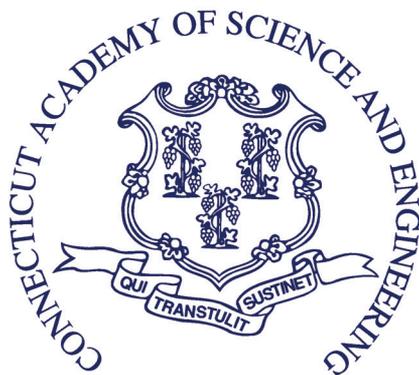


CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING



1976

ANNUAL REPORT
2012-2013

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 2013 fiscal year, June 30, 2013, continues to be excellent. This was a productive year, highlighted by projects conducted on behalf of the General Assembly, state agencies and others. Demand for Academy services remained strong. The state's two-year budget (FY13/FY14) included funding for the Academy to conduct a study each year on behalf of the General Assembly. Study topics are selected based on discussion with the leadership of General Assembly committees.

This year the Academy's membership continued to grow with the election of 33 new members and a total membership at year end of 336 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 2014 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. These projects showcase the broad nature of the Academy's services on a wide range of issues of importance to the state, including transportation, workforce strategies, public health, biomedical and stem cell research, and program evaluation. The Public Policy Inquires section of the annual report highlights project details of these and other projects conducted by the Academy this past year.

Governor Dannel P. Malloy attended the Academy's annual meeting to present the 2013 Connecticut Medal of Science to Dr. Thomas A. Steitz, Sterling Professor of Molecular Biophysics & Biochemistry and Professor of Chemistry at Yale University and a Howard Hughes Medical Institute Investigator. Steitz was honored for his groundbreaking work on the structure and function of the ribosome, the protein-making factory key to the function of all life. Dr. Steitz shared the 2009 Nobel Prize in chemistry for his research.

The Academy's quarterly *Bulletin* continues to inform the public and provide the state's government and business leadership as well as 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 "High-Tech Imaging Tools Let CT Scientists Unlock Secrets of Biological Molecules," "Making the Case for Space," "The Connecticut Stem Cell Research Program: Taking a Measure of the Progress After the

First Six Years,” and “Additive Manufacturing: Revolutionizing Connecticut Industry.” In addition, the Academy continued its efforts to support science and technology initiatives in the state by assisting the *Hartford Courant* in its News in Education – Science Matters series, a program targeted to middle school students that publishes articles about interesting science and technology topics and individuals throughout the school year.

Also in FY13, the Academy helped establish a new award program of the Connecticut Science & Engineering Fair, called the Urban School Challenge (USC), through inaugural use of the Academy’s Endowment Fund. The Endowment Fund was established in 2005 to enhance the Academy’s mission, especially relative to informing the public and engaging youth in science and technology. The USC recognizes one high school student and one middle school student from an urban school district, providing the high school winner the opportunity to compete in the national Intel International Science & Engineering Fair and the middle school winner with a chance to attend Project Oceanology’s Ocean Camp, a week-long residential program.

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 to various issues for consideration of the state’s leadership and looks forward to meeting new challenges in the years 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.



Louis Manzione
President
July 1, 2013

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: Executive, Membership and Nominating. The members of the Council and chairs of the Standing Committees for the 2013 fiscal year were as follows:

Council of the Academy

Officers:

President: Louis Manzione, University of Hartford
 Vice-President/President Elect: Sandra K. Weller, UConn Health Center
 Treasurer: Phillip Gardner, Coherent, Inc. (ret.)
 Secretary: Regis A. Matzie, Westinghouse Electric Company (ret.)
 Past President: Gale F. Hoffnagle, TRC Environmental Corporation, Inc.

Councilors:

Laura Grabel, Wesleyan University
 Margaret Grey, Yale University
 Robert Hobbs, United Technologies Research Center (ret.)
 Harris Marcus, UConn
 Richard D. Pinder, Connecticut Department of Emergency Services and
 Public Protection, Division of Scientific Services (formerly Connecticut
 Department of Public Safety) (ret.)
 George Wisner, Wisner Associates & Connecticut Science and Engineering Fair

Chairmen of the Technical Boards:

(See pages 5-6 for a listing of the chairs.)

Chairmen of the Standing Committees

Executive Committee: Louis Manzione, University of Hartford
Membership Committee: Kathleen Maurer, Connecticut Department of
 Corrections
Nominating: : Gale F. Hoffnagle, TRC Environmental Corporation, Inc.

Council Advisors:

John P. Cagnetta, Northeast Utilities (ret.)
 Anthony J. DeMaria, Coherent*DEOS LLC (ret.)
 Alan C. Eckbreth, Consultant & United Technologies Research Center (ret.)
 Myron Genel, Yale School of Medicine
 Michael J. Werle, TEaMS, Inc.

Academy Staff:

Executive Director

Richard H. Strauss

Associate Director

Terri Clark

Assistant Director for Programs

Ann G. Bertini

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 2013 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. * *Dr. Magnarelli passed away on July 11, 2013. He was elected to the Academy in 2000, and served as a member of the Academy's Governing Council (2004-2011) and as Chairperson of the Agriculture, Food and Nutrition Technical Board (2002-2013).*

BIOMEDICAL RESEARCH AND HEALTH CARE:

Andrew Arnold, UConn Health Center

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:

Niloy Dutta, UConn

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:

Karl M. Prewo, Innovatech, LLC

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.

EDUCATION AND HUMAN RESOURCES:

Kathleen F. Maurer, Connecticut Department of Corrections

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.

ENERGY PRODUCTION, USE AND CONSERVATION:

Lee S. Langston, UConn

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

ENVIRONMENT:

Ralph Lewis, UConn

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.

PUBLIC HEALTH:

Paul R. Skolnik, UConn School of Medicine

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:

George Foyt, United Technology Research Center (ret.)

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

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.

Through its Bylaws, Academy membership is limited to 400. At the close of the 2013 fiscal year, the Academy had a total of 336 members, including this year's 33 newly elected members, as follows:

Eric Altman

Professor, Department of Chemical & Environmental Engineering,
Yale University

Thomas J. Barber

Professor in Residence, Mechanical Engineering, UConn

David Beveridge

University Professor of Natural Science and Mathematics, Wesleyan
University

Allan J. Brockett

Vice President, Engineering-Module Centers, Pratt & Whitney

Edgar M. Brown

Technical Manager Reactor Protection Systems, Nuclear Automation,
Westinghouse Electric Company, LLC

John Carlson

Eugene Higgins Professor of Molecular, Cellular and Developmental
Biology, Yale University

Wilson K.S. Chiu

Professor, Mechanical Engineering, UConn

Robin Côté

Professor of Physics, UConn

Alan H. Epstein

Vice President, Technology and Environment, Pratt & Whitney

Joan Feigenbaum

Grace Murray Hopper Professor of Computer Science, Yale University

David U. Furrer

Senior Fellow Discipline Lead, Materials and Processes Engineering, Pratt & Whitney

Jorge Galán

Lucille P. Markey Professor of Microbiology and Chairman, Department of Microbial Pathogenesis, Yale School of Medicine

Evangelos Hadjimichael

Professor and Former Dean, School of Engineering, Fairfield University

Arianna Kalian

Vice President, Engineering and Operations, ClearEdge Power

Richard W. Korsmeyer

Senior Research Fellow and Head of External Technology & Collaborations, Pfizer, Inc.

George Lister

Jean McLean Wallace Professor of Pediatrics; Professor of Cellular and Molecular Physiology; and Chair, Pediatrics, Yale School of Medicine

Edison T. Liu

President and Chief Executive Officer, The Jackson Laboratory at UConn Health Center

J. Patrick Loria

Professor of Chemistry and Professor of Molecular Biology and Biophysics, Yale University

Joseph Mantese

Research Fellow, United Technologies Research Center

Tom A. Martin

President and Board Chairman, Phonon Corporation

David Mazurek

Professor/Structural Engineer, U.S. Coast Guard Academy

C. Thomas Philbrick

Connecticut State University Distinguished Professor, Western Connecticut State University



Newly elected CASE members at the 38th annual meeting May 22, 2013. (Photo: Frank LaBanca)

Marina Picciotto

Charles B. G. Murphy Professor of Psychiatry and Professor of Neurobiology and of Pharmacology; Assistant Chair for Basic Science Research, Yale School of Medicine

Leon Pintsov

Chief Scientist and Vice President, International Standards and Advanced Technology, Pitney Bowes, Inc.

