Connecticut Academy of Science and Engineering

Annual Report

2013-2014

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.*

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Report of the President

The state of the Academy at the end of the 2014 fiscal year, June 30, 2014, 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 has grown. In addition to studies and projects conducted for state agencies, the General Assembly's two-year budget (FY14/FY15) included funding for the Academy to conduct a study each year on their behalf with study topics selected based on discussion with committee leadership.

This year the Academy's membership continued to grow with the record high election of 50 new members and a total membership at year end of 376 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 2015 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 Academy's services on a wide range of issues of importance to the state including transportation, energy, public health, biomedical and stem cell research, early childhood education, and minority and women's business enterprise program contracting. The Public Policy Inquires section of the annual report highlights the studies and projects conducted by the Academy this past year.

Representing Governor Dannel P. Malloy, State Department of Education Chief Academic Officer Dianna Roberge-Wentzell attended the Academy's annual meeting to present the 2014 Connecticut Medal of Technology to Dr. Frederick J. Leonberger, an internationally known technologist and industry leader in the field of photonics and fiber optics. Dr. Leonberger is retired as Chief Technology Officer, JDS Uniphase, and previously served as a United Technologies Research Center manager. For almost 40 years, he has been a major contributor to his field not only in the development of a variety of important optical devices, but in product and business strategy, commercialization and overall company leadership.

The Academy's quarterly *Bulletin* continues to inform the public and provide the state's government and business leadership, and the general public with timely notice of developments of interest at both the state and national

levels. This year the *Bulletin's* feature articles covered a range of topics, including "Cogeneration: Combined Heat and Power - A Powerful Solution to Address the Vagaries of Nature," "STEM Programs in K-12: Measuring Success," "Yale's Robert Shiller Awarded Nobel Prize for Research in Asset Price Analysis," and "New Strategies for Data Management in Connecticut." Also, 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 and high school students that publishes articles about interesting science and technology topics throughout the school year.

Also in FY14, the Academy continued support for the Connecticut Science & Engineering Fair's Urban School Challenge (USC), which the Academy helped establish through its the Endowment Fund. 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 nationally and the middle school winner with a chance to attend Project Oceanology's Ocean Camp.

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. Also, special recognition goes to CASE member Gale F. Hoffnagle who completed his six years of service to the Academy as its Vice President, President, and finally as Past President this year.

Sandra K. Weller
President
July 1, 2014

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 2014 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
Robert Hobbs, United Technologies Research Center (ret.)
Lee Langston, UConn
Harris Marcus, UConn
Sara Rockwell, Yale School of Medicine
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 2014 fiscal year were:

AGRICULTURE, FOOD AND NUTRITION:
Theodore G. Andreadis, 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.

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

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.) *(thru April 2014)*
John Ivan, UConn *(effective May 2014)*
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 2014 fiscal year the Academy had a total of 376 members, including this year's 50 newly elected members, as follows:

Giridhari L. Agrawal
President, R&D Dynamics Corporation

Eric J. Amis
Director, Physical Sciences, United Technologies Research Center

Theodore G. Andreadis
Director, The Connecticut Agricultural Experiment Station; Adjunct Professor, Department of Pathobiology, UConn

Jacques Banchereau
Professor and Director of Immunological Sciences, The Jackson Laboratory

Ronald R. Breaker
Henry Ford II Professor and Chair, Molecular, Cellular and Developmental Biology; Professor, Molecular Biophysics and Biochemistry, Yale University; Investigator, Howard Hughes Medical Institute

Hui Cao
Professor of Applied Physics and Physics, Yale University

Sonia Caprio
Professor of Pediatrics, Yale School of Medicine

Meredith B. Colket
Senior Fellow, United Technologies Research Center

Lynn Cooley
C. N. H. Long Professor of Genetics; Professor of Cell Biology and of Molecular, Cellular, and Developmental Biology; Yale School of Medicine

Jun-Hong Cui
Professor, Department of Computer Science and Engineering, UConn

Daniel C. DiMaio
Waldemar Von Zedtwitz Professor of Genetics; Vice Chair, Department of Genetics; Professor of Therapeutic Radiology and Molecular Biophysics & Biochemistry; Scientific Director, Yale Cancer Center

James Duncan
Ebenezer K. Hunt Professor of Biomedical Engineering; Professor of Diagnostic Radiology & Electrical Engineering, Yale University

Thomas Filburn
Professor of Mechanical and Biomedical Engineering, University of Hartford

Francis Galasso
Adjunct Professor/Research Scientist Emeritus, Department of Chemistry, UConn; UTRC (ret.)

