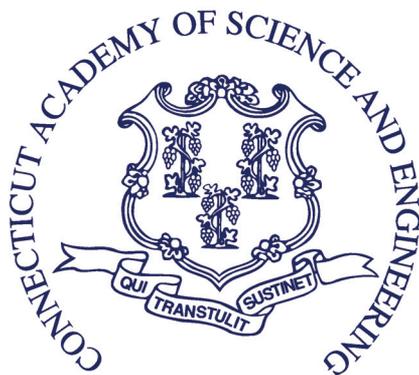


CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING



1976

ANNUAL REPORT

2008-2009

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING

The Connecticut Academy is a non-profit institution patterned after the National Academy of Sciences to identify and study issues and technological advancements that are or should be of concern to the state of Connecticut. It was founded in 1976 by a Special Act of the Connecticut General Assembly.

VISION

The Connecticut Academy will foster an environment in Connecticut where scientific and technological creativity can thrive and contribute to Connecticut becoming a leading place in the country to live, work and produce for all its citizens, who will continue to enjoy economic well being and a high quality of life.

MISSION STATEMENT

The Connecticut Academy will provide expert guidance on science and technology to the people and to the state of Connecticut, and promote the application of science and technology to human welfare and economic well being.

GOALS

- *To provide information and advice on science and technology to the government, industry and people of Connecticut.*
- *To initiate activities that foster science and engineering education of the highest quality, and promote interest in science and engineering on the part of the public, especially young people.*
- *To provide opportunities for both specialized and inter-disciplinary discourse among its own members, members of the broader technical community, and the community at large.*

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING
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The state of the Academy at the end of the 2009 fiscal year, June 30, 2009, continues to be excellent. The year was highlighted by projects conducted on behalf of state agencies, the General Assembly and others.

This year the Academy's membership continued to grow with the election of 23 new members and a total membership at year-end of 253 of Connecticut's leading scientists, physicians, and engineers. Financially, the Academy ended the year in excellent condition and is well positioned to maintain financial stability through the 2010 fiscal year.

The Academy's efforts in advising the state on issues of science and technology were highlighted this year through its efforts on several projects. On behalf of the General Assembly, in its role as Independent Monitor for implementation of recommendations from the Academy's study of a Needs-Based Analysis of the UConn Health Center's Facility Plan, the Academy completed its assignment to monitor and report on progress regarding the process established by the General Assembly. Additionally, on behalf of the General Assembly through the Connecticut Renewable Energy Investment Board/Connecticut Clean Energy Fund, the Academy completed a study on Preparing for Connecticut's Energy Future, and reported its findings and recommendations to the General Assembly's Energy and Technology Committee, and the Clean Energy Fund.

Two projects were also completed for the Connecticut Department of Transportation including a study on Weigh Station Technologies and Practices and a study on Applying Transportation Asset Management in Connecticut. Additionally, the Academy completed its work for the Connecticut Office of Policy and Management on the development of a Real-Time Energy Report, which is available to the public on the state's CT Energy Info website at (www.ctenergyinfo.org); and for the Stepping Stones Museum for Children on developing a "portable" energy-related exhibit for young children.

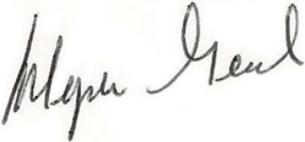
Academy Member Robert Birge of the University of Connecticut was named the winner of the 2009 Connecticut Medal of Science award in recognition of his accomplishments, including creating a protein-based disk drive in 1982, pioneering the use of spectroscopic and theoretical methods to study biological molecules, and most recently, working to develop an artificial retina that will bring functional sight to those who would otherwise be blind. He was selected for this honor by an Academy Committee; the medal was awarded on behalf of the state by the Board of Governors of Higher Education.

The Academy's quarterly *Bulletin* continues to inform the public and provide the state's government and business leadership and the general public with timely notice of developments of interest at both the state and national levels. This year the *Bulletin's* feature articles discussed a wide range of topics, including "Climate Change and Connecticut: 'New Legislation Mandates Action on Global Warming,'" "Personalized Medicine: The 'Medical GPS' of the Future," "Science is for Everyone... 'at the New Connecticut Science Center'," and "Experiment Station in Forefront of Efforts to Monitor, Test for Mosquito-Borne Viruses." Also, the Academy continued its efforts to support science and technology initiatives in the state by providing technical advice for the development of an energy exhibit for the Stepping Stones Museum for Children in Norwalk, and assisting the *Hartford Courant* in its Newspapers in Education - Making News in Science series, a program targeted to middle school students that publishes articles about interesting science and technology topics and individuals throughout the school year.

As the year came to a close, the Academy commenced work on two studies for the Connecticut Department of Transportation, including a study of "Design-Build for Transportation Projects" and a study regarding "Water-Quality Monitoring and Assessment Due to Addition of a Lane on a Divided Highway in Southeastern Connecticut" as well as providing technical advice to the Stepping Stones Museum for Children in the development of a permanent energy exhibit to be housed at the museum.

The General Assembly, state agencies and other organizations continue to call upon the Academy to address key issues involving science, engineering, and technology. The Academy is pleased to have had an opportunity to participate in developing innovative ideas and solutions for various issues for consideration of the state's leadership and looks forward to meeting new challenges in the year ahead.

On behalf of the Academy's membership and its Governing Council, I would like to thank the individuals and organizations that have assisted us in the past year — our members, patrons, clients and colleagues.



Myron Genel
President
July 1, 2009

The property, affairs and activities of the Academy are managed by a Council of 11 Members, which serves also as the Board of Directors of the Corporation. In addition, the chairs of the ten Technical Boards serve as ex officio, non-voting members of the Council. The Council meets quarterly. There are three Standing Committees of the Academy: Finance, Membership and Nominating.

The members of the Council and chairs of the Standing Committees for the 2009 fiscal year were as follows:

Council of the Academy

Officers:

President – Myron Genel, Yale School of Medicine
 Vice-President/President Elect – Gale F. Hoffnagle, TRC Environmental Corporation, Inc.
 Treasurer – Frederick J. Leonberger, JDS Uniphase Corporation (ret.)
 Secretary – Sandra K. Weller, University of Connecticut Health Center
 Past President – Alan C. Eckbreth, Consultant & United Technologies Research Center (ret.)

Councilors:

Margaret Grey, Yale University
 James C. Hogan, Jr., Connecticut Department of Public Health (ret.)
 Herbert S. Levinson, Transportation Consultant & University of Connecticut (ret.)
 Louis A. Magnarelli, Connecticut Agricultural Experiment Station
 Louis Manzione, University of Hartford
 Richard D. Pinder, Connecticut Department of Public Safety (ret.)

Chairmen of the Technical Boards:

(See pages 4-5 for a listing of the chairs.)

Council Advisors:

John P. Cagnetta, Northeast Utilities (ret.)
 Anthony J. DeMaria, Coherent*DEOS LLC
 J. E. Goldman, GB Energy Systems, Inc.
 Harvey S. Sadow, Boehringer Ingelheim Corporation (ret.)
 Michael J. Werle, TEAMS, Inc.

Academy Staff:

Executive Director

Richard H. Strauss

Assistant Director for Programs

Ann G. Bertini

Office Administrator

Jerome F. Jaminet

Chairmen of the Standing Committees:

Finance:

Frederick J. Leonberger, JDS Uniphase Corporation (ret.)

Membership:

James C. Hogan, Jr., Connecticut Department of Public Health (ret.)

Nominating:

Gale F. Hoffnagle, TRC Environmental Corporation, Inc.

TECHNICAL BOARDS

The Members of the Academy are divided into ten Technical Boards (TBs) that represent both their technical and public policy interests.

The TB responsibilities in their designated policy areas include: serving as a forum for examining science-based issues; providing the resources for assembling and overseeing ad hoc committees to respond to inquiries placed with the Academy; and generating guidance in instances where science and technology are expected to offer new opportunities or challenges for the development of sound state policy. In each of the above, the TBs may encourage the participation of expert non-members.

The Chairs and mission statements of the TBs for the 2009 fiscal year were:

AGRICULTURE, FOOD AND NUTRITION:

Louis A. Magnarelli, The Connecticut Agricultural Experiment Station
The production, distribution, safety, and nutrition of food, including development of biotechnology to improve the quality of food and the environment.

BIOMEDICAL RESEARCH AND HEALTH CARE

Gualberto Ruano, GENOMAS, Inc.

The delivery, quality and cost of medical care and related problems, including preventative health care and the development of biotechnology for improving human health.

COMMUNICATION AND INFORMATION SYSTEMS:

Louis Manzione, University of Hartford

All means of communicating voice, data, and other combinations of business and personal information, including the development of new hardware and software technologies, with special attention to complementarity and interchangeability with transportation systems.

ECONOMIC DEVELOPMENT:

Earl R. Thompson, United Technologies Research Center (ret.)

Economic opportunities afforded by Connecticut's technological base and its human and natural resources, with a special role in assessing the potential economic impact of new technologies.

ENERGY PRODUCTION, USE AND CONSERVATION:

Lee S. Langston, University of Connecticut

The production, use, conservation and distribution of energy with special attention to meeting future demand and environmental quality standards.