Nalini Ravishanker

Professor, Statistics, UConn

Chittaranjan Sahay

Vernon D. Roosa Distinguished Professor of Manufacturing Engineering, University of Hartford

Bryce Samson

Vice President of Business Development, Nufern

Ripi Singh

Director, R&D, Renewable Power/Solar, Alstom Power

Hong Tang

Associate Professor of Electrical Engineering, Physics and Applied Physics, Yale University

Frank M. Torti

Executive Vice President for Health Affairs & Dean, School of Medicine, UConn Health Center

Suzy V. Torti

Professor, Molecular, Microbial and Structural Biology, UConn
Health Center

J. Evan Ward

Professor, Marine Sciences, UConn

Mei Wei

Professor, Chemical, Materials, and Biomolecular Engineering and
Associate Dean for Research & Graduate Education, UConn

HONORARY MEMBERSHIP

The Academy created the category of Honorary Membership in 2009 to recognize individuals not otherwise eligible for membership. Honorary members are nominated and designated after a 2/3 vote of the Academy's Council. Selection of Honorary Members is limited to no more than two individuals per year. Honorary Members shall be entitled to all privileges of membership, except voting and holding elective office.

Elliot Ginsberg, president and CEO of the Connecticut Center for Advanced Technology (CCAT), was elected to Honorary Membership in recognition of his accomplishments at CCAT, where he identifies and directs the formulation, implementation and execution of innovative economic development tools and programs promoting the region's technological capabilities. CCAT offers a wide range of services to its diverse customer base by offering programs in technology, efficiency and work-



CASE President Lou Manzione, left, shakes hands with newly elected Honorary Member, Elliot Ginsberg of CCAT. (Photo: Frank LaBanca)

force development. CCAT addresses military and civilian advanced manufacturing needs, promotes energy planning and policy initiatives, and stimulates innovation and workforce development efforts. In addition, CCAT is actively involved in researching and field-testing how enhancements in lasers, computational modeling and next-generation manufacturing can aid the competitive needs of U.S. industry. For the last five years, CCAT has partnered with CASE to support the Academy's H. Joseph Gerber Medals of Excellence. Ginsberg joined CCAT in 2007 after a decade serving as chief of staff to US Rep. John B. Larson. Ginsberg is a member of the board of directors of Connecticut Technology Council, Capital Workforce Partners, MetroHartford Alliance, Oak Hill, Natick and Hanscom Science and Technology Boards, St. Francis Hospital Foundation, Connecticut Landmarks and Connecticut Legal Rights Project. He is a member of advisory boards for the NASA Space Grant Consortium, CT Regional Institute for the 21st Century, Charter Oak Cultural Center, Statewide Advanced Manufacturing Committee, Defense Technology Initiative, and the Connecticut Small Business Administration. He also is a member of the Connecticut Employment and Training Commission, the state Nanotechnology Council and the board of overseers for the Bushnell Center for the Performing Arts. A graduate of Franklin & Marshall College, Ginsberg holds a J.D. from the UConn School of Law.

DISTINGUISHED SERVICE AWARD

The Academy created the category of Honorary Membership in 2009 to recognize individuals not otherwise eligible for membership. Honorary members are nominated and designated after a 2/3 vote of the Academy's Council. Selection of Honorary Members is limited to no more than two individuals per year. Honorary Members shall be entitled to all privileges of membership, except voting and holding elective office.



CASE President Lou Manzione, left, presents the Distinguished Service Award to Anthony DeMaria. (Photo: Frank LaBanca)

Dr. Anthony J. DeMaria was awarded the 2013 Distinguished Service Award. A charter member of the Academy, DeMaria was elected to the governing council in 1992, served as the Academy's fourth president from 1994 to 2000, and held the post of past-president from 2000 to 2004.

During his presidency, DeMaria served as chair of the strategic planning committee that developed the Academy's first long-range plan, providing a foundation for the Academy as it is today. He also oversaw the first committee to

recommend candidates for the Connecticut Medals of Science and Technology and in 2004, DeMaria himself was awarded the Connecticut Medal of Technology for his groundbreaking laser research.

DeMaria and his family came to the United States from Italy when he was five years old. Growing up in Waterbury, he worked construction jobs to pay for his education. He received a bachelor's degree in electrical engineering from UConn. He worked at Anderson Laboratories while pursuing a master's degree in science at Rensselaer Polytechnic Institute in Hartford. He went on to earn a PhD in electronics and physics at UConn. His 1965 thesis led to his greatest breakthrough—generating picosecond laser pulses, whose time durations lasted the time it takes light to travel the thickness of a sheet of paper.

He had a 33-year career with the United Technologies Corporation before co-founding DeMaria ElectroOptics Systems, LLC (DEOS) in 1994 for the purpose of transferring laser radar technology to commercial use. In 2001, DEOS was acquired by Coherent, Inc., with DeMaria serving as chief scientist until his retirement in 2012.

Dr. DeMaria is a member of the National Academy of Engineering (1976) and the National Academy of Sciences (1997) and a past president of the Optical Society of America and SPIE, the International Optics Society. He also served as Editor of the *IEEE Quantum Electronics Journal* for ten years.

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 (*listed by project start date*):

Benchmarking Connecticut's Transportation Infrastructure Capital Program with Other States: The Connecticut Department of Transportation contracted with CASE to conduct this study, the purpose of which was to benchmark Connecticut's performance in capital programming against other state DOTs, identify ways to improve the performance and efficiency of the capital programming process and create a "Transportation Investment Dashboard," tool to communicate the performance of Connecticut's capital program to the state's transportation leadership.

Project Start Date: *July 2011*. Project Completion Date: *September 2012*.
Source: Connecticut Department of Transportation

Strategies for Evaluating the Effectiveness of Programs and Resources for Assuring Connecticut's Skilled Workforce Meets the Needs of Business and Industry Today and in the Future: The Connecticut General Assembly commissioned CASE to conduct this study. The study was designed to identify strategies and mechanisms to assess and evaluate the value and effectiveness of state programs and resources with a goal of providing businesses and industries in Connecticut with a skilled workforce (focus on science, technology, engineering and mathematics related fields) that meets the needs and expectations of employers, and at the same time, seeks to ensure that our students are receiving the education they need and should expect, in order to successfully work in today's jobs/careers and in the jobs/careers of the future. Project Start Date: *December 2011*. Project Completion Date: *December 2012*. Source: Connecticut General Assembly

Project Algebra: Albertus Magnus College contracted with CASE to serve as an external evaluator for Project Algebra on behalf of the Connecticut Office of Higher Education with funding provided by the US Department of Education Teacher Quality Program that supports the development of cross-school and cross-district professional learning communities that foster collaboration and reflective practice; increased teacher competence, and confidence in creating and implementing standards-based lessons that are more student-centered, more engaging, more authentic, optimally differentiated, and that emphasize the effective use of technology. Project Start Date: *June 2012*. Anticipate Project Completion Date: *August 2013*. Source: Connecticut Office of Higher Education

Biomedical Research Peer Review: The Connecticut Department of Public Health (DPH) contracted with CASE for the fifth consecutive year to manage the

peer review of biomedical proposals in the fields of heart disease, cancer, and other tobacco-related diseases, as well as diabetes and Alzheimer's disease. A panel of 13 reviewers from Connecticut and various out-of-state institutions served on the Biomedical Research Peer Review Committee. A total of 23 proposals were reviewed. In March, DPH announced the awarding of \$3,010,611 to the top nine proposals based on the CASE Peer Review results. Project Start Date: *September 2012*. Project Completion Date: *December 2012*. Source: Connecticut Department of Public Health

Connecticut Disparity Study – Phase 1: The Connecticut General Assembly commissioned CASE to conduct the *Disparity Study*. The study's purpose is to provide an analysis of existing statistical data concerning the state's set-aside program to determine whether its current form achieves the goal of facilitating the participation in state contracts of small contractors and minority business enterprises. Findings from the study's initial research and analysis of Connecticut's current Set-Aside Program identified that: The state's executive branch agencies and the other branches of state government that are responsible for awarding state contracts and overseeing the Set-Aside Program do not uniformly collect subcontractor contracting data, including payment information; and a review of the legal issues and case law, including presentations to the CASE Study Committee by experts on matters of race-based and gender-based programs, identified that subcontractor data and financial information is a critical component of conducting a valid disparity study. Additionally, it was noted that unless quality data are collected and available for analysis, the results of the disparity study could be challenged in court, which would negate the purpose of conducting the study. Therefore, a plan to divide into four distinct phases was authorized by the General Assembly: Phase 1: Connecticut's Set-Aside Program Review and Analysis, Legal Issues, and Stakeholder Anecdotal Information/ Analysis; Phase 2: Diversity Data Management System Specification and Review of Agency Procedures and Practices Related to System Implementation, Best Practices Review and Analysis, and Establishing MBE/WBE Program Requirements ; Phase 3: Diversity Data Management System Testing, Econometric Model Acquisition and Testing, Legal Issues Update, Agency Progress and Race-Neutral Measures Implementation Review, and MBE/WBE Company Survey; and Phase 4: Data Analysis and Goal Setting, Anecdotal Information/ Analysis, and Final Project Report

Project Start Date: *September 2012*. Anticipated Phase 1 Project Completion Date: *September 2013*
Source: Connecticut General Assembly

Analyzing the Economic Impact of Transportation Projects: The Connecticut Department of Transportation contracted with CASE to assess the economic impact of transportation projects. This type of economic impact analysis goes beyond a traditional economic analysis that provides project justification on the basis of construction jobs and related indirect economic benefits.