Bernard Goffinet
Professor, Ecology & Evolutionary Biology, UConn

Brenton R. Graveley
Professor, Genetics and Developmental Biology, UConn School of Medicine

Daniel L. Gysling
Technical Fellow, Aeromechanics, Pratt & Whitney

Theodore R. Holford
Susan Dwight Bliss Professor of Public Health, Biostatistics Department, Yale School of Public Health

Jay D. Humphrey
John C. Malone Professor of Biomedical Engineering, Yale University

Lanbo Liu
Professor, Civil and Environmental Engineering, UConn

Joseph A. Lorenzo
Professor of Medicine and Orthopedics; Director, Bone Biology Research, UConn Health Center

Lawrence E. Marks
Emeritus Director, The John B. Pierce Laboratory Emeritus; Professor of Epidemiology and of Psychology, Yale University

Newly elected CASE members at the 39th Annual Meeting June 5, 2014. (Photo: Frank LaBanca)

Robert P. Mason
Professor, Marine Sciences and Chemistry, UConn

David R. Mayhew
Sterling Professor of Political Science; Resident Faculty Fellow, Institution for Social & Policy Studies, Yale University

Augustus D. Mazzoca
Director, New England Musculoskeletal Institute; Professor and Chairman, Department of Orthopaedic Surgery, UConn Health Center

Louise D. McCullough
Professor of Neurology and Neuroscience; Director of Stroke Research, UConn Health Center

Nicholas A. Meanwell
Executive Director, Discovery Chemistry, Bristol-Myers Squibb Research and Development

Laura R. Ment
Professor of Pediatrics (Neurology) and of Neurology; Associate Dean for Admissions and Financial Aid, Yale School of Medicine

Ivana Milanovic
Professor, Mechanical Engineering, University of Hartford

Ishita Mukerji
Dean of Natural Sciences and Mathematics, Wesleyan University

Laura E. Niklason
Professor of Anesthesiology & Biomedical Engineering, Yale University

Douglas L. Oliver
Professor of Neuroscience, UConn Health Center

Stephanie S. O'Malley
Professor of Psychiatry; Deputy Chair for Clinical Research, Yale School of Medicine

David Paltiel
Professor of Public Health and Management, Yale School of Public Health

Richard S. Parnas
Professor, Chemical Engineering, UConn

Timothy W. Patterson
Product Development Engineer, US Hybrid

Joseph J. Pignatello
Chief Scientist, The Connecticut Agricultural Experiment Station; Professor Adjunct, Chemical Engineering and Environmental Engineering, Yale University

Thomas W. Prete
Vice President, Engineering, Pratt & Whitney

Ramamurthy Ramprasad
Professor, Chemical, Materials & Biomolecular Engineering, UConn

James E. Rothman
Fergus F. Wallace Professor of Biomedical Sciences; Professor and Chair, Department of Cell Biology, Yale School of Medicine

Robert J. Shiller
Sterling Professor of Economics; Professor of Finance, Yale University

Peter G. Smith
Vice President, Engineering, United Technologies Aerospace Systems

Gregory A. Sotzing
Professor, Department of Chemistry, UConn

Patrick Sung
Professor and Chairman, Department of Molecular Biophysics and Biochemistry; Professor, Department of Therapeutic Radiology, Yale School of Medicine

Jiong Tang
Professor and Director of Graduate Studies, Mechanical Engineering, UConn