ENVIRONMENT:

Barry Chernoff, Wesleyan University

The physics, chemistry, geology, biology, ecology and engineering of the environment as these relate to issues of economic development, energy use, transportation, public health and the quality and utilization of Connecticut's atmosphere, land, water and sea natural resources.

HUMAN RESOURCES:

Kathleen F. Maurer, The Hartford

The effective utilization of people in ways that will contribute to human development and economic growth, including applications of technology to improve both basic and advanced skills to make people more employable, and with attention to the impact of urban growth and development.

PUBLIC HEALTH:

James C. Hogan, Jr. Connecticut Department of Public Health (ret.)

The impacts on the public health of communicable diseases and of materials and energy of man-made and natural origin in the environment.

TECHNOLOGY:

Francis R. Preli, Pratt & Whitney

The development and utilization of knowledge for the purpose of providing material goods and services, including the utilization of research results to design and manufacture materials and products, with particular attention to developing effective means for transferring technology from the academic to the industrial community and within the industrial community, and for the improvement of manufacturing technology.

TRANSPORTATION SYSTEMS:

Mitchell Smooke, Yale University

The movement of people and material within and across Connecticut, including vehicles and infrastructure, with special attention to complementarity and interchangeability with communication systems.

NEW MEMBERS

The Bylaws of the Academy provide that members must live or work in Connecticut and are to be elected by the current members on the basis of their accomplishments in science, engineering and/or technology. In particular, scientists and engineers may be considered for membership on the basis of fulfillment of either or both of the following criteria:

- Scientific distinction achieved through significant original contribution in theory or application;
- Unusual accomplishments in the pioneering of new and developing fields of applied science and technology.

In addition, members of the national academies are automatically considered for membership by resolution of Council.

The Academy's enabling legislation was amended by the Connecticut General Assembly in 2009 to provide for the Academy, through its Bylaws, to establish its membership limit. In fiscal year 2010, Academy membership will be asked to vote on a Bylaw amendment to increase the Academy's current membership limit of 250.

At the close of the 2009 fiscal year the Academy had a total of 253 members, including this year's 23 newly elected Academy members, as follows:

Aindow, Mark

Professor & Program Director, Materials Science & Engineering,
University of Connecticut

Bagtzoglou, Amvrossios C.

Department Head, Civil & Environmental Engineering,
University of Connecticut

Blasko, Vladimir

Fellow, Power Electronics Group, United Technologies Research Center

Choi, Mun Y.

Dean of Engineering, University of Connecticut

Donoghue, Michael J.

Vice President for West Campus Planning & Program Development;
G. Evelyn Hutchinson Professor Ecology & Evolutionary Biology;
& Curator of Botany, Peabody Museum, Yale University

Escabí, Monty A.

Associate Professor of Electrical & Computer Engineering,
University of Connecticut

Gogarten, J. Peter

Professor of Molecular & Cell Biology, University of Connecticut

Jones, Peter W.

James E. English Professor of Mathematics & Applied Mathematics,
Yale University

Jorkasky, Diane K.

Consultant; Formerly Head of World Wide Clinical Research
Operations, Pfizer, Inc.

Krystal, John H.

Robert L. McNeil, Jr., Professor of Clinical Pharmacology; & Deputy
Chairman for Research, Department of Psychiatry,
Yale School of Medicine

Laurencin, Cato T.

Vice President for Health Affairs & Dean of the College of Medicine;
Van Dusen Distinguished Professor of Orthopaedic Surgery;
Professor of Chemical, Materials, & Biomolecular Engineering,
University of Connecticut Health Center

Liang, Bruce T.

Ray Neag Distinguished Professor of Cardiovascular Biology and
Medicine; Director, Center for Cardiology & Cardiovascular
Biology, University of Connecticut School of Medicine

Regan, Lynne

Professor of Molecular Biophysics & Biochemistry & Chemistry,
Chemistry, Organic Chemistry; Director, Sackler Institute for
Biological, Physical & Engineering Sciences, Yale University

Salovey, Peter

Provost; Chris Argyris Professor of Psychology; Professor of
Epidemiology & Public Health, Yale University

Sessa, William C.

Professor & Vice Chairman, Department of Pharmacology;
Director, Vascular Biology & Therapeutics Program,
Yale School of Medicine

Sherwin, Robert S.

C.N.H. Long Professor of Medicine, Yale School of Medicine

Silberschatz, Abraham

Sidney J. Weinberg Professor & Chair of Computer Science,
Yale University

Sweasy, Joann B.

Professor of Therapeutic Radiology & Genetics,
Yale School of Medicine

Tamborlane, William V.

Professor & Chief of Pediatric Endocrinology, Yale School of Medicine

Vanderlick, T. Kyle

Dean of Engineering & Thomas E. Golden, Jr. Professor of
Engineering, Yale University

Viisscher, Pieter T.

Professor of Marine Sciences; & Director, Center for Integrative
Geosciences, University of Connecticut

Whitlatch, Robert B.

Professor of Marine Sciences, University of Connecticut

One of the principal purposes of the Academy is to provide science and technology information and advice on public policy issues, upon request of a government agency or private organization. Information regarding inquiries received, continued, or completed during the fiscal year is listed below:

Monitoring and Technical Assistance During the Implementation of UCHC [University of Connecticut Health Center] Study Recommendations – Phase 2:

The Connecticut General Assembly adopted legislation in May 2008 naming CASE as an independent monitor regarding the implementation of recommendations from the CASE study report, “A Needs-based Analysis of The University of Connecticut Health Center (UCHC) Facilities Plan.” In Phase 2, CASE monitored and reported on progress regarding UCHC’s selection of hospital partners based upon the Solicitation of Interest process. The project report identified that the process resulted in new opportunities that have the potential to transform UCHC from one of the smallest academic medical centers in the nation to one of the largest. The proposed relationships resulting from the formation of a principal clinical partnership between the University of Connecticut Health Center and Hartford Healthcare Corporation, as well as the development of the Connecticut Health Education and Research Collaborative (includes Bristol Hospital, Connecticut Children’s Medical Center, St. Francis Hospital, The Hospital of Central Connecticut and the new University Hospital), provide a unique opportunity for the UCHC to attain the General Assembly’s stated goal of achieving excellence in medical education. Additionally, while the framework and foundations for the articulation of detailed agreements have been developed, it remains necessary for UCHC and its partners to complete this process by finalizing affiliation agreements that will set forth the details of their relationships and operating understandings. It is recommended that the state support these efforts by providing necessary authorizations to begin the process of implementing the plans for the creation of the principal clinical partnership between UCHC and HHC, including authorization for the construction of the replacement hospital on the UCHC Campus. Study Period: *September 2008 – February 2009. Final Report Issued.* Source: Connecticut General Assembly

A Study of Weigh Station Technologies and Practices: This study was requested in response to concerns about the operation of the Greenwich Weigh and Inspection Station (Greenwich Station) on I-95 Northbound. The Greenwich Station’s configuration, combined with both the size and volume of trucks and buses (commercial vehicles) which must use it, severely impacts the ability of enforcement personnel to operate the station effectively to assure commercial vehicle compliance with the state’s weight and safety regulations and requirements. The objective of the study was to provide a literature-based and best practices review of the current state of knowledge regarding weigh and inspection station technologies with respect to their application

and consideration for use in Connecticut. The focus of the study was identification of technologies and practices that have the potential to increase the efficiency and effectiveness of weigh and inspection stations to deter the passage of overweight and unsafe vehicles across the state's highways; increase the transit efficiency for the large percentage of commercial vehicles that are compliant with Connecticut laws and regulations; and utilize information gathered through weigh system technologies for the multiple purposes of enforcement and transportation infrastructure decision-making and budgeting, including pavement design and highway maintenance and rehabilitation. The report concludes that the overall benefits of a statewide network of high-speed mainline weigh-in-motion (WIM) systems, coupled with e-screening capability and a comprehensive virtual and permanent weigh and inspection station system, include encouraging commercial vehicle compliance with state regulations, improving the efficiency of weight and inspection program operations, and improving air quality. The state may also be able to utilize valuable information collected from the system's operation for highway pavement design purposes.

Study Period: *October 2007 – November 2008. Final Report Issued.*
Source: Connecticut Department of Transportation

Applying Transportation Asset Management in Connecticut: This study consists primarily of a detailed review of those states that utilize transportation asset management (TAM) systems that may be applicable for Connecticut's consideration, and includes as well the identification of a comprehensive pavement life-cycle analysis tool. Although the report focuses primarily on highway and bridge assets, TAM also can be applied to other transportation assets. It is a multimodal management strategy that provides a systematic approach to making the best transportation system investment decisions to sustain and improve the mobility of goods and people, and improve the quality of life of the public. The primary conclusion of this study is that, across the United States, individual states are finding the shift to Transportation Asset Management Systems worthwhile and productive as they are steadily seeing the condition of their assets improve and their resource allocation decisions galvanizing around an increasingly coherent vision for their transportation infrastructure.

Study Period: *November 2007 – December 2008. Final Report Issued.*
Source: Connecticut Department of Transportation

Real-Time Energy Report: As a result of legislation adopted in 2007 that was based on the 2006 CASE study "Energy Alternatives and Conservation," the Office of Policy and Management engaged the Academy to oversee the development of a Real-Time Energy Report. This report was created to be broadcast on TV along with a station's weather report as a way to increase public awareness of energy use across the state and the need, under certain conditions, for the public to take actions to collectively reduce its energy use. The report, which is now called CT Power Update, is also available online at www.ctenergyinfo.com.