State leaders are increasingly interested in the relationship and value of transportation projects on economic development and longer-term economic growth. The main goal of the study is to explore methods, approaches and analytical software tools for analyzing economic activity that results from large scale transportation investments in Connecticut.

Project Start Date: *September 2012*. Anticipated Project Completion Date: *September 2013*

Source: Connecticut Department of Transportation

Connecticut Stem Cell Research Program Accomplishments: The Connecticut Department of Public Health (DPH) and Connecticut Innovations (CI) contracted with CASE to conduct an analysis of the accomplishments of the Connecticut Stem Cell Research Program. DPH is tasked with overseeing the Connecticut Stem Cell Research Program and CI provides administrative support. In 2005, Connecticut joined California and New Jersey as the only states to allocate public funds for stem cell research (Public Act 05-149). The program appropriated \$20M for grants-in-aid for embryonic or human adult stem cell research. Additionally, this act allocated a total of \$80M to be used over the course of seven years (2008-2015) from the state's tobacco Settlement fund to support additional stem cell research.

Project Start Date: *September 2012*. Project Completion Date: *February 2013*.

Source: Connecticut Department of Public Health and Connecticut Innovations

2013 Connecticut Stem Cell Research Grant Program – Peer Review: The Connecticut Department of Public Health (DPH) contracted with CASE for the management and oversight of the peer review process for the 2013 CT Stem Cell Research Grant Program. CASE recruited and managed the Peer Review Committee, which reviewed a total of 109 proposals. The Stem Cell Research Advisory Committee met June 10, 2013 subsequent to the Peer Review Committee's finalization of the rankings, in early May, selected 23 proposals for funding totaling \$9.8M.

Project Start Date: *September 2012*. Project Completion Date: *June 2013*.

Source: Connecticut Department of Public Health

Health Impact Assessments Study: The Connecticut General Assembly (CGA) commissioned CASE to conduct a Health Impact Assessments (HIA) study. HIAs are used to evaluate objectively the potential health effects of a project or policy before it is built or implemented. HIA is commonly defined as 'a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population.' The goal is to provide the CGA and state agencies with information about HIAs for the purpose of assessing their value for use in Connecticut.

Project Start Date: *October 2012*. Anticipated Project Completion Date: *August 2013*

Source: Connecticut General Assembly

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 2013 for studies and technical assistance (also see *Public Policy Inquiries*):

- \$6,000 from the Connecticut Department of Transportation for *Benchmarking Connecticut's Transportation Infrastructure Capital Program with Other States*.
- \$58,570 from the Connecticut General Assembly for Strategies for a study on *Evaluating the Effectiveness of Programs and Resources for Assuring Connecticut's Skilled Workforce Meets the Needs of Business and Industry Today and in the Future*.
- \$11,484 from Albertus Magnus College for Project Algebra, a professional development program for teachers.
- \$43,000 from the Connecticut Department of Public Health for peer review and rating of biomedical research proposals in the fields of heart disease, cancer or tobacco-related diseases, as well as diabetes and Alzheimer's disease with funding through the state's Tobacco Settlement Fund.
- \$333,635 from the Connecticut General Assembly for the *Connecticut Disparity Study – Phase 1*.
- \$94,908 from the Connecticut Department of Transportation for the study on *Analyzing the Economic Impact of Transportation Projects*.
- \$25,628 from the Connecticut Department of Public Health and Connecticut Innovations for the *Connecticut Stem Cell Research Program Accomplishments* study.
- \$103,500 from the Connecticut Department of Public Health for the peer review and rating of proposals in stem cell research for the consideration of the Stem Cell Research Advisory Committee.
- \$69,050 from the Connecticut General Assembly for the *Health Impact Assessments Study*.
- \$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 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, short article highlighting a science museum or program located in Connecticut and information regarding science and technology developments of interest in the state of Connecticut.

The *Bulletin's* editorial staff includes Martha Sherman, Managing Editor, and Executive Editors: Academy Members Dr. Phillip J. Gardner, Coherent Inc. (ret.) and Dr. Edward C. Monahan, Professor Emeritus, Marine Sciences and Resource Economics, UConn (ret.).

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

Academy Web Site

The Academy's website can be found at www.ctcase.org and includes:

- About CASE
- The *Bulletin*
- In the Press
- Publications
- Technical Boards
- Student Science and Technology Competitions and Special Events
- Connecticut Medals of Science and Technology
- H. Joseph Gerber Medal of Excellence
- Honorary Membership
- CASE Member Distinguished Service Award
- Public Membership Directory*
- CASE Member Portal & Directory
- Links
- CASE Endowment Fund: Donate
- Annual Report
- Contact Us

**Online Member Portal: The Academy's online membership portal provides a complete searchable history of academy membership including current and past members.*

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 Office 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; William C. Stwalley, Board of Trustees Distinguished Professor and Head, Physics Department, UConn, 2005; Michael P. Snyder, Lewis B. Cullman Professor of Molecular, Cellular and Developmental Biology, Professor of Molecular Biophysics and Biochemistry and Director of the Yale Center for Genomics and Proteomics, Yale University, 2007; Robert R. Birge, Harold S. Schwenk, Sr., Distinguished Chair in Chemistry, UConn, 2009; and Steven L. Suib, Board of Trustees Distinguished Professor and Head, Chemistry Department, UConn, 2011.

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; Gene Banucci, Founder and Chairman, ATMI, Inc., 2006; Tso-Ping Ma, Raymond John Wean Professor of Electrical Engineering, Yale University, 2008; and Jonathan M. Rothberg, Chairman, CEO and Founder, Ion Torrent™, 2010.

2013 Connecticut Medal of Science

Thomas A. Steitz

*Sterling Professor of Molecular Biophysics & Biochemistry and Professor of Chemistry
Howard Hughes Medical Institute Investigator*

Curiosity is at the heart of all scientists, believes Professor and Nobel Prize-winner Thomas A. Steitz. He recalls always wondering about what gives substances color and later, while a student at Lawrence College in Appleton, Wisconsin, he learned about the structure of molecules that produce color. Over the years, Professor Steitz's curiosity led him to "want to understand how the structures of biological macromolecules can explain how they work," opening the door to our current understanding of the mechanisms

by which the proteins and nucleic acids involved in the central dogma of molecular biology carry out gene expression, from replication and recombination of the DNA genome, to its transcription into mRNA, followed by the translation of mRNA into protein. Most recently, Professor Steitz's work on the ribosome has led to the development of new classes of antibiotics to treat multiple-drug resistant bacterial infections.



Gov. Dannel P. Malloy congratulates Connecticut Medal of Science winner Thomas A. Steitz. (Photo: Frank LaBanca)

Steitz, Sterling Professor of Molecular Biophysics and Biochemistry at Yale, is widely published and has earned numerous awards and recognitions including the 2009 Nobel Prize in Chemistry which he shared with Venkatraman Ramakrishnan and Ada Yonath. In 2001 Professor Steitz and his colleagues founded Rib-X Pharmaceuticals, a company developing antibiotics to treat tuberculosis, methicillin-resistant *Staphylococcus*, and *Escherichia coli*.

Thomas Steitz was born in Milwaukee, Wisconsin, in 1940. His father was the head of personnel at the Milwaukee County Hospital while his mother stayed home to raise Thomas and his two younger brothers and two younger sisters. In junior high school, he became a serious saxophone player and even considered majoring in music; however, at Lawrence College, the influence of Professor Robert Rosenberg changed the course of events, helping Tom "understand the world around him because he introduced to us the concepts of atomic orbitals and bonding and how studying chemistry at the physical chemical atomic level allowed us to understand the properties of chemicals." He earned his PhD in biochemistry and molecular biology at Harvard University in 1966 and later worked in the Cambridge Laboratory of Molecular Biology (LMB) in England, annually attending a week-long meeting known as "Crick week" because "Francis [Crick] would sit in the front row and frequently ask many questions."