Jane R. Taylor
Charles B. G. Murphy Professor of Psychiatry and Professor of Psychology, Yale School of Medicine

Fred R. Volkmar
Chair, Child Study Center, Yale University; Chief of Child Psychiatry, Yale New Haven Children's Hospital; Irving B. Harris Professor of Child Psychiatry; Professor of Psychiatry, Pediatrics, and of Psychology, Yale School of Medicine

Guiling Wang
Professor, Civil and Environmental Engineering, UConn

Barrett O. Wells
Professor and Associated Department Head, Physics, UConn

Kurt W. Zilm
Professor of Chemistry; Professor of Chemical Engineering, Yale University

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 2/3rds 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.

Michael P. Speciale, center, is pictured with CASE President Lou Manzione and 2012 Honorary CASE Member Glenn Cassis, Executive Director of the African-American Affairs Commission. (Photo: Frank LaBanca)

Michael P. Speciale was elected to Honorary Membership to recognize his 29 years as executive director of the New England Air Museum. His tenure began six years after the disastrous 1979 tornado which nearly destroyed the Museum. Speciale overhauled the cash-strapped Museum which now boasts an additional 62,000 square feet and nearly 60,000 annual visitors. He helped to create new and innovative exhibits and oversaw the restoration of numerous aircraft through the years including the VS-44 Flying Boat, the A-26 Invader, the Sikorsky S-51 helicopter, and the B-29 Superfortress. Speciale also oversaw the construction of two new exhibit hangars, and with the assistance of the 58th Bomb Wing, created a hangar to preserve the history of these veterans and their accomplishments during World War II. In addition, Speciale incorporated special events into the Museum's programming, instituted a corporate partnership program, and created a weekend, school holiday and summer program that makes Museum educators available to teach the public about the science of aviation. He directed the creation and funding of the SOAR for Science program which teaches students the concepts of flight through discussion, demonstration and hands-on activity and reaches over 135 classrooms in Connecticut. While proud of the Museum's accomplishments, Speciale is quick to credit his talented staff and a dedicated cadre of volunteers. A graduate of Fordham College, Speciale holds a master's degree in social work from Fordham University's School of Social Service and a master's in public administration from University of Hartford. Speciale began his career as a social worker for the Community Church of New York and went on to work for the Greater Hartford United Way and later the United Way Connecticut, where he helped to develop and was the first director of the statewide 211 Infoline program.

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):

Connecticut Disparity Study – Phase 1: The *Disparity Study – Phase 1* was conducted by CASE on behalf of the Government Administration and Elections Committee of the Connecticut General Assembly (CGA). The study's purpose was to provide an analysis of existing statistical data concerning the state's set-aside program to determine whether in its current form the program achieves the goal of facilitating the participation in state contracts of small contractors and minority business enterprises. Preliminary research demonstrated that the state's executive branch agencies and the other branches of state government responsible for awarding state contracts and overseeing the set-aside program do not uniformly collect subcontractor contracting data, including payment information. A review of the legal issues and case law identified that subcontractor data and financial information is a critical component of conducting a valid disparity study. It was noted that unless quality data are collected and available for analysis, the result of the disparity study could be challenged in court, which would negate the purpose of conducting the study. Therefore, the CGA authorized a plan to divide the *Disparity Study* into four distinct phases. Phase 1 focused on Connecticut's Set-Aside Program Review and Analysis, Legal Issues, and Stakeholder Anecdotal Information/Analysis. The *Disparity Study – Phase 1* report states that the purpose of a minority business enterprise program should be to eliminate discrimination in state contracting in the market area. Although Connecticut's current program was intended to achieve this objective, it was not designed as a *narrowly tailored* program, and thus does not meet the strict scrutiny judicial standard for justifying a race-based program. *(See below for Connecticut Disparity Study – Phase 2)*
Project Start Date: *September 2012* Project Completion Date: *August 2013*
Source: Connecticut General Assembly