Project Start Date: *December 2007. Project Completion Date: October 2008*
Source: Connecticut Office of Policy and Management

Preparing for Connecticut's Energy Future: Directed by Public Act 08-168, *An Act Concerning Energy Scarcity and Security, Renewable and Clean Energy and a State Solar Strategy*, the goal of this study was to determine the best way for the state to plan, oversee, develop, implement and manage energy issues and programs in the form of a state agency and/or other alternative organizational structure(s) that would best achieve the energy policy goals of Connecticut, while fostering the state's economic competitiveness. The study takes into consideration the following state energy responsibilities: planning, regulatory matters, efficiency, renewables/clean energy, transportation, education programs, and other issues. It includes a review Connecticut's energy policy history; an overview of the state's current energy leadership structure; best practices summary review of energy organizational and program implementation structures of several states and input from Connecticut's energy stakeholders. The study's primary conclusion was that Connecticut should reorganize its energy leadership structure by combining existing entities, in particular ones that already involve many of the same key representatives. The recommendations include the creation, through legislation, of an independent Connecticut Energy Office, to be headed by a Secretary of Energy, a Connecticut Energy Coordinating Council and a Connecticut Energy Stakeholders Advisory Group. The proposed new energy leadership structure would address comprehensive policy and planning for all energy sectors (electricity, space heating and cooling, transportation) as well as environmental aspects of energy issues, such as climate change.

Study Period: July 2008 – December 2008. Final Report Issued.

Source: Connecticut Clean Energy Fund on behalf of the Connecticut Renewable Energy Investment Board and conducted for the Connecticut General Assembly

A Study of the Feasibility of Utilizing Waste Heat from Central Electric Power Generating Stations: A significant by-product of power generation plants is rejected (or "waste") heat. Rejected heat results from inefficiencies of the power generating process that are then rejected into the atmosphere or into bodies of water – Connecticut rivers and Long Island Sound. Large quantities of heat are rejected in Connecticut – enough energy to heat every building in the state. In September 2008, the Connecticut Energy Advisory Board (CEAB) requested that the Connecticut Academy of Science and Engineering (CASE) investigate the feasibility of using the rejected heat rather than wasting it. Connecticut's power plants transform energy stored in nuclear and chemical fuels, with roughly one-third being converted into useful energy and two-thirds being rejected as heat. The total heat currently being rejected from Connecticut's power plants is an untapped resource that is roughly equal in value to all of the fossil fuels used for the state's residential, commercial, and industrial sectors for process and space heating. The study concluded that

there are several beneficial uses for this rejected heat, and recommended the following: rejected heat should be used to develop district energy (heating and cooling) systems in high population/employment areas; waste heat enterprise zones should be created to encourage economic development; and to complement this effort, Connecticut should also explore the potential of growing algae for generating biofuel from fossil fuel stack gases, or cooling water reject heat. Proven combined heat and power technologies can be utilized to capture rejected heat for useful purposes and will pave the path towards energy independence and security by reducing dependence on fossil fuels, while creating jobs and providing economic benefits, as well as improving the environment and energy efficiency. The challenge is to develop the policies and infrastructure necessary to utilize this valuable resource that is currently wasted.

Start Date: September 2008. Anticipated Project Completion Date: July 2009

Source: Connecticut Energy Advisory Board

Design-Build: A Transportation Project Contracting Methodology for Connecticut's Consideration: The Federal Highway Administration established Special Experimental Project Number 14 in 1990 to enable state transportation agencies to test and evaluate a variety of alternative project contracting methods that provided the potential to expedite highway projects in a more cost-effective manner, without jeopardizing product quality or contractor profitability. One of these methods was design-build. The objective of this study is to conduct a literature review to identify how using the design-build process may benefit the State of Connecticut. The literature review is intended to establish known issues and advantages with the design-build process with regard to transportation infrastructure projects and to determine if there are certain types of transportation-related projects where the design-build contracting methodology would be a preferred method over the traditional design-bid-build project contracting methodology.

Start Date: May 15, 2009. Anticipated Project Completion Date: June 2010

Water Quality Monitoring and Assessment Due to Addition of a Lane on a Divided Highway in Southeastern Connecticut: The Connecticut Department of Transportation (ConnDOT) and the Federal Highway Administration (FHWA) are conducting an Environmental Impact Study for the expansion of I-95 between Old Lyme and New London, Connecticut. The United States Geologic Survey (USGS) is conducting a three-year water quality monitoring program to establish the baseline chloride levels in the proposed highway expansion zone, as required by FHWA's Environmental Impact Statement. On behalf of ConnDOT, the Academy's tasks on this project are as follows: Task A provides for CASE to conduct a literature review to identify and establish best practices as pertaining to monitoring and predicting the impact of deicing salts on the environment; and Task B calls for the CASE Study Committee to participate on ConnDOT's USGS Project Technical Advisory Committee to monitor and provide technical support and input regarding the USGS Water Quality Monitoring Project throughout the project period.

Start Date: May 15, 2009. Anticipated Completion Date Task A: June 2010, Task B: May 2013

Source: Connecticut Department of Transportation

“The Lab” Exhibit Technical Review: A CASE Technical Advisory Committee provides expertise to the Stepping Stones Museum for Children, Norwalk for the development of the museum’s new permanent energy exhibit called, “The Lab.” Working throughout the conceptual and interpretive phases of the exhibit planning process, the committee will provide guidance regarding content development, and identify key messages and outcomes of the exhibit experience.

Project Start Date: May 2009. Anticipated project completion date: February 2010

Source: The Stepping Stones Museum for Children

Additionally, the Academy completed a review of 29 biomedical research proposals on behalf of the Connecticut Department of Public Health (DPH) in the fields of heart disease, cancer or tobacco-related diseases. A 21-member CASE committee composed of members and non-member peers reviewed and rated the proposals. The seven top scoring projects were funded; funding came from Tobacco Settlement Funds. The committee also provided an evaluation and recommendations for improvement to the DPH review process and tools.

Most inquiries are referred to the Technical Boards for a response, or to the Academy Executive Director. One, or more, of the ten Technical Boards is selected to assemble appropriate experts to conduct a study and prepare the response to the inquirer. The Academy provides technical support, prepares reports, and otherwise conducts the pertinent business of the Academy in these efforts.

The Academy also receives requests from state agencies, private organizations, and private inquirers for sources of technical information and technical experts on a variety of topics. While not a referral service, the Academy will provide or suggest resource persons in this state or elsewhere as appropriate.

The Academy continues to be funded by a plan under which the State of Connecticut and the private sector share a substantial portion of the general support of the Academy.

The following major sources of funding were recognized in fiscal year 2009 for a variety of studies and technical assistance (also see “Public Policy Inquiries”):

- \$125,688 from Connecticut Innovations, Inc. through the Connecticut Clean Energy Fund on behalf of the Renewable Energy Investment Board for the study entitled *Preparing for Connecticut’s Energy Future*.
- \$88,073 from the Connecticut Energy Advisory Board for *A Study of the Feasibility of Utilizing Waste Heat from Central Electric Power Generating Stations*.
- \$64,940 from the Connecticut Department of Transportation for studies on *Weigh Station Technologies and Practices*; *Applying Transportation Asset Management in Connecticut*; *Design-Build: A Transportation Project Contracting Methodology for Connecticut’s Consideration*; and *Water Quality Monitoring and Assessment Due to Addition of a Lane on a Divided Highway in Southeastern Connecticut*, and participation in other activities.
- \$44,997 from the Connecticut General Assembly for *Monitoring and Technical Assistance During the Implementation of UCHC [University of Connecticut Health Center] Study Recommendations – Phase 2*.
- \$37,500 from the Connecticut Department of Public Health for technical assistance in conducting a peer review and rating of biomedical research proposals in the fields of heart disease, cancer or tobacco-related diseases with funding through the state’s Tobacco Settlement Fund.
- \$21,544 from the Connecticut Office of Policy and Management for the development of a Real-Time Energy Report.
- \$4,667 from the Connecticut Science Center for support for the Center’s Science Advisory Committee and the development of narratives for the winners of the Connecticut Medals of Science and Technology.
- \$3,000 from the Connecticut Center for Advanced Technology to support the awarding of the H. Joseph Gerber Medal of Excellence to winners of Connecticut science and technology competitions.

In addition to support from the State of Connecticut (see “Contracts and Grants”), the Academy seeks support and financial contributions from leading industrial and commercial institutions headquartered or having major operations in Connecticut. The total received in fiscal year 2009 was \$13,715, for which the Academy is most appreciative.

The following Patrons of the Academy are recognized below for their support and financial contributions in fiscal year 2009. The Academy’s Patrons receive all general literature and major reports of the Academy and are invited to its Annual Meeting.

Leading Patron

The Connecticut Light and Power Company

Annual Meeting Sponsors

Connecticut Center for Advanced Technology
Connecticut Economic Resource Center
Connecticut Technology Council
TRC Environmental Corporation, Inc.
University of Connecticut Health Center
University of Connecticut School of Engineering
Wesleyan University
Yale School of Medicine
Yale University

PUBLICATIONS

In response to the provision of the Academy charter to “...encourage both specialized and interdisciplinary discourse among its members and with other members of the technical community by means of ...publications...” the Academy undertakes the following activities:

The Bulletin

This quarterly publication of the Academy promotes the exchange of technical and research information among the various technical communities in Connecticut. The *Bulletin* generally includes a feature article, news from the National Academies, and information regarding science and technology developments of interest in the state of Connecticut.