He joined Yale in 1970 and teamed with other faculty to form the Yale Center for Structural Biology, where his efforts focused on the study of the ribosome, "the major target of antibiotics." Professor Steitz explains that the ribosomes are the binding site for 50% of the antibiotics used worldwide; however, because ribosomes mutate, a mutant ribosome can become resistant to antibiotics, requiring researchers to continuously develop new antibiotics. Professor Steitz is quick to point out that all the "intelligent

design” that researchers produce cannot compete with the “evolution of bacteria.” Fortunately, ribosome research “allows us to have more information to enable the design of antibiotics.” Professor Steitz is gravely concerned about the misuse of antibiotics and the potential worldwide catastrophe of drug-resistant bacteria.

Professor Steitz reflects that each of us wants to be remembered for doing good things and for being a good person. “I’ve had a lot of people in my lab who have gone on to do good things, and I hope they are happy for having been in my lab.” In particular, he would like to be remembered for the same qualities as Frederic Richards, the 1995 Connecticut Medal of Science Award, whom he sees as his hero. Fred Richards was “just an exemplary scientist, person and leader and we loved to follow him. I would like to be a Fred Richards who had the insight and wisdom to hire and cultivate other scientists.”

This summary was adapted from Dr. Steitz’s narrative for the Connecticut Science Center Medal Project, written by Wendy Swift, and other materials.

SPECIAL ACTIVITIES

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 22, 2013. 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

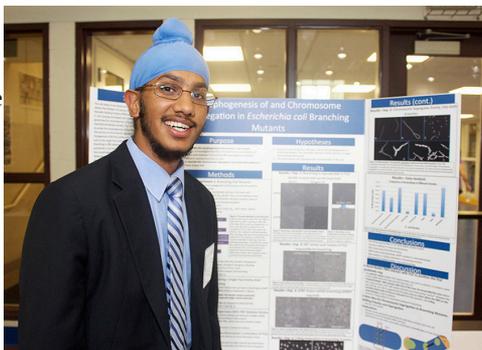
is an affirmation that manufacturing automation has enhanced every aspect of human life and profoundly impacted the standard of living of every person and nation in the world. I am only one of the many who have contributed to our nation's rich technological heritage and one of the fortunate few to be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

The 2013 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.

Kaitavjeet Chowdhary,
Glastonbury High School,
Glastonbury, CT

2013 Connecticut Science Fair –
1st Place, Life Sciences-
Senior Division

Project: *Morphogenesis of and
Chromosome Segregation in
Escherichia coli Branching Mutants*



Maxmillian Minichetti,
Greenwich High School,
Greenwich, CT

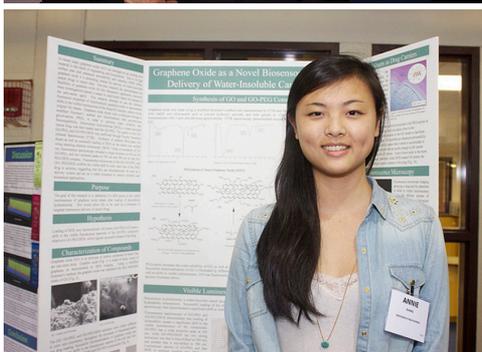
2013 Connecticut Science Fair –
1st Place, Physical Sciences-
Senior Division

Project: *Optimization of a Dye Co-
Sensitized Solar Cell to Assist Photo
Electrochemical Water-Splitting with
a Nanostructured C-PC Enhanced
Fe2O3 Photo-Anode*



**Annie Zhang, Greenwich High
School, Greenwich, CT**

2013 Connecticut Science
Challenge – 1st Place
Project: *Graphene Oxide as a Novel
Biosensor in Targeted Delivery of
Chemotherapy Drugs*



Top: Glastonbury High School senior Kaitavjeet Chowdhary stands in front of his project poster.
Center: CASE President Lou Manzione, left, and CCAT President & CEO Elliot Ginsberg present a Gerber Medal to Greenwich High School sophomore Maxmillian Minichetti.
Bottom: Greenwich High School senior Annie Zhang stands with her project poster (Photos: Frank LaBanca)

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.

Each year approximately 1,800 entrants from around the United States compete in the Intel Science Talent Search. A total of 40 students win honors as finalists with 300 students selected as semi-finalist winners. Each of Connecticut's Intel semifinalists and their respective schools received awards of \$1,000.

The seven semi-finalists from Connecticut participated in the Connecticut Science Challenge with Academy awards going to the top three students as determined by the Academy's Judging Committee.

The 2013 Connecticut Science Challenge first place winner and recipient of an Academy H. Joseph Gerber Medal of Excellence was **Annie Zhang** of **Greenwich High School in Greenwich, CT**, for her project, *Graphene Oxide as a Novel Biosensor in Targeted Delivery of Chemotherapy Drugs* (Please see the H. Joseph Gerber Medal of Excellence for a listing of the winners of this award.)

Second place honors, including a \$500 award from the Academy, went to national finalist **Yifan Zhang** of **Choate Rosemary Hall in Wallingford, CT**, for her project, *Prestin is Targeted to the Basolateral Membrane Using a Tyrosine Motif*.

An honorable mention, which included an award of \$250 from the Academy, went to **Alex Buhimschi** of **Hamden Hall Country Day School in Hamden, CT**, for his project, *Improved and Novel Methods for Activation of Psoralens as In-situ Anti-Cancer Agents*.

Connecticut Science and Engineering Fair

The 2013 Connecticut Science & Engineering Fair (CSEF) 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 CSEF.

The winners received the H. Joseph Gerber Medal of Excellence, including a solid silver medal and a \$1,000 honorarium. The Gerber Medal is presented by the Academy in partnership with the Connecticut Center for Advanced Technology. In addition, they received a Certificate of Recognition from the Academy and an Official Statement of recognition from Governor Dannel P. Malloy. (Please see the H. Joseph Gerber Medal of Excellence for a listing of the winners of this award.)

In addition, the Academy recognizes the winners of the Urban School Challenge of CSEF. The Urban School Challenge is a new award of CSEF that recognizes a middle school and high school student from an urban district. The Urban School Challenge is supported by funds from the Academy's Endowment Fund and others. Winners are:

Middle School Division, Maya Geradi, Worthington Hooker School, New Haven, CT

Project: *Floride Free Water?*

High School Division, Karim Karbouch, Bridgeport Regional Aquaculture Science & Technology Education Center

Project: *Optimization of the Cellulose Algae Sodium Chloride Battery*

Connecticut Junior Science and Humanities Symposium

The Connecticut Junior Science and Humanities Symposium is sponsored by the UConn 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.

The 2013 symposium was held in March at the UConn. 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:

1st Place: Kaitavjeet Chowdhary, Glastonbury High School, Glastonbury, CT

Project: *Morphogenesis of and Chromosome Segregation in Escherichia Coli Branching Mutants*

2nd Place: Alexandru Buhimschi, Hamden Hall Country Day School, Hamden, CT

Project: *UVB-Induced Psoralen Photoadducts and Their Rapid Detection by Surface Enhanced Laser Desorption Ionization Time of Flight Mass Spectrometry (SELDI-TOFMS) Technology*

3rd Place: Mallory Madfes, Greenwich High School, Greenwich, CT

Project: Mycoremediation of PCB Soil Contaminants with *Pleurotus ostreatus*

4th Place: Reed Morgan, Darien High School, Darien, CT

Project: *Ethnogenesis and State Formation in the Mycenaean Hither State of Pylos: A-pu2/Iklaina as a Diagnostic*

5th Place: Janine Kerr, Danbury High School, Danbury, CT

Project: *Biological Control of the Emerald Ash Borer Using Entomopathogenic Fungi and Nematodes*

These students and their schools were recognized at the 2013 Annual Meeting and Dinner of the Academy. The students received Certificates of Recognition and a \$250 honorarium. Each high school was also recognized with a Letter of Commendation and a \$500 donation to its science department to further science and mathematics education from the Academy. Additionally, Governor Dannel P. Malloy 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 2013, the Academy recognized the 15 middle and elementary school student winners of the Invention Convention with Certificates of Recognition and a Connecticut Science Center annual membership.