Analyzing the Economic Impact of Transportation Projects: The Connecticut Department of Transportation (CTDOT) contracted with CASE to assess the economic impact of transportation projects. The main goal of the study was to explore methods, approaches and analytical software tools for analyzing economic activity that results from large-scale transportation investments in Connecticut. The primary conclusion was that the transportation system and users of transportation infrastructure interact with the economy in complex ways, causing economic impacts. Therefore, in order to effectively analyze the economic impact of transportation projects, CTDOT should consider: establishing the role of economic impact analysis in the state's strategic transportation planning process; adopting an objective, independent and consistent process for conducting economic impact analyses that incorporates the state's regional, economic and political considerations; building capacity of CTDOT staff, including their

understanding of economic impact analysis and the tools used to conduct such analyses for use in the strategic planning process and to support and manage analysts who conduct the analyses; utilizing analysts well versed in the principles of transportation planning/engineering and economic theory and knowledgeable about the interrelations between the two for the purpose of ensuring validity of the results; establishing a partnership with an organization or consultant with the capacity to conduct economic analyses to achieve consistency in analyses over time; and selecting an economic analysis software model to analyze the economic impact of transportation projects.
Project Start Date: *September 2012* Project Completion Date: *September 2013*
Source: Connecticut Department of Transportation

Health Impact Assessments Study: The Public Health Committee of the CGA commissioned CASE to conduct a Health Impact Assessments (HIA) study. HIAs are used to evaluate objectively the potential health effects of a policy, program, project, or plan 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 study showed that health considerations are often unintentionally overlooked in the development and implementation of policies in non-health sectors such as transportation, education, energy, housing, and labor. It was noted that HIAs use a flexible, yet systematic, analytical process to achieve these goals. Additionally, they provide the basis for making changes to ensure that health is appropriately considered during the development of policies, program, projects, and plans, when applicable. The study recommended that the Department of Public Health lead this effort by raising awareness of HIAs, creating demand for the appropriate use of HIAs, and promoting the need for capacity development within the state to effectively conduct and participate in HIAs—with the goal of using HIAs as a catalyst for integrating public health into the decision-making process throughout all sectors and levels of government.
Project Start Date: *October 2012* Project Completion Date: *August 2013*
Source: Connecticut General Assembly

Project Connecticut Common Core State Standards-Science, Technology, Engineering and Mathematics (Project CCSS-STEM): A Teacher Professional Development Project. Albertus Magnus College contracted with CASE to serve as an external evaluator for the project that is funded through the Connecticut Office of Higher Education with funds from the US Department of Education Teacher Quality Program. The project supports the development of cross-school and cross-district professional learning communities that foster collaboration and reflective practice to increase teacher competence and confidence in creating and implementing standards-based lessons that are more student-centered, engaging and authentic, optimally differentiated, and that emphasize the effective use of technology. The project includes faculty from Central Connecticut and Southern Connecticut State Universities, and Manchester Community College. Participating middle and high School teachers are from Branford, Hamden, Madison, and New Haven Public Schools, and from parochial schools in Madison and Hamden.

Project Start Date: *July 2013* Anticipated Project Completion Date*: August 2014*
Source: Connecticut Office of Higher Education

Connecticut Disparity Study – Phase 2: For background about the *Disparity Study*, see C*onnecticut Disparity Study – Phase 1*. Phase 2 of the *Disparity Study,* conducted on behalf of the Government Administration and Election Committee of the CGA, focused on Diversity Data Management System Specification and Review of Agency Procedures and Practices Related to System Implementation, Best Practices Review and Analysis, and Establishing MBE (minority business enterprise)/WBE (women business enterprise) Program Requirements. The *Disparity Study – Phase 2* states that the most effective statewide programs have a centralized structure with support from the governor and key political leaders, and advocate for MBEs and WBEs by implementing consistent programs, developing policies, overseeing and enforcing compliance, and educating stakeholders. The study suggests that Connecticut can be a national leader as an advocate for MBE and WBE business opportunities by considering the implementation of a series of recommended actions.
Project Start Date: *August 2013* Project Completion Date: *May 2014*
Source: Connecticut General Assembly