Additionally, an Executive Newsletter, a summary of the *Bulletin*, is published quarterly. This newsletter provides busy industry, academic and government leaders with highlights of the most important issues presented in the *Bulletin*.

The *Bulletin's* editorial staff includes Martha Sherman, Managing Editor, and two Executive Editors: Academy Members George Foyt, Manager of Electronics Research, United Technologies Research Center (ret.) and Edward C. Monahan, Professor emeritus, Marine Sciences and Resource Economics, University of Connecticut (ret.). Dr. Foyt retired from his position as an Executive Editor in June 2009, and was replaced by Phillip Gardner, Director, CO₂ Laser Commercial Engineering, Coherent, Inc. (ret.).

Copies of the *Bulletin* are sent to Academy members, other academic and industrial scientists, state legislators, commissioners of the state's executive departments, patrons of the Academy, as well as a variety of interested people.

Academy Website

The Academy's website can be found at www.ctcase.org. Information available on the website includes the following:

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- [Home Page](#)
 - [About CASE](#)
 - [The Bulletin](#)
 - [In the Press](#)
 - [Publications](#)
 - [News in Science and Technology \(an executive summary of the Bulletin\)](#)
 - [Technical Boards](#)
 - [Student Science and Technology Competitions and Special Events](#)
 - [Connecticut Medals of Science and Technology](#)
 - [H. Joseph Gerber Medal of Excellence](#)
 - [Membership Directory](#)
 - [Links](#)
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 - [Annual Report](#)
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CONNECTICUT MEDALS OF SCIENCE AND TECHNOLOGY

The Connecticut Medals of Science and Technology are awarded in alternate years by the State of Connecticut through the Board of Governors of Higher Education. The Connecticut Medals are modeled after the National Medals of Science and Technology, which are awarded annually by the president of the United States.

The Connecticut Medal of Science is awarded in recognition of extraordinary achievements in scientific fields crucial to Connecticut's economic competitiveness. The Connecticut Medal of Technology is awarded in recognition of extraordinary achievements by an individual in fields of technology that are demonstrated to have made a difference in Connecticut's industrial competitiveness.

Previous recipients of the Connecticut Medal of Science include Frederick M. Richards, Sterling Professor Emeritus of Molecular Biophysics and Biochemistry, Yale University, 1995; Ronald R. Coifman, Professor of Mathematics, Yale University, 1996; and William C. Stwalley, Board of Trustees Distinguished Professor and Head, Physics Department, University of Connecticut, 2005.

Previous recipients of the Connecticut Medal of Technology include H. Joseph Gerber, founder of Gerber Scientific, Inc., 1995; Charles H. Kaman, founder and CEO of Kaman Corporation, 1996; Anthony J. DeMaria, Chief Scientist, Coherent-DEOS, LLC, 2004; and Gene Banucci, Founder and Chairman, ATMI, Inc., 2006.

2009 Connecticut Medal of Science



Robert R. Birge, PhD

Robert R. Birge, PhD

*The Harold S. Schwenk, Sr., Distinguished Chair
in Chemistry
University of Connecticut*

A Yale student composition, *Time After Time*, became the second most frequently performed song by the renowned à cappella group, the Yale Whiffenpoofs. The student composer and Whiffenpoof musical director, Robert "Pitchpipe" Birge (Yale '68), went on to complete other noteworthy accomplishments including creating a protein-based disk drive in 1982, pioneering the use of spectroscopic and theoretical

methods to study biological molecules, and most recently, working to develop an artificial retina that will bring functional sight to those who would otherwise be blind.

A chemistry and music major, Birge recalls that his music professor did him “an enormous favor by pushing him towards the sciences.” In graduate work at Wesleyan University, Birge studied chemical physics under the mentorship of Peter Leermakers on “high resolution molecular spectroscopy of retinals” to better understand how “light drives the isomerization of the retinal chromophore,” and creates a change in the geometry of protein molecules responsible for vision.

His research led him to work with a 3.5 billion-year-old archaeal protein called bacteriorhodopsin, found worldwide in salt marshes. This simple protein is among the earliest life forms converting sunlight into energy and is similar to the visual protein rhodopsin. The research provides insight into understanding how rhodopsin activates the nerve impulses essential for vision, paving the way for development of an artificial retina, which is now five to ten years from completion.

Birge suggests that young people “follow their dreams and find something to do that genuinely interests them,” because if “you love something you will find your niche” and that passion will pull you through difficult times. His contributions include over 225 refereed articles. He served on a 2007 CASE Study Committee on Energy Alternatives and Conservation, established a new center for Nanobionics at the University of Connecticut, was elected to the Connecticut Academy of Science and Engineering and the Connecticut Academy of Arts and Sciences in 2005, earned the 3M Award of Canada in Physical Chemistry and the Connecticut Innovations 2001 Annual Technology Award.

This summary was adapted from Dr. Birge’s narrative for the Connecticut Science Center Medal Project, written by Wendy Millstein.

The Academy sponsors, supports, or participates in a number of special activities in response to the mandate of its Charter to “... promote interest in science and engineering on the part of the public, especially young people.” This year the Academy recognized students of the Connecticut Science Challenge, Connecticut Science Fair, Connecticut Junior Science and Humanities Symposium, and the Connecticut Invention Convention at the Academy’s Annual Meeting and Awards Dinner on May 20, 2009. Funding for all student and school awards is provided from contributions to the Academy’s Student Awards Fund by the Members of the Academy and by the Connecticut Center for Advanced Technology, for its sponsorship of the H. Joseph Gerber Medal of Excellence.

The H. Joseph Gerber Medal of Excellence – An Award of the Connecticut Academy of Science and Engineering in Partnership with the Connecticut Center for Advanced Technology



This award is in recognition of H. Joseph Gerber’s (1924-1996) technical leadership in inventing, developing and commercializing manufacturing automation systems for a wide variety of industries worldwide. An elected member of the National Academy of Engineering and the Connecticut Academy of Science and Engineering, Mr. Gerber received the National Medal of Technology in 1994 followed by the Connecticut Medal of Technology in 1995.

Joe Gerber’s contributions to the technological capabilities of manufacturing were the result of a life grounded in genius, and shaped by vision and determination. As an inventor and as founder, Chief Executive Officer, Chairman of the Board and President of Gerber Scientific, Inc., Mr. Gerber was a leader for nearly half a century in inventing and producing factory automation equipment designed to solve global manufacturing problems. Mr. Gerber shaped his companies and the industries they served with a vision – of increasing human potential through technology; of eliminating tedious, time-consuming manual tasks through automation that increases productivity; and of creating technology that directly and immediately revolutionized manufacturing for companies both large and small. Today, Joe Gerber’s genius continues to dominate in the manufacture of apparel and flexible materials, signs and commercial graphics, and lenses for eyeglasses.

Mr. Gerber made the following comments upon his receipt of the National Medal of Technology in 1994: “This award is more than a symbol of personal

achievement as it is the highlight of a long and productive career for me. It is an affirmation that manufacturing automation has enhanced every aspect of human life and profoundly impacted the standard of living of every person and nation in the world. I am only one of the many who have contributed to our nation's rich technological heritage and one of the fortunate few to be recognized for his achievements."

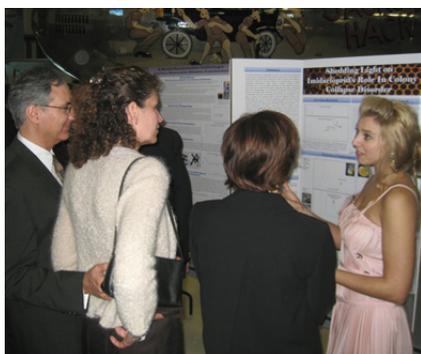
The 2009 H. Joseph Gerber Medal of Excellence was awarded to the winners of the Connecticut Science Challenge and the Connecticut Science Fair's Life Sciences and Physical Sciences Senior Divisions. Each of the winners



received a solid silver medal and a \$1,000 honorarium.

Aditya Rajagopalan, Choate Rosemary Hall, Wallingford, CT
Connecticut Science Challenge – 1st Place

Project Title: *Modeling Synergistic Cellulolytic-Hemicellulolytic Enzyme Complexes for Lignocellulosic Hydrolysis*



Eliza H. McNitt, Greenwich High School, Greenwich, CT
Connecticut Science Fair – 1st Place, Life Sciences – Senior Division

Project Title: *Shedding Light on Imidacloprid's Role in Colony Collapse Disorder*

Michael D. Tom, Greenwich High School, Greenwich, CT
Connecticut Science Fair – 1st Place, Physical Sciences – Senior Division

Project Title: *A Novel Tensiometer Utilizing Carbon Nanotube Elastic Conductors*



Top photo: Aditya Rajagopalan (left), with science teacher Deron Chang (Photo courtesy of Stephanie Choi)

Middle: Eliza McNitt (far right) discusses her project. (Photo courtesy of Deborah Day)

Bottom: Michael D. Tom (center) with CASE President Myron Genel (left) and Member Scott Rivkees (Photo courtesy of Andrew Bramante)

National Intel Science Talent Search and the Connecticut Science Challenge

The national Intel Science Talent Search, administered by Science Service, is sponsored by the world's largest chipmaker, Intel Corporation. Formerly known as the Westinghouse Science Talent Search, the national contest is America's oldest and most highly regarded science competition for high school seniors that is intended to stimulate student interest in science, math and technology. High school students from around the United States participate in this prestigious annual science project competition. Additionally, the projects of the state's finalists and semifinalists are subsequently judged for state honors in the Connecticut Science Challenge.

This year, 1,608 entrants from 36 states, the District of Columbia and accredited overseas schools in India and South Korea, competed in the Intel Science Talent Search. A total of 40 students won honors as finalists and 300 students were selected as semi-finalist winners, including five students from Connecticut who were awarded semi-finalist honors. Each of Connecticut's semifinalist winners and their respective schools received awards of \$1,000.

The 2009 Connecticut Science Challenge first place winner was **Aditya Rajagopalan**, for his project, *Modeling Synergistic Cellulolytic-Hemicellulolytic Enzyme Complexes for Lignocellulosic Hydrolysis*. He was also a winner of the H. Joseph Gerber Medal of Excellence. (Please see the H. Joseph Gerber Medal of Excellence for a listing of the winners of this award.)

Second place honors, which included a \$500 award from the Academy, went to national finalist **Stephanie Choi** of Choate Rosemary Hall in Wallingford, CT, for her project *Identification of Nox2-Modifier Gene Variances on C57BL6 Mice Hybrid SJL/C57BL6 Mice*. An honorable mention, which included an award of \$250 from the Academy, went to **Fiona W. Wood** of North Haven High School, North Haven, CT, for her project *Biophysically Realistic Computational Models of Temporal Encoding in Cortex*.

In addition, these winners also received a Certificate of Recognition from the Academy and an Official Statement of recognition from Governor M. Jodi Rell.

Connecticut Science Fair

The 2009 Connecticut Science Fair was held in March at Quinnipiac College in Hamden.

To promote interest in science and engineering, and to recognize those high school students whose science projects are judged to be the best of the senior division in each of the two major categories, Life Sciences and Physical Sciences, the Academy provides special awards each year to the top two winners of the Connecticut Science Fair.

The winners received the H. Joseph Gerber Medal of Excellence, including a solid silver medal and a \$1,000 honorarium. In addition, they received a Certificate of Recognition from the Academy and an Official Statement of recognition from Governor M. Jodi Rell. (Please see the H. Joseph Medal of Excellence for a listing of the winners of this award.)

Connecticut Junior Science and Humanities Symposium

The Connecticut Junior Science and Humanities Symposium is sponsored by the University of Connecticut and is part of the national U. S. Army Junior Science and Humanities Symposia Program. The Academy joined with other corporations and institutions in support of this event.



Connecticut Junior Science and Humanities Symposium awardees (left to right) Amoolya Narayanan, Anita Gade and Ishan Sinha (Photo courtesy of Deborah Day)

The 2009 symposium was held in March at the University of Connecticut. The symposium has been effective in enhancing student motivation, stimulating original research and promoting the setting for exciting scientific meetings. It is intended to recognize students who have demonstrated intellectual achievement and promise. This event provides a forum for selected high school

students to present a variety of technical papers and posters, meet in small discussion groups with leading scientists from Connecticut industries, and utilize special facilities at the university to explore technical and ethical challenges of current science. The Academy recognizes the top five oral presenters and their respective schools. The winners are as follows:

Amoolya Narayanan, Glastonbury High School, Glastonbury, CT
Topic: *Anti-biofilm Effect of Trans-cinnamaldehyde on Uropathogenic Escherichia coli*

Swathi Krishnan, Rye Country Day School, Rye, NY
Topic: *Use of Novel Structured RNA Molecules to Block HIV-1 Replication*

Matthew Greenberg, Staples High School, Westport, CT
Topic: *Obesity Pathogenesis: Dissecting the Models of Leptin Resistance*

Anita Gade, Fairfield Warde High School, Fairfield, CT

Topic: *Stargazin Glutamic Acid 191, a Conserved Residue amongst TARP Proteins: Investigating Its Role in Stargazin Oligomerization*

Ishan Sinha, Amity Regional High School, Woodbridge, CT

Topic: *Improving Low-Temperature Performance of Biodiesel*

These students and their schools were recognized by the Academy at the JSHS awards ceremony. The students received Certificates of Recognition, and books containing bookplates with the seal of the Academy were presented to both the students and their school libraries in the name of the Academy. Each high school was also recognized with a Letter of Commendation and a \$300 donation to its science department to further science and mathematics education from the Academy. Additionally, Governor M. Jodi Rell issued an Official Statement to each high school in recognition of this outstanding achievement.

Connecticut Invention Convention

The Connecticut Invention Convention is a program that seeks to provide students in grades K-8 with a meaningful opportunity to develop and encourage creative thinking and invention. The Invention Convention program is designed to integrate all aspects of a student's educational experience in an effort to solve real-life problems by understanding and using creative skills. The convention provides an opportunity for student inventors to participate in a friendly competition and to share their ideas with each other as well as adult inventors, engineers, patent attorneys and other professionals.

For 2009, the Academy recognized the 17 middle school student winners of the Invention Convention with Certificates of Recognition and monetary awards (\$50 US Savings Bonds).



Invention Convention students display their winning projects at the CASE dinner. (Photo courtesy of Charles Baumgartner)

ANNUAL MEETING

The thirty-fourth Annual Meeting and Dinner of the Academy was held May 20, 2009, at the New England Air Museum in Windsor Locks, CT. The event included a business meeting for members that provided a review of the activities and affairs of the Academy. Approximately 250 Academy members and guests had an opportunity to meet with student science competition award winners, who displayed their projects during the event's reception. During dinner, the twenty-three newly elected members of the Academy were recognized.

High school and middle school students of science and technology competitions were presented with awards during the Academy's celebratory Student Science Competition Awards Ceremony. The students and schools recognized by the Academy are listed under the "Special Activities" section of this report. Approximately \$6,000 was awarded to this year's winning students and their schools. This year, special recognition was given to the Lyme-Old Lyme High School robotics team, "Techno Ticks," for winning the International Chairman's Award at the national FIRST Robotics Competition.



Student winners await presentation of the Student Science Competition Awards, part of the Academy's annual dinner. (Photo courtesy of Deborah Day)

The event concluded with a keynote address that was delivered by Academy member Gary Yohe, Woodhouse/Sysco Professor of Economics at Wesleyan University. The author of more than 100 scholarly articles, several books, and many contributions to media coverage, most of Dr. Yohe's work has focused attention on the mitigation and adaptation/impacts sides of climate change. He is a senior member of the International Panel on Climate Change that was awarded a share of the 2007 Nobel Peace Prize.

The Academy recognizes and thanks the following companies and organizations for their generous donations in support of the Annual Meeting: Connecticut Center for Advanced Technology; Connecticut Economic Resource Center; Connecticut Technology Council; TRC Environmental Corporation, Inc.; University of Connecticut Health Center; University of Connecticut School of Engineering; Wesleyan University; Yale University; and Yale University School of Medicine.

**CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED**

Financial Statements

**YEAR ENDED JUNE 30, 2009
(with comparative totals for 2008)**

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

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INDEPENDENT AUDITOR'S REPORT

JOHN C. BURNS, CPA, LLC
CERTIFIED PUBLIC ACCOUNTANT AND CONSULTANT

Independent Auditor's Report

Council of the Academy
Connecticut Academy of Science
and Engineering, Incorporated
Hartford, Connecticut

I have audited the accompanying statement of financial position of the Connecticut Academy of Science and Engineering, Incorporated (Academy) as of June 30, 2009 and the related statements of activities, cash flows, and functional expenses for the year then ended. These financial statements are the responsibility of the Academy's management. My responsibility is to express an opinion on these financial statements based on my audit.

I conducted my audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States. Those standards require that I plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. I believe that my audit provides a reasonable basis for my opinion.

In my opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Connecticut Academy of Science and Engineering, Incorporated as of June 30, 2009, and the changes in its net assets and its cash flows for the year then ended in conformity with accounting principles generally accepted in the United States of America.

Information at June 30, 2008 and for the year ended June 30, 2008, is presented for comparative purposes only and was extracted from the financial statements prepared by net asset class for that year, on which an unqualified opinion dated December 2, 2008, was expressed.

In accordance with Government Auditing Standards, I have also issued my report dated December 2, 2009, on my consideration of the Academy's internal control over financial reporting and on my tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of my testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with Government Auditing Standards and should be considered in assessing the results of my audit.

John C. Burns CPA, LLC

John C Burns, CPA, LLC
December 2, 2009

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STATEMENT OF FINANCIAL POSITION

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING INCORPORATED

STATEMENT OF FINANCIAL POSITION JUNE 30, 2009 (with comparative totals for 2008)

	<u>2009</u>	<u>2008</u>
ASSETS		
Cash, Including Interest-Bearing Deposits of \$335,892 in 2009 and \$344,318 in 2008 (Note 3)	\$337,519	\$352,959
Accounts Receivable – Contracts (Note 2)	63,573	25,354
Prepaid Expenses	7,082	3,234
Other Assets	704	748
Furniture and Equipment, Net of Accumulated Depreciation of \$30,930 in 2009 and \$28,068 in 2008 (Note 2)	<u>7,456</u>	<u>10,318</u>
TOTAL ASSETS	<u>\$416,334</u>	<u>\$392,613</u>
LIABILITIES AND NET ASSETS		
LIABILITIES		
Accounts Payable and Accrued Expenses	\$23,768	\$23,951
Contract Revenue Received in Advance (Notes 2 and 5)	<u>6,000</u>	<u>14,774</u>
TOTAL LIABILITIES	<u>29,768</u>	<u>38,725</u>
NET ASSETS (Notes 2 and 6)		
Unrestricted:		
Board Designated	26,855	19,290
Undesignated	<u>288,450</u>	<u>277,645</u>
TOTAL UNRESTRICTED NET ASSETS	315,305	296,935
Temporarily Restricted:	<u>71,261</u>	<u>56,953</u>
TOTAL NET ASSETS	<u>386,566</u>	<u>353,888</u>
TOTAL LIABILITIES AND NET ASSETS	<u>\$416,334</u>	<u>\$392,613</u>

See notes to financial statements

STATEMENT OF ACTIVITIES

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING INCORPORATED

STATEMENT OF ACTIVITIES
YEAR ENDED JUNE 30, 2009
(with comparative totals for 2008)

	2009			2008 Total
	Unrestricted	Temporarily Restricted	Total	
Revenues and Other Support				
Contracts (Note 5)	\$390,409	\$0	\$390,409	\$643,475
Contributions (Note 2)	17,165	15,075	32,240	34,710
Membership Dues	23,800	0	23,800	21,780
Interest Income	7,433	2,282	9,715	11,280
Report Fees and Miscellaneous Income	0	0	0	330
Contributed Services (Note 2)	88,352	0	88,352	78,540
Total	527,159	17,357	544,516	790,115
Net Assets Released from Restrictions (Notes 2 and 6):				
Satisfaction of Program Restrictions	3,049	(3,049)	0	0
Total Revenues and Other Support	530,208	14,308	544,516	790,115
Expenses (Note 2):				
Program Services:				
Publications	29,182	0	29,182	32,509
Technical Guidance and Information	298,720	0	298,720	503,280
Awards	13,578	0	13,578	7,158
Total Program Services	341,480	0	341,480	542,947
Support Services:				
Management and General	170,054	0	170,054	122,605
Fund Raising	304	0	304	276
Total Support Services	170,358	0	170,358	122,881
Total Expenses	511,838	0	511,838	665,828
Change in Net Assets	18,370	14,308	32,678	124,287
Net Assets at Beginning of Year	296,935	56,953	353,888	229,601
Net Assets at End of Year	\$315,305	\$71,261	\$386,566	\$353,888

See notes to financial statements

STATEMENT OF FUNCTIONAL EXPENSES

STATEMENT OF FUNCTIONAL EXPENSES YEAR ENDED JUNE 30, 2009 (with comparative totals for 2008)

	PROGRAM SERVICES			2009
	Publications	Technical Guidance & Information	Awards	Total Program Services
Professional Services	\$21,770	\$184,240	\$1,366	\$207,376
Professional Services – In-Kind (Note 2)	0	88,352	0	88,352
Employee Benefits	751	11,708	163	12,622
Rent and Parking (Note 7)	797	1,593	0	2,390
Office Expenses	743	1,176	16	1,935
Insurance	191	383	0	574
Travel and Subsistence	149	1,530	131	1,810
Council Activities	0	0	0	0
Membership Activities	0	0	0	0
Awards and Prizes	0	0	11,902	11,902
Printing	4,552	9,280	0	13,832
Miscellaneous	0	0	0	0
Total Expenses before Depreciation	28,953	298,262	13,578	340,793
Depreciation (Note 2)	229	458	0	687
Total Expenses	\$29,182	\$298,720	\$13,578	\$341,480

See notes to financial statements

STATEMENT OF FUNCTIONAL EXPENSES

STATEMENT OF FUNCTIONAL EXPENSES YEAR ENDED JUNE 30, 2009 (with comparative totals for 2008)

<u>SUPPORT SERVICES</u>				
<u>Management & General</u>	<u>Fund Raising</u>	<u>Total Support Services</u>	<u>2009 Total Program & Support</u>	<u>2008 Total</u>
\$111,457	\$0	\$111,457	\$318,833	\$508,670
0	0	0	88,352	78,540
12,421	0	12,421	25,043	0
8,737	199	8,936	11,326	10,500
9,829	0	9,829	11,764	13,014
1,771	48	1,819	2,393	2,260
1,419	0	1,419	3,229	6,773
3,551	0	3,551	3,551	4,158
13,406	0	13,406	13,406	15,213
0	0	0	11,902	6,396
2,344	0	2,344	16,176	18,375
<u>3,000</u>	<u>0</u>	<u>3,000</u>	<u>3,000</u>	<u>326</u>
167,935	247	168,182	508,975	664,225
<u>2,119</u>	<u>57</u>	<u>2,176</u>	<u>2,863</u>	<u>1,603</u>
<u>\$170,054</u>	<u>\$304</u>	<u>\$170,358</u>	<u>\$511,838</u>	<u>\$665,828</u>

See notes to financial statements

STATEMENT OF CASH FLOWS

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING INCORPORATED

STATEMENT OF CASH FLOWS
YEAR ENDED JUNE 30, 2009
(with comparative totals for 2008)

	<u>2009</u>	<u>2008</u>
Cash Flows from Operating Activities		
Change in Net Assets	\$ 32,678	\$ 124,287
Adjustments to Reconcile Change in Net Assets to Net Cash Provided by (Used) in Operating Activities:		
Depreciation	2,863	1,603
Change In:		
Accounts Receivable - Contracts	(38,219)	65,596
Prepaid Expenses and Other Assets	(3,805)	(1,981)
Accounts Payable and Accrued Expenses	(183)	8,822
Contract Revenue Received in Advance	(8,774)	(38,389)
Total Adjustments	<u>(48,118)</u>	<u>35,651</u>
Net Cash Provided by (Used in) Operating Activities	<u>(15,440)</u>	<u>159,938</u>
Cash Flows from Investing Activities		
Additions to Furniture and Equipment	<u>0</u>	<u>(8,396)</u>
Net Cash Used in Investing Activities	<u>0</u>	<u>(8,396)</u>
Net Increase(Decrease) in Cash	(15,440)	151,542
Cash - Beginning of Year	<u>352,959</u>	<u>201,417</u>
Cash - End of Year	<u>\$ 337,519</u>	<u>\$ 352,959</u>

See notes to financial statements

NOTES TO FINANCIAL STATEMENTS

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS

JUNE 30, 2009

(with comparative totals for 2008)

NOTE 1 – NATURE OF OPERATIONS

The Connecticut Academy of Science and Engineering, Incorporated (Academy) was established to foster science and engineering, to promote the application of science and engineering to human health and welfare, and to study and report upon any subject within its competence when appropriate.

The Academy is a not-for-profit organization established under Special Act No. 76-53 of the State of Connecticut and incorporated under the Non-stock Corporation Act of the State of Connecticut. The Academy is exempt from federal income tax under Section 501(c) (3) of the Internal Revenue Code and is also exempt from state income tax.

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

Net Asset Classes

The net asset classes of the Academy consist of the following:

Unrestricted Net Assets

Unrestricted net assets consist of net assets over which the governing board has control to use in carrying out the operations of the Academy in accordance with its charter and bylaws and are neither permanently restricted nor temporarily restricted by donor-imposed restrictions. The governing board has designated \$26,855 of unrestricted net assets for the Academy's Endowment.

Temporarily Restricted Net Assets

Temporarily restricted net assets consist of net assets whose use is limited by donor-imposed restrictions, which either expire with the passage of time (time restriction) or can be fulfilled and removed by actions of the Academy pursuant to the restrictions (purpose restriction). The Academy reflects contributions as temporarily restricted support based on the purpose of the restrictions stipulated by the donor. The Academy reflects contract revenue as unrestricted support if the restrictions are met in the reporting period. The Academy's temporarily restricted net assets consist of monies restricted for Endowment and Student Award purposes.

When donor-imposed restrictions expire, that is when a stipulated time restriction ends or the purpose of the restriction is accomplished, temporarily restricted net assets are reclassified to unrestricted net assets and reported in the accompanying statement of activities as net assets released from restrictions.

Contributions

Contributions received or promises to give without donor-imposed restrictions are reflected as unrestricted support. Contributions received or promises to give with donor-imposed restrictions are reflected as either temporarily or permanently restricted support in the accompanying financial statements. Contributions or promises to give with donor-imposed conditions are not recognized as contributions or promises to give in the accompanying financial statements until the period when the conditions are met.

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS
JUNE 30, 2009
(with comparative totals for 2008)

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

Contributed Services

Contributed services have been provided by a number of unpaid volunteers who have contributed their time. The members of the Academy and their peers have donated significant amounts of time to the Academy's program services. Contributed services are recognized if the services received create or enhance nonfinancial assets or require specialized skills, are provided by individuals possessing those skills, and would typically need to be purchased if not provided by donation. Contributed services that do not meet the above criteria are not recognized (Note 4).

For the years ended June 30, contributed services and related expenses provided for the Technical Guidance and Information Program reflected in the accompanying financial statements are as follows:

	<u>2009</u>	<u>2008</u>
Professional Services	\$88,352	\$78,540

Furniture and Equipment

All acquisitions or donations of furniture and equipment are reflected at cost or their fair value at the date of gift. Depreciation is provided for over the estimated useful lives of the assets, which range from five to seven years, on a straight-line basis.

Accounts Receivable - Contracts and Contract Revenue Received in Advance

Accounts receivable - contracts consist of fees earned on contracts in progress, but not yet received. In the opinion of management, all accounts receivable at June 30, 2009 and 2008 are deemed collectible.

Contract revenue received in advance consists of contract fees received, but not yet earned.

Functional Expenses

The costs of providing the various programs and other activities have been summarized on a functional basis on the accompanying Statement of Activities. Accordingly, certain costs have been allocated among the programs and supporting services benefited.

The Academy's Program Services are as follows: "Publications" represents the production and distribution of quarterly bulletins; "Technical Guidance and Information" represents the providing of information and advice on science and technology to government, industry and citizens of Connecticut; and "Awards" represents a student awards program to recognize achievements related to science and technology.

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS
JUNE 30, 2009
(with comparative totals for 2008)

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (continued)

Functional Expenses (continued)

The Academy's Support Services are as follows: "Management and General" represents expenses incurred in support of the general operation and management of the Academy; and "Fund Raising" represents expenses related to fund raising activities in support of the Science and Technology Collaborative and the operation and general affairs of the Academy.

Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements, and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates.

NOTE 3 - CONCENTRATION OF CASH CREDIT RISK

The Academy maintains cash accounts at various local banks. Accounts at the banks are insured by the Federal Deposit Insurance Corporation (FDIC) up to \$250,000. At June 30, 2009 and 2008, cash balances at banks covered by FDIC insurance aggregate \$337,519 and \$346,249, respectively and amounts not insured aggregated approximately \$0 and \$200,195, respectively.

NOTE 4 - DEFINED CONTRIBUTION PLAN

The Academy maintains a simple defined contribution plan for its employees. The Academy matches 100% of the first 3% of each employee's contributions. The amount contributed by the Academy was \$4,845 and \$0 for the years ended June 30, 2009 and 2008, respectively.

NOTE 5 - CONTRACT ARRANGEMENTS AND SUBSEQUENT FUNDING RISKS

During the years ended June 30, 2009 and 2008 the Academy applied to the Connecticut General Assembly, other State Agencies and public companies for funding in the form of Personal Service Agreements. The Academy has obtained various contracts aggregating \$590,794 and \$641,303 during the years ended June 30, 2009 and 2008, respectively

Future similar operations beyond June 30, 2009 are dependent on continued funding from the State or other similar organizations.

Certain services are provided by the members of the Academy on a volunteer basis, but do not meet the criteria to be recognized in the accompanying financial statements (Note 2).

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS

JUNE 30, 2009

(with comparative totals for 2008)

NOTE 5 – CONTRACT ARRANGEMENTS AND SUBSEQUENT FUNDING RISKS (continued)

Contracts, accounts receivable – contracts and contract revenue as of and for the year ended June 30, 2009 consisted of the following:

<u>Agency</u>	<u>Total Contract Amount</u>	<u>Accounts Receivable - Contracts</u>	<u>Contract Rev. Year End June 30, 2009</u>
Connecticut Department of Public Health	\$37,500	\$0	\$37,500
Connecticut Office of Policy and Management	70,490	0	21,544
Connecticut Energy Advisory Board	96,880	63,073	88,073
Connecticut General Assembly	44,997	0	44,997
Connecticut Department of Transportation	398,915	0	64,940
Connecticut Center for Advanced Technologies	9,000	0	3,000
Connecticut Science Center	5,500	500	4,667
Connecticut Innovations, Inc. thru Connecticut Clean Energy Fund	<u>125,688</u>	<u>0</u>	<u>125,688</u>
Totals	<u>\$ 788,970</u>	<u>\$ 63,573</u>	<u>\$ 390,409</u>

NOTE 6 - NET ASSETS

Net assets released from donor-restriction by incurring expenses satisfying the purposes of contributions restricted to various Academy programs or restricted as to time periods, amounted to \$3,049 and \$3,225 for the years ended June 30, 2009 and 2008, respectively. At June 30, 2009 and 2008, net assets of \$71,261 and \$56,953, respectively, were temporarily restricted.

Net assets temporarily restricted at June 30, 2009 consisted of \$49,743 and \$21,518 for the Endowment and Student Awards, respectively. Net assets temporarily restricted at June 30, 2008 consisted of \$39,871 and \$17,082 for the Endowment and Student Awards, respectively.

NOTE 7 – LEASE OBLIGATION

The Academy signed a five year lease for its office space on July 22, 2008. The monthly rental is \$830 for the first two years and increases to \$855 for years three and four and \$880 for year five. The monthly rental includes one parking space. Rent expense amounted to \$9,958 and \$9,932 for the years ended June 30, 2009 and 2008, respectively.

JOHN C. BURNS, CPA, LLC
CERTIFIED PUBLIC ACCOUNTANT AND CONSULTANT

Independent Auditor's Report on Internal Control over Financial
Reporting and on Compliance and Other Matters Based
on an Audit of Financial Statements Performed
in Accordance With Government Auditing Standards

Council of the Academy
Connecticut Academy of Science
and Engineering, Incorporated
Hartford, Connecticut

I have audited the financial statements of the Connecticut Academy of Science and Engineering, Incorporated (Academy), as of and for the year ended June 30, 2009, and have issued my report thereon dated December 2, 2009. I conducted my audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States.

Internal Control Over Financial Reporting

In planning and performing my audit, I considered the Academy's internal control over financial reporting as a basis for designing my auditing procedures for the purpose of expressing my opinion on the financial statements, but not for the purpose of expressing an opinion on the effectiveness of the Academy's internal control over financial reporting. Accordingly, I do not express an opinion on the effectiveness of the Academy's internal control over financial reporting.

A control deficiency exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent or detect misstatement on a timely basis. A significant deficiency is a control deficiency, or combination of control deficiencies, that adversely affects the Academy's ability to initiate, authorize, record, process, or report financial data reliably accordance with generally accepted accounting principles such that there is more than a remote likelihood that misstatement of the Academy's financial statement that is more than inconsequential will not be prevented or detected by the Academy's internal control.

A material weakness is a significant deficiency, or combination of significant deficiencies that results in more than a remote likelihood that material misstatement of the financial statements will not be prevented or detected by the Academy's internal control.

My consideration of the internal control over financial reporting was for the limited purpose described in the first paragraph of this section and would not necessarily identify all deficiencies in internal control that might be significant deficiencies or material weaknesses. I did not identify any deficiencies in internal control over financial reporting that I consider to be material weaknesses, as defined above.

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Compliance and other Matters

As part of obtaining reasonable assurance about whether the Academy's financial statements are free of material misstatement, I performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of my audit, and accordingly, I do not express such an opinion. The results of my tests disclosed no instances of noncompliance or other matters that are required to be reported under Government Auditing Standards.

This report is intended solely for the information and use of the Council of the Academy, management, Connecticut Innovations, Inc, Connecticut Energy Advisory Board, Connecticut Department of Transportation, Connecticut General Assembly, Connecticut Department of Public Health and the Connecticut Office of Policy and Management and state awarding agencies and pass-through entities and is not intended to be and should not be used by anyone other than these specified parties.

John C. Burns CPA, LLC

John C Burns CPA, LLC
December 2, 2009

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JOHN C. BURNS, CPA, LLC
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Independent Auditor's Report on Compliance with Requirements
Applicable to its Major Programs and on Internal Control
Over Compliance in Accordance with
the State Single Audit Act and on the Schedule
of Expenditures of State Financial Assistance

Council of the Academy
Connecticut Academy of Science
and Engineering, Incorporated
Hartford, Connecticut

Compliance

I have audited the compliance of the Connecticut Academy of Science and Engineering, Incorporated (Academy) with the types of compliance requirements described in the Office of Policy and Management Compliance Supplement/Contract that are applicable to its major state programs for the year ended June 30, 2009. The major state programs are identified in the summary of auditors' results section of the accompanying schedule of findings and questioned costs. Compliance with the requirements of laws, regulations, contracts and grants applicable to its major state programs is the responsibility of the Academy's management. My responsibility is to express an opinion on compliance based on my audit.

I conducted my audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States; and the State Single Audit Act (C.G.S. Section 4-230 to 4-236). Those standards and the State Single Audit Act require that I plan and perform the audit to obtain reasonable assurance about whether noncompliance with the types of compliance requirements referred to above that could have a direct and material effect on a major state program occurred. An audit includes examining, on a test basis, evidence about the Academy's compliance with those requirements and performing such other procedures, as I considered necessary in the circumstances. I believe that my audit provides a reasonable basis for our opinion. My audit does not provide a legal determination on the Academy's compliance with those requirements.

In my opinion, the Academy complied, in all material respects, with the requirements referred to above that are applicable to its major state programs for the year ended June 30, 2009.

Internal Control Over Compliance

The management of the Academy is responsible for establishing and maintaining effective internal control over compliance with requirements of laws, regulations, contracts and grants applicable to state programs. In planning and performing my audit, I considered the internal control over compliance with requirements that could have a direct and material effect on a major state program in order to determine my auditing procedures for the purpose of expressing my opinion on compliance, but not for the purpose of expressing an opinion on the effectiveness of internal control over compliance. Accordingly, I do not express an opinion on the effectiveness of the Academy's internal control over compliance.

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A control deficiency in an entity's internal control over compliance exists when the design or operation of a control does not allow management or employees, in the normal course of performing their assigned functions, to prevent or detect noncompliance with a type of compliance requirement of a state program on a timely basis. A significant deficiency is a control deficiency, or combination of control deficiencies, that adversely affects the entity's ability to administer a state program such that there is more than a remote likelihood that noncompliance with a type of compliance requirement of a state program that is more than inconsequential will not be prevented or detected by the entity's internal control.

A material weakness is a significant deficiency, or combination of significant deficiencies that result in more than a remote likelihood that material noncompliance with a type of compliance requirement of a state program will not be prevented or detected by the Academy's internal control.

My consideration of the internal control over compliance was for the limited purpose described in the first paragraph of this section and would not necessarily identify all deficiencies in internal control that might be significant deficiencies or material weaknesses. I did not identify any deficiencies in internal control over compliance that I consider to be material weaknesses, as defined above.

Schedule of Expenditures of State Financial Assistance

I have audited the basic financial statements of the Connecticut Academy of Science and Engineering, Incorporated as of and for the year ended June 30, 2009, and have issued my report thereon dated December 2, 2009. My audit was performed for the purpose of forming an opinion on the basic financial statements taken as a whole. The accompanying schedule of expenditures of state financial assistance is presented for purposes of additional analysis as required by the State Single Audit Act and is not a required part of the basic financial statements. Such information has been subjected to the auditing procedures applied in the audit of the basic financial statements and, in my opinion, is fairly stated, in all material respects, in relation to the basic financial statements taken as a whole.

This report is intended solely for the information and use of the Council of the Academy, management, Connecticut Innovations, Inc, Connecticut Energy Advisory Board, Connecticut Department of Transportation, Connecticut General Assembly, Connecticut Department of Public Health and the Connecticut Office of Policy and Management and state awarding agencies and pass-through entities and is not intended to be and should not be used by anyone other than these specified parties.

John C. Burns CPA, LLC

John C Burns CPA, LLC
December 2, 2009

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SCHEDULE OF EXPENDITURES OF STATE FINANCIAL ASSISTANCE

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

SCHEDULE 1

SCHEDULE OF
EXPENDITURES OF STATE FINANCIAL ASSISTANCE
YEAR ENDED JUNE 30, 2009

<u>State Grantor</u> Pass – Through Grantor <u>Program Title</u>	<u>State Grant</u> <u>Program</u> <u>Identification</u> <u>Number</u>	<u>Expenditures</u>
Connecticut Innovations, Inc. thru Connecticut Clean Energy Fund	None (Note A)	\$ 125,688
Connecticut Energy Advisory Board	None (Note A)	88,073
Connecticut Department of Transportation	None (Note A)	64,940
Connecticut General Assembly	None (Note A)	44,997
Connecticut Department of Public Health	None (Note A)	37,500
Connecticut Office of Policy and Management	None (Note A)	<u>21,544</u>
Total State Financial Assistance		<u>\$ 382,742</u>

See independent auditors' report and notes to schedule of expenditures of state financial assistance.

NOTES TO SCHEDULE OF EXPENDITURES OF STATE FINANCIAL ASSISTANCE

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING, INCORPORATED

NOTES TO SCHEDULE OF EXPENDITURES OF STATE FINANCIAL ASSISTANCE JUNE 30, 2009

NOTE A - GENERAL

State of Connecticut funding is provided from Connecticut Innovations, Inc, the Connecticut Energy Advisory Board, the Connecticut Department of Transportation, the Connecticut General Assembly, the Connecticut Department of Health and the Connecticut Office of Policy and Management operating budgets through Personal Service Agreements and letters of agreement. Accordingly, the funds are not attributed to a specific State Department and do not have State Grant Program Identification Numbers.

NOTE B - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The accounting policies of the Academy conform to generally accepted accounting principles as applicable to not-for-profit agencies. The following is a summary of the more significant policies relating to the aforementioned programs:

Basis of Accounting

The financial statements contained in the Academy's annual audit report are prepared on the accrual basis of accounting. Contract revenues and other revenues are recognized upon notification of unconditional contributions of donors or when services are performed. Expenditures are recorded when the obligations are incurred.

Expenditures of State Financial Assistance

The Schedule of Expenditures of State Financial Assistance, contained in this report, is prepared based on regulations established by the State of Connecticut Office of Policy and Management. In accordance with these regulations (Section 4-236-22), certain grants are not dependent on expenditure activity, and accordingly, are considered to be expended in the fiscal year of receipt. These grant program receipts are reflected in the expenditures column of the Schedule of Expenditures of State Financial Assistance.

SCHEDULE OF FINDINGS AND QUESTIONED COSTS

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING, INCORPORATED

SCHEDULE OF FINDINGS AND QUESTIONED COSTS YEAR ENDED JUNE 30, 2009

SECTION I- SUMMARY OF AUDIT RESULTS

Financial Statements

The type of auditor's report issued was unqualified.

Internal control over financial reporting:

- Material weakness(es) identified - none
- Significant deficiency(ies) identified that are not considered to be material weaknesses – none
- Noncompliance material to financial statements noted - none

State Financial Assistance

Internal control over its major programs:

- Material weakness(es) identified - none
- Significant deficiency(ies) identified that are not considered to be material weaknesses – none

The type of auditor's report issued on compliance for its major program was unqualified.

Audit findings disclosed that are required to be reported in accordance with Section 4-236-24 of the Regulations to the State Single Audit Act - none

- The following schedule reflects the major programs included in the audit:

<u>State Grantor and Program</u>	<u>State Grant and Program Identification Numbers</u>	<u>Expenditures</u>
Connecticut Innovations, Inc. thru Connecticut Clean Energy Fund	None (Note A)	\$125,688
Connecticut Energy Advisory Board	None (Note A)	88,073

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

SCHEDULE OF FINDINGS AND QUESTIONED COSTS
YEAR ENDED JUNE 30, 2009

SECTION II - SUMMARY OF FINDINGS RELATED TO FINANCIAL
STATEMENTS REQUIRED UNDER GENERALLY
ACCEPTED GOVERNMENT AUDITING STANDARDS

- I issued reports, dated December 2, 2009, on internal control over financial reporting and on compliance and other matters based on an audit of financial statements performed in accordance with Government Auditing Standards.
- My report on compliance indicated no reportable instances on noncompliance.
- My report on internal control over financial reporting indicated no significant deficiencies.

SECTION III -FINDINGS AND QUESTIONED COSTS FOR
STATE FINANCIAL ASSISTANCE

- No findings or questioned costs are reported relating to the Academy's State financial assistance programs.

MAJOR STUDIES OF THE ACADEMY

2009

- A Study of the Feasibility of Utilizing Waste Heat From Central Electric Power Generating Stations and Potential Applications
- Independent Monitor Report: Implementation of the UCHC Study Recommendations

2008

- Preparing for Connecticut's Energy Future
- Applying Transportation Asset Management in Connecticut
- A Study of Weigh and Inspection Station Technologies
- A Needs-Based Analysis of the University of Connecticut Health Center Facilities Plan

2007

- A Study of the Feasibility of Utilizing Fuel Cells to Generate Power for the New Haven Rail Line
- Guidelines for Developing a Strategic Plan for Connecticut's Stem Cell Research Program

2006

- Energy Alternatives and Conservation
- Evaluating the Impact of Supplementary Science, Technology, Engineering and Mathematics Educational Programs
- Advanced Communications Technologies
- Preparing for the Hydrogen Economy: Transportation
- Information Technology Systems for Use in Incident Management and Work Zones
- Improving Winter Highway Maintenance: Case Studies for Connecticut Consideration
- An Evaluation of the Geotechnical Engineering and Limited Environmental Assessment of the Beverly Hills Development, New Haven, CT

2005

- Assessment of a Connecticut Technology Seed Capital Fund/Program
- Demonstration and Evaluation of Hybrid Diesel-Electric Transit Buses
- An Evaluation of Asbestos Exposures in Occupied Spaces

2004

- A Study of Railcar Lavatories and Waste Management Systems

2003

- An Analysis of Energy Available from Agricultural Byproducts, Phase II: Assessing the Energy Production Processes
- Study Update: Bus Propulsion Technologies Available in Connecticut

2002

- A Study of Fuel Cell Systems
- Transportation Investment Evaluation Methods and Tools
- An Analysis of Energy Available from Agricultural Byproducts, Phase 1: Defining the Latent Energy Available

2001

- A Study of Bus Propulsion Technologies in Connecticut

2000

- Efficacy of the Connecticut Motor Vehicle Emissions Testing Program
- Indoor Air Quality in Connecticut Schools
- Study of Radiation Exposure from the Connecticut Yankee Nuclear Power Plant

1999

- Evaluation of MTBE as a Gasoline Additive
- Strategic Plan for CASE

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING

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