Governor Dannel P. Malloy addresses the 38th Annual Meeting and Dinner on May 22, 2013. (Photo: Frank LaBanca)

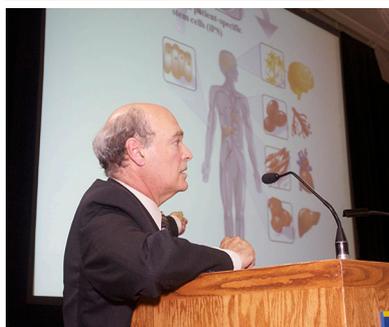
The thirty-eighth Annual Meeting and Dinner of the Academy was held May 22, 2013, at Quinnipiac University in Hamden. The event included a business meeting for members that provided a review of the activities and affairs of the Academy. Approximately 300 Academy members and guests had an opportunity to meet with student science competition award winners, who displayed their projects during the event's reception. Governor Dannel

P. Malloy presented the 2013 Connecticut Medal of Science to Nobel-winning biochemist Tom Steitz of Yale University. During remarks, Governor Malloy thanked members of the state's scientific and high-tech community for their passion and dedication. He also emphasized the importance of bioscience in Connecticut and the state's commitment to growing that industry.



Winners of the 2013 Connecticut Science Challenge, Connecticut Science & Engineering Fair, Connecticut Junior Science and Humanities Symposium and the Connecticut Invention Convention. (Photo: Frank LaBanca)

During dinner, the thirty-three newly elected members of the Academy were recognized and high school and middle school student winners 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 \$9,000 was awarded to this year's winning students and their schools.



Top: Laura Grabel, Lauren B. Dachs Professor of Science and Society, Wesleyan University.

Center: Mark Lalande, Professor and Chair, Genetics and Developmental Biology, UConn Health Center; and Director, UConn Stem Cell Institute.

Bottom: Haifan Lin, Professor of Cell Biology and Genetics, Yale University; and Director, Yale Stem Cell Center.

(Photos: Frank LaBanca)

The event concluded with a keynote address from leaders of Connecticut's stem cell research community.

CASE members Laura Grabel, Marc Lalande and Haifan Lin gave a three-part keynote speech that provided an overview of stem cell research in Connecticut and highlighted key developments and other future possibilities based on current research. Laura Grabel is Wesleyan University's Lauren B. Dachs Professor of Science and Society; Marc Lalande is Professor and Chair of Genetics and Developmental Biology at the UConn Health Center and Director of the UConn Stem Cell Institute; and Haifan Lin is Professor of Cell Biology and of Genetics at Yale University and Director of the Yale Stem Cell Center.

The Academy recognizes and thanks the following companies and organizations for their generous donations in support of the Annual Meeting:

ClearEdge Power
Connecticut Center for Advanced Technology
Connecticut Economic Resource Center
Connecticut Innovations
Connecticut Technology Council
Nufern
Pfizer
Pratt & Whitney
UConn Health Center
UConn School of Engineering
United Technologies Research Center
Wesleyan University
Westinghouse Electric Company
Yale University

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

Financial Statements

**YEAR ENDED JUNE 30, 2013
(with comparative totals for 2012)**

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

To the Council of the Academy
Connecticut Academy of Science & Engineering, Incorporated

Report on the Financial Statements

I have audited the accompanying financial statements of the Connecticut Academy of Science & Engineering, Incorporated (the Academy) a nonprofit organization, which comprise the statement of financial position as of June 30, 2013, and the related statements of activities, functional expenses, and cash flows for the year then ended, and the related notes to the financial statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

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 from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. Accordingly, I express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my audit opinion.

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 & Engineering, Incorporated as of June 30, 2013, and the changes in its net assets and its cash flows for the year then ended in accordance with accounting principles generally accepted in the United States of America.

Report on Summarized Comparative Information

I have previously audited the Connecticut Academy of Science & Engineering, Incorporated's 2012 financial statements, and my report dated November 30, 2012, expressed an unmodified opinion on those audited financial statements. In my opinion, the summarized comparative information presented herein as of and for the year ended June 30, 2012, is consistent, in all material respects, with the audited financial statements from which it has been derived.

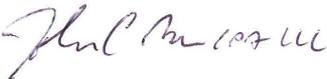
Other Matters

Other Information

My audit was conducted for the purpose of forming an opinion on the financial statements as a whole. The accompanying Schedule of Expenditures of State Financial Assistance is presented for purposes of additional analysis as required by the State of Connecticut Single Audit Act, and is not a required part of the financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In my opinion, the information is fairly stated in all material respects, in relation to the financial statements as a whole.

Other Reporting Required by Government Auditing Standards

In accordance with Government Auditing Standards, I have also issued my report dated December 4, 2013, on my consideration of the Connecticut Academy of Science & Engineering, Incorporated'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 internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with Government Auditing Standards in considering the Academy's internal control over financial reporting and compliance



Farmington, Connecticut
December 4, 2013

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STATEMENT OF FINANCIAL POSITION

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING INCORPORATED

STATEMENT OF FINANCIAL POSITION
JUNE 30, 2013

(with comparative totals for 2012)

	<u>2013</u>	<u>2012</u>
ASSETS:		
Current Assets:		
Cash and cash equivalents (Notes 2 and 3)	\$331,004	\$270,448
Investments (Notes 2 and 4)	19,967	101,275
Accounts receivable contracts (Note 2)	10,684	13,905
Unbilled amounts earned under contracts (Note 2)	155,453	60,284
Other assets	<u>2,633</u>	<u>7,928</u>
Total current assets	<u>519,741</u>	<u>453,840</u>
Fixed Assets:		
Furniture and equipment	15,743	13,578
Less accumulated depreciation	<u>(2,123)</u>	<u>(10,770)</u>
Net furniture and equipment	<u>13,620</u>	<u>2,808</u>
Other Assets:		
Cash and cash equivalents endowment	81,623	65,311
Investments endowment	<u>43,590</u>	<u>50,635</u>
Total other assets	<u>125,213</u>	<u>115,946</u>
TOTAL ASSETS	<u><u>\$658,574</u></u>	<u><u>\$572,594</u></u>
LIABILITIES AND NET ASSETS:		
Current Liabilities:		
Accounts payable and accrued expenses	\$97,555	\$31,377
Contract revenue received in advance (Notes 2 and 5)	<u>4,917</u>	<u>3,000</u>
Total current liabilities	<u>102,472</u>	<u>34,377</u>
Net Assets (Notes 2 and 6):		
Unrestricted:		
Board designated	125,213	45,350
Undesignated	<u>397,590</u>	<u>392,234</u>
Total unrestricted	522,803	437,584
Temporarily restricted	<u>33,299</u>	<u>100,633</u>
Total net assets	<u>556,102</u>	<u>538,217</u>
TOTAL LIABILITIES AND NET ASSETS	<u><u>\$658,574</u></u>	<u><u>\$572,594</u></u>

See notes to financial statements

STATEMENT OF ACTIVITIES

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING INCORPORATED

STATEMENT OF ACTIVITIES YEAR ENDED JUNE 30, 2013 (with comparative totals for 2012)

	2013			2012
	Unrestricted	Temporarily Restricted	Total	Total
REVENUES				
Contracts (Note 5)	\$751,468	\$0	\$751,468	\$579,106
Contributions (Note 2)	27,140	8,945	36,085	37,300
Membership dues	30,300	0	30,300	28,800
Interest income	894	0	894	3,091
Investment gains(loss)	(1,176)	0	(1,176)	0
Report fees and miscellaneous income	350	0	350	518
Contributed services (Note 2)	57,679	0	57,679	19,236
TOTAL REVENUES BEFORE NET ASSETS RELEASED FROM RESTRICTIONS	866,655	8,945	875,600	668,051
Net assets released from restrictions (Note 6):	5,683	(5,683)	0	0
TOTAL REVENUES	872,338	3,262	875,600	668,051
EXPENSES (Note 2):				
Program services:				
Publications	30,517	0	30,517	32,039
Technical guidance and information	622,901	0	622,901	400,487
Awards	9,656	0	9,656	10,911
Total program services	663,074	0	663,074	443,437
Support Services:				
Management and general	194,448	0	194,448	181,874
Fund raising	193	0	193	166
Total support services	194,641	0	194,641	182,040
TOTAL EXPENSES	857,715	0	857,715	625,477
Net asset transfers	70,596	(70,596)	0	0
CHANGE IN NET ASSETS	85,219	(67,334)	17,885	42,574
NET ASSETS, BEGINNING OF YEAR	437,584	100,633	538,217	495,643
NET ASSETS, END OF YEAR	\$522,803	\$33,299	\$556,102	\$538,217

See notes to financial statements

STATEMENT OF FUNCTIONAL EXPENSES

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING INCORPORATED

STATEMENT OF FUNCTIONAL EXPENSES
YEAR ENDED JUNE 30, 2013
(with comparative totals for 2012)

	2013				2012				
	PROGRAM SERVICES		SUPPORT SERVICES		PROGRAM SERVICES		SUPPORT SERVICES		
	Publications	Technical Guidance & Information	Awards	Total Program Services	Management & General	Fund Raising	Total Support Services	2013 Total Program & Support	2012 Total
Professional services	\$23,472	\$529,054	\$334	\$552,860	\$122,656	\$0	\$122,656	\$675,516	\$498,577
Professional services in-kind (Note 2)	0	57,679	0	57,679	0	0	0	57,679	19,236
Employee benefits	734	19,138	51	19,923	17,230	0	17,230	37,153	39,091
Rent and parking (Note 7)	312	624	0	936	2,886	78	2,964	3,900	3,900
Office expenses	573	3,652	16	4,241	17,437	0	17,437	21,678	16,005
Insurance	218	437	0	655	2,020	55	2,075	2,730	2,226
Travel and subsistence	0	6,152	0	6,152	3,331	0	3,331	9,483	6,989
Council activities	0	0	0	0	3,611	0	3,611	3,611	4,284
Membership activities	0	0	0	0	22,885	0	22,885	22,885	13,682
Awards and prizes	0	0	9,255	9,255	0	0	0	9,255	8,799
Loss disposal of furniture and equipment	34	67	0	101	311	8	319	420	0
Printing	4,966	5,683	0	10,649	160	0	160	10,809	10,550
Depreciation (Note 2)	208	415	0	623	1,921	52	1,973	2,596	2,138
TOTAL EXPENSES	\$30,517	\$622,901	\$9,656	\$663,074	\$194,448	\$193	\$194,641	\$857,715	\$625,477

See notes to financial statements.

STATEMENT OF CASH FLOWS

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING INCORPORATED

STATEMENT OF CASH FLOWS YEAR ENDED JUNE 30, 2013 (with comparative totals for 2012)

	<u>2013</u>
CASH FLOWS FROM OPERATING ACTIVITIES	
Change in net assets	\$ 17,885
Adjustments to reconcile change in net assets to net cash provided by operating activities:	
Contributions restricted for long-term purposes	(7,580)
Expenditures restricted for long-term purposes	5,000
Investment return for long-term purposes	(245)
Net unrealized losses on investments	1,176
Loss disposal of furniture and equipment	420
Depreciation	2,596
Change in operating assets and liabilities:	
Accounts receivable contracts	3,221
Unbilled amounts earned under contracts	(95,169)
Other assets	5,295
Accounts payable and accrued expenses	66,178
Contract revenue received in advance	1,917
Total adjustments	<u>(17,191)</u>
Net cash provided by (used in) operating activities	<u>694</u>
CASH FLOWS FROM INVESTING ACTIVITIES	
Proceeds from investments	101,532
Purchase of investments	(20,262)
Deposit to board designated endowment	(7,580)
Purchase of furniture and equipment	<u>(13,828)</u>
Net cash provided by (used in) investing activities	<u>59,862</u>
INCREASE(DECREASE) IN CASH AND CASH EQUIVALENTS	60,556
CASH AND CASH EQUIVALENTS, BEGINNING OF YEAR	<u>270,448</u>
CASH AND CASH EQUIVALENTS, END OF YEAR	<u>\$ 331,004</u>

See notes to financial statement

NOTES TO FINANCIAL STATEMENTS

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS

JUNE 30, 2013

(with comparative totals for 2012)

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.

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 are net assets that are not subject to donor-imposed restrictions and may be used for any operating purpose of the Academy

Temporarily Restricted Net Assets

Temporarily restricted net assets are net assets that are subject to donor-imposed stipulations that require the passage of time and/or the occurrence of a specific event, for them to be used.

Cash and Cash Equivalents

Cash equivalents represent cash in checking accounts, money market funds or short-term investments with original maturities of three months or less. This includes unrestricted cash used for operations, cash held in investment accounts and cash with donor restrictions.

Investments

The Academy records investments in marketable securities with readily determinable fair values at their fair values in the statements of financial

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS

JUNE 30, 2013

(with comparative totals for 2012)

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES
(continued)

position. Realized and unrealized gains and losses are reported in the statement of activities.

Accounts Receivable – Contracts, Unbilled Amounts Earned Under 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, 2013 and 2012 are deemed collectible.

Unbilled amounts earned under contracts consist of fees earned on contracts in progress, but not yet billed. Contract amounts considered earned are recognized as revenue when the work is performed.

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

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.

Contributions

Contributions received are recorded as unrestricted, temporarily restricted or permanently restricted support depending on the existence or nature of any donor restrictions.

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

CONNECTICUT ACADEMY OF SCIENCE
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NOTES TO FINANCIAL STATEMENTS
JUNE 30, 2013
(with comparative totals for 2012)

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES
(continued)

if not provided by donation. Contributed services that do not meet the above criteria are not recognized (Note 5).

Contributed services and related expenses provided for the Technical Guidance and Information Program was \$57,679 and \$19,236 for the years ended June 30, 2013 and 2012, respectively.

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.

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.

Income Taxes

The Academy is a not-for-profit organization and is exempt from federal taxes as a public charity under section 501(C)(3) of the Internal Revenue Code. Accordingly, no provision for income taxes has been made in the accompanying financial statements. The Academy's informational returns for the years ended June 30, 2009 through 2012 are subject to examination by the Internal Revenue Service.

Use of Estimates

The preparation of financial statements in conformity with generally

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS
JUNE 30, 2013
(with comparative totals for 2012)

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES
(continued)

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.

Reclassifications

Certain amounts in the 2013 financial statements have been reclassified to conform to the 2012 financial statement presentation.

Subsequent Events

Management has evaluated subsequent events through December 4, 2013, the date the financial statements were available to be issued. Through that date, there were no material events that would require recognition or additional disclosure in the financial statements.

NOTE 3 - CONCENTRATION OF CREDIT RISK

Financial instruments, which could potentially subject the Academy to concentration of credit risk, consist principally of cash and cash equivalents, investments and support from governmental agencies.

At times, cash and cash equivalents exceed the amount insured by the Federal Deposit Insurance Corporation, however the Academy has not suffered, nor expects to suffer, any losses from such concentrations.

The Academy receives approximately 84% of its total revenue and support from various governmental agencies. A significant reduction in the level of this support, if this were to occur, could have a significant impact on the Academy's programs and activities. At June 30, 2013, approximately \$154,642 of accounts receivable and unbilled amounts earned under contracts is due from governmental agencies.

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS
JUNE 30, 2013
(with comparative totals for 2012)

NOTE 4 - INVESTMENTS

Investments valued based upon quoted market prices are composed of the following as of June 30:

	<u>2013</u>		<u>2012</u>	
	<u>Cost</u>	<u>Fair Value</u>	<u>Cost</u>	<u>Fair Value</u>
Certificates of deposit	\$ 40,000	\$ 39,934	\$ 151,910	\$ 151,910
Corporate bonds	<u>24,724</u>	<u>23,623</u>	<u>0</u>	<u>0</u>
	<u>\$ 64,724</u>	<u>\$ 63,557</u>	<u>\$ 151,910</u>	<u>\$ 151,910</u>

NOTE 5 - CONTRACT ARRANGEMENTS AND SUBSEQUENT FUNDING RISKS

During the years ended June 30, 2013 and 2012 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 \$721,848 and \$357,663 during the years ended June 30, 2013 and 2012, respectively. 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).

Contracts, accounts receivable – contracts and contract revenue as of and for the year ended June 30, 2013 consisted of the following:

CONNECTICUT ACADEMY OF SCIENCE
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NOTES TO FINANCIAL STATEMENTS
JUNE 30, 2013
(with comparative totals for 2012)

<u>Agency</u>	<u>Accounts Receivable- Contracts</u>	<u>Unbilled Amounts Earned Under Contracts</u>	<u>Contract Rev. Year End June 30, 2013</u>
Connecticut Department of Public Health	\$0	\$0	\$159,314
Connecticut Center for Advanced Technology	0	0	3,000
Connecticut Department of Transportation	0	0	103,101
Connecticut General Assembly	0	154,652	461,255
Connecticut Innovations, Inc	0	0	12,814
Connecticut Science Center	0	0	500
Albertus Magnus College	<u>10,684</u>	<u>801</u>	<u>11,484</u>
Totals	<u>\$10,684</u>	<u>\$155,453</u>	<u>\$751,468</u>

NOTE 6 - NET ASSETS

Net assets released from donor-restriction by incurring expenses satisfying the purposes of contributions restricted to various Academy programs, amounted to \$5,683 and \$5,635 for the years ended June 30, 2013 and 2012, respectively.

Net asset transfers represent amounts contributed in prior years for inclusion in the Academy Endowment and amounted to \$70,596 for the year ended June 30, 2013.

Temporarily restricted net assets at June 30, 2013 consist of \$33,299 for Student Awards. Net assets temporarily restricted at June 30, 2012 consist of \$30,037 for Student Awards and \$70,596 for the Endowment.

Unrestricted board designated net assets at June 30, 2013 and 2012 consist of amounts set aside for the Academy Endowment.

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS

JUNE 30, 2013

(with comparative totals for 2012)

NOTE 7 - 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 \$6,319 and \$5,888 for the years ended June 30, 2013 and 2012, respectively.

NOTE 8 - OPERATING LEASE OBLIGATIONS

The Academy leases office space and office equipment under various operating leases. Operating lease expense amounted to \$5,858 and \$5,858 for the years ended June 30, 2013 and 2012, respectively.

The following is a schedule by years of future minimum rentals under the leases at June 30, 2013:

2014	\$ 1,958
2015	1,306

NOTE 9 - FAIR VALUE MEASUREMENTS

The fair value hierarchy in FASB ASC Topic 820 prioritizes fair value measurements into three levels based on the nature of the inputs. The three levels of the fair value hierarchy under FASB ASC Topic 820 are as follows:

Level 1 - Investments in this category are valued based on quoted prices in active markets for identical assets that are accessible at the measurement date. An active market is a market in which transactions for the asset occur with sufficient frequency and volume to provide pricing information on an ongoing basis.

Level 2 - Investments in this category are valued based on inputs, in the absence of actively quoted market prices, which are observable for the asset, either directly or indirectly. Level 2 inputs include: (a) quoted prices for similar assets in active markets, (b) quoted prices for identical or similar assets in markets that are not active, (c) inputs other than quoted prices that are observable for the asset such as interest rates and yield curves observable at commonly quoted intervals, and (d) inputs that are derived principally from or corroborated by observable market data by correlation or other means.

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS
JUNE 30, 2013
(with comparative totals for 2012)

NOTE 9 – FAIR VALUE MEASUREMENTS (continued)

Level 3 – Investments in this category are valued based on unobservable inputs for assets. Unobservable inputs are used to the extent observable inputs are not available, thereby allowing for situations in which there is little, if any, market activity for the asset at the measurement date.

The asset's or liability's fair value measurement level within the fair value hierarchy is based on the lowest level of any input that is significant to the fair value measurement.

The following is a summary of the Academy's investments by level, within the fair value hierarchy, as of:

June 30, 2013	Fair value measurement using input considered as:			
	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>	<u>Total</u>
Certificates of deposit	\$ 39,934	\$ 0	\$ 0	\$ 39,934
Corporate bonds	<u>0</u>	<u>23,623</u>	<u>0</u>	<u>23,623</u>
	<u>\$ 39,934</u>	<u>\$ 23,623</u>	<u>\$ 0</u>	<u>\$ 63,557</u>

The following is a summary of the Academy's investments by level, within the fair value hierarchy, as of:

June 30, 2012	Fair value measurement using input considered as:			
	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>	<u>Total</u>
Certificates of deposit	\$ 151,910	\$ 0	\$ 0	\$ 151,910
Corporate bonds	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
	<u>\$ 151,910</u>	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 151,910</u>

NOTE 10 – BOARD DESIGNATED ENDOWMENT

The Academy's endowment consists of a fund designated by the Board to function as an endowment with the purpose of enhancing the Academy's mission, especially relative to informing the public and engaging youth in science and technology. As required by accounting principles generally accepted in the United States of America, net assets associated with endowment funds, including funds designated by the Board to function as endowments, are classified and reported based on the existence or absence of

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS
JUNE 30, 2013

(with comparative totals for 2012)

NOTE 10 – BOARD DESIGNATED ENDOWMENT (continued)

donor-imposed restrictions. The endowment consists of unrestricted monies designated by the board for investment to fund future Academy activities.

Investment Return Objectives and Risk Parameters

The objectives of the investment portfolio of the Academy include the preservation of capital, generation of income and capital appreciation such that the value of invested assets keeps up with the rate of inflation. Endowment assets will be held in cash and cash equivalents and bonds.

Spending Policy and How the Investment Objectives Relate to Spending Policy

The Academy Endowment Fund spending rules provide for a maximum annual draw from the fund of 3% of the fund balance, plus \$2,000 per year for an initial three year pilot program beginning with the fiscal year ended June 30, 2013.

The changes in the Academy's endowment fund are as follows:

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS
JUNE 30, 2013
(with comparative totals for 2012)

NOTE 10 – BOARD DESIGNATED ENDOWMENT (continued)

	Board-Designated <u>Unrestricted</u>	<u>Total</u>
Endowment assets, June 30, 2011	<u>\$ 39,475</u>	<u>\$ 39,475</u>
Investment return:		
Investment income	0	0
Unrealized losses	<u>0</u>	<u>0</u>
Total investment return	<u>0</u>	<u>0</u>
Additions to endowment funds	5,875	5,875
Amounts appropriated for expenditure	<u>0</u>	<u>0</u>
	<u>5,875</u>	<u>5,875</u>
Endowment assets, June 30, 2012	<u>45,350</u>	<u>45,350</u>
Net asset transfers	<u>70,596</u>	<u>70,596</u>
Investment return:		
Investment income	245	245
Unrealized losses	<u>(1,138)</u>	<u>(1,138)</u>
Total investment return	<u>(893)</u>	<u>(893)</u>
Additions to endowment funds	15,160	15,160
Amounts appropriated for expenditure	<u>(5,000)</u>	<u>(5,000)</u>
	<u>10,160</u>	<u>10,160</u>
Endowment assets, June 30, 2013	<u>\$ 125,213</u>	<u>\$ 125,213</u>

Endowment assets are comprised of the following at June 30:

	<u>2013</u>	<u>2012</u>
Cash and cash equivalents	\$ 81,623	\$ 45,350
Certificates of deposit	19,967	0
Corporate bonds	<u>23,623</u>	<u>0</u>
Total endowment	<u>\$ 125,213</u>	<u>\$ 45,350</u>

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

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*

Independent Auditor's Report

To the Council of the Academy
Connecticut Academy of Science & Engineering, Incorporated
Rocky Hill, Connecticut

I have audited, 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 the financial statements of the Connecticut Academy of Science and Engineering, Incorporated (the Academy), which comprise the statement of financial position as of June 30, 2013 and the related statements of activities, and cash flows for the year ended, and the related notes to the financial statements, and have issued my report thereon dated December 4, 2013.

Internal Control over Financial Reporting

In planning and performing my audit, I considered the Academy's internal control over financial reporting (internal control) to determine the audit procedures that are appropriate in the circumstances 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. Accordingly, I do not express an opinion on the effectiveness of the Academy's internal control.

A deficiency in internal control 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 and correct misstatements on a timely basis. A material weakness is a deficiency or combination of deficiencies in internal control such that there is a reasonable possibility that a material misstatement of the entity's financial statements will not be prevented, or detected and corrected, on a timely basis. A significant

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deficiency is a deficiency, or combination of deficiencies, in internal control that is less severe than a material weakness, yet important enough to merit attention by those charged with governance.

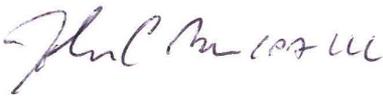
My consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during my audit I did not identify any deficiencies in internal control that I consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

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.

Purpose of This Report

The purpose of this report is solely to describe the scope of my testing of internal control and compliance and the result of that testing, and not to provide an opinion on the effectiveness of the Academy's internal control or on compliance. This report is an integral part of an audit performed in accordance with Government Auditing Standards in considering the Academy's internal control and compliance. Accordingly, this communication is not suitable for any other purpose.