2013 Connecticut Biomedical Research Grant Program – Peer Review: The Connecticut Department of Public Health (DPH) contracted with CASE for the fifth consecutive year to manage the peer review of biomedical research proposals in the fields of heart disease, cancer, and other tobacco-related diseases, as well as diabetes, Alzheimer's disease and stroke. A panel of 14 reviewers from Connecticut and various out-of-state institutions served on the Biomedical Research Peer Review Committee. A total of 17 proposals were reviewed. In October 2014, DPH announced the awarding of $2.3 million to the top 8 proposals based on the CASE Peer Review results.
Project Start Date: *August 2013* Project Completion Date*: December 2013*
Source: Connecticut Department of Public Health

2014 Connecticut Stem Cell Research Grant Program Peer Review: The Connecticut Department of Public Health (DPH) contracted with CASE for the third consecutive year to manage and oversee the peer review process for the Connecticut Stem Cell Research Grant Program. CASE recruited and managed the Peer Review Committee, which reviewed a total of 111 proposals. The Peer Review Committee met April 10-11, 2014, to finalize the ranking of proposals for funding decision consideration by the Connecticut Stem Cell Research Advisory Committee at its June 9, 2014, meeting. A news release from Governor Dannel P. Malloy on June 24 announced the award of approximately $10 million to fund 18 stem cell research proposals.
Project Start Date: *September 2013* Project Completion Date: *June 2014*
Source: Connecticut Department of Public Health

Peer Review of a CL&P/UConn Report Concerning Emergency Preparedness and Response at Selective Critical Facilities: On behalf of the Connecticut Department of Energy and Environmental Protection (DEEP), CASE performed a peer review

of reports prepared for DEEP by Connecticut Light and Power Company (CL&P) and the UConn Schools of Engineering and Business on methods for providing reliable electric services to critical facilities. Reports reviewed by the CASE Peer Review Committee (PRC) included the following:

- *Analysis of Selective Hardening Options: Introduction and Executive Summary to Analysis Reports* by CL&P, December 11, 2013
- *Reliability of Selective Hardening Options* by the UConn School of Engineering
- *Life-Cycle Cost Analysis of Selective Hardening Options* by the UConn School of Engineering
- *Benefit-Cost Analysis of Selective Hardening Options* by the UConn School of Business

The PRC provided comments and findings for use in the development of the peer review report. Additionally, at DEEP's request, the CASE Project Management Team conducted an initial scan of best practices for providing reliable power to critical facilities and identified possible funding sources for microgrid projects.
Project Start Date: *October 2013* Project Completion Date: *January 2014*
Source: Connecticut Department of Energy and Environmental Protection

Energy Efficiency and Reliability Solutions for Rail Operations/Facilities: There is on-going interest in improving the energy efficiency and redundancy for state facilities for the purpose of reducing energy costs and reliance on fossil fuels, improving the environment, and for serving as a visible model for the public to encourage use of energy efficient technologies in Connecticut. CTDOT contracted with CASE to conduct a study investigating energy efficiency and reliability for rail operations and facilities. Rail facilities owned and/or operated by CTDOT provide a unique opportunity to include a public education component into energy efficiency components of these facilities. The study will examine energy source options for the purpose of reducing energy consumption for rail operations/facilities.
Project Start Date: *October 2013* Anticipated Project Completion Date: *November 2014*
Source: Connecticut Department of Transportation

Methods to Measure Phosphorus and Make Future Predictions: Public Act No. 12-155, *An Act Concerning Phosphorous Reduction in State Waters,* sets forth a process for making recommendations regarding a state-wide strategy to reduce phosphorus loading in inland non-tidal waters to comply with US Environmental Protection Agency standards. This effort is being guided by a Coordinating Committee that is responsible for overseeing the work of three working groups as follows:

- Working Group 1: Statewide Response to Phosphorus Non-point Pollution
- Working Group 2: Methods to Measure Phosphorus and Make Future Projections
- