportunities for peer evaluation. Makes minor technical correction.	Agreed to by voice vote.

AMENDMENT TO H.R. 5161

OFFERED BY MR. WU OF OREGON

Page 2, line 19, insert ", or to consortia consisting of such a center and one or more institutions of higher education," after "5505 or 5506".

Page 3, line 17, insert "or consortium" after "transportation center".

Page 4, line 18, insert "to help set research priorities and facilitate technology transfer" after "infrastructure research".

Page 6, line 21, strike "Centers" and insert "Centers and consortia".

Page 6, line 23, strike "Center".

AMENDMENT TO H.R. 5161

OFFERED BY MR. INGLIS OF SOUTH CAROLINA

Page 2, line 22, through page 7, line 8, redesignate subsections (b) through (g) as subsections (c) through (h), respectively.

Page 2, after line 21, insert the following new subsection:

"(b) COST SHARING.—The Secretary may require cost sharing by industry and consortia partners to leverage the Government's share.".

Page 8, line 18, strike "section 5505A(g)" and insert "section 5505A(h)".

Page 9, line 8, strike "section 5505A(g)" and insert "section 5505A(h)".

AMENDMENT TO H.R. 5161

OFFERED BY MR. INGLIS OF SOUTH CAROLINA

Page 1, line 19, insert ''restrictive designs and'' after ''such as''.

Page 5, line 21, insert ''water'' after ''or waste''.

Page 6, line 10, insert ''and industries'' after ''Federal agencies''.

Page 6, line 22, strike ''collaboration'' and insert ''evaluation, collaboration,''.

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