Farmington, Connecticut
December 4, 2013

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Report on Compliance for Each Major State Program;
Report on Internal Control over Compliance; and Report on the Schedule
of Expenditures of State Financial Assistance Required by the State Single
Audit Act

Independent Auditor's Report

To the Council of the Academy
Connecticut Academy of Science & Engineering, Incorporated
Rocky Hill, Connecticut

Report on Compliance for Each Major State Program

I have audited the Connecticut Academy of Science and Engineering, Incorporated's (the Academy) compliance with the types of compliance requirements described in the Office of Policy and Management Compliance Supplement/Contract that could have a direct and material effect on each of the Academy's major state programs for the year ended June 30, 2013. The Academy's major state programs are identified in the summary of auditors' results section of the accompanying schedule of findings and questioned costs.

Management's Responsibility

Management is responsible for compliance with the requirements of laws, regulations, contracts and grants applicable to its major state programs.

Auditor's Responsibility

My responsibility is to express an opinion on compliance for each of the Academy's major state programs based on my audit of the types of compliance requirements referred to above. 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. Sections 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 my opinion on compliance for each major state program. However, my audit does not provide a legal determination of the Academy's compliance.

Opinion of Each Major State Program

In my opinion, the Academy complied, in all material respects, with the compliance requirements referred to above that could have a direct and material effect on each of its major state programs for the year ended June 30, 2013.

Report on Internal Control over Compliance

Management of the Academy is responsible for establishing and maintaining effective internal control over compliance with the types of compliance requirements referred to above. In planning and performing my audit of compliance, I considered the Academy's internal control over compliance with the types of requirements that could have a direct and material effect on each major state program to determine the auditing procedures that are appropriate in the circumstances for the purpose of expressing my opinion on compliance for each major state program and to test and report on internal control over compliance in accordance with the State Single Audit Act, 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.

A deficiency in internal control over compliance exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance with a type of compliance requirement of a state program on a timely basis. A material weakness in internal control over compliance is a deficiency, or combination of deficiencies, in internal control over compliance, such that there is a reasonable possibility that material noncompliance with a type of compliance requirement of a state program will not be prevented, or detected and corrected, on a timely basis. A significant deficiency in internal control over compliance is a deficiency or combination of deficiencies, in internal control over compliance with a type of compliance requirement of a state program that is less severe than a material weakness in internal control over compliance, yet important enough to merit attention by those charged with governance.

My consideration of internal control over compliance was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over compliance that might

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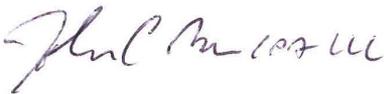
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be material weaknesses or significant deficiencies. I did not identify any deficiencies in internal control over compliance that I consider to be material weaknesses. However, material weaknesses may exist that have not been identified.

The purpose of this report on internal control over compliance is solely to describe the scope of my testing of internal control over compliance and the results of that testing based on the requirements of the State Single Audit Act. Accordingly, this report is not suitable for any other purpose.

Report on Schedule of Expenditures of State Financial Assistance Required by the State Single Audit Act

I have audited the financial statements of the Connecticut Academy of Science and Engineering, Incorporated as of and for the year ended June 30, 2013, and have issued my report thereon dated December 4, 2013, which contained an unmodified opinion on those financial statements. My audit was conducted for the purpose of forming an opinion on the financial statements 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 is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the financial statements. The information has been subjected to the auditing procedures applied in the audit of the financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In my opinion, the Schedule of Expenditures of State Financial Assistance is fairly stated in all material respects in relation to the financial statements as a whole.



Farmington, Connecticut
December 4, 2013

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SCHEDULE OF EXPENDITURES OF STATE FINANCIAL ASSISTANCE

CONNECTICUT ACADEMY OF SCIENCE SCHEDULE 1 AND ENGINEERING, INCORPORATED

SCHEDULE OF EXPENDITURES OF STATE FINANCIAL ASSISTANCE YEAR ENDED JUNE 30, 2013

State Grantor Pass - Through Grantor <u>Program Title</u>	<u>State Grant Program Identification Number</u>	<u>Expenditures</u>
Connecticut Department of Public Health:		
Review of Grants-In-Aid For Biomedical Research	DPHM1-0000045982	\$43,000
Stem Cell Research Grant Program	DPHM1-0000046819	6,250
Accomplishments Study		
Stem Cell Research Grant Program	DPHM1-0000047386	6,564
Accomplishments Study		
Stem Cell Research Grant Program Peer Review	DPHM1-0000046969	51,700
Stem Cell Research Grant Program Peer Review	DPHM1-0000046970	14,500
Stem Cell Research Grant Program Peer Review	DPHM1-0000047611	8,300
Stem Cell Research Grant Program Peer Review	DPHM1-0000047939	29,000
Pass-through Connecticut Innovations, Inc.		
Stem Cell Research Grant Program	PSA1700	12,814
Accomplishments Study		
Connecticut Department of Transportation:		
Assessing the Economic Impact of	DOTM1-0000111750	73,658
Transportation Projects		
Assessing the Economic Impact of	DOTM1-0000110793	21,250
Transportation Projects		
General Additional Services	DOTM1-0000110793	2,193
Capital Program Benchmarking	DOTM1-0000045982	6,000
Connecticut General Assembly Office Legislative		
Management:	JCLM12PSA0021	58,570
Connecticut Skilled Workforce Needs Study		
Connecticut Disparity Study	JCLM13PSA0004	200,000
Connecticut Disparity Study	JCLM14PSA0002	133,635
Health Impact Assessment Study	OLMM1-0000013955	<u>69,050</u>
Total State Financial Assistance		<u>\$736,484</u>

See independent auditors' report and 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
FOR THE YEAR ENDED JUNE 30, 2013

NOTE 1 - GENERAL

State of Connecticut funding is provided from the Connecticut Department of Public Health, the Connecticut Department of Transportation, the Connecticut General Assembly Office of Legislative Management and Connecticut Innovations, Inc. 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 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

The accounting policies of the Academy conform to accounting principles generally accepted in the United States of America as applicable to not-for-profit organizations.

The information in the Schedule of Expenditures of State Financial Assistance is presented based upon regulations established by the State of Connecticut, Office of Policy and Management.

Basis of Accounting

The expenditures reported on the Schedule of Expenditures of State Financial Assistance are reported on the accrual basis of accounting. In accordance with Section 4-236-22 of the Regulations to the State Single Audit Act, certain grants, Personal Service Agreement and letters of agreement 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 FOR THE YEAR ENDED JUNE 30, 2013

I. SUMMARY OF AUDITOR'S RESULTS

Financial Statements

Type of auditor's report issued: Unmodified

Internal control over financial reporting:

Material weakness(es) identified? ___ yes X no
Significant deficiency(ies) identified? ___ yes X none reported
Noncompliance material to financial
statements noted? ___ yes X no

State Financial Assistance

Internal control over its major programs:

Material weakness(es) identified? ___ yes X no
Significant deficiency(ies) identified? ___ yes X none reported

Type of auditor's report issued on compliance for
its major programs: Unmodified

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?
___ yes X no

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

<u>State Grantor and Program</u>	<u>State Grant Program Identification Numbers</u>	<u>State Expenditures</u>
Connecticut Department of Transportation:		
Assessing the Economic Impact of Transportation Projects	DOTM1-0000111750	\$ 73,658
Assessing the Economic Impact of Transportation Projects	DOTM1-0000110793	\$ 21,250
Connecticut General Assembly		
Connecticut Disparity Study	JCLM13PSA0004	\$200,000
Connecticut Disparity Study	JCLM14PSA0002	\$133,635
 Dollar threshold used to distinguish between type A and type B programs		 \$100,000

II. FINANCIAL STATEMENT FINDINGS

No matters were reported.

III. STATE FINANCIAL ASSISTANCE FINDINGS AND QUESTIONED COSTS

No matters were reported.

MAJOR STUDIES OF THE ACADEMY

2012

- Strategies for Evaluating the Effectiveness of Programs and Resources for Assuring Connecticut's Skilled Workforce Meets the Needs of Business and Industry Today and in the Future
- Benchmarking Connecticut's Transportation Infrastructure Capital Program with Other States

2011

- Advances in Nuclear Power Technology
- Alternative Methods for Safety Analysis and Intervention for Use by ConnDOT for Contracting Vehicles and Drivers for Transportation Projects and Services
- Guidelines for the Development of a Strategic Plan for Accessibility to and Adoption of Broadband Services in Connecticut

2010

- Environmental Mitigation Alternatives for Transportation Projects in Connecticut
- The Design-Build Contracting Methodology for Transportation Projects: A Review of Practice and Evaluation for Connecticut Applications
- Peer Review of an Evaluation of the Health and Environmental Impacts Associated with Synthetic Turf Playing Fields

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 UConn 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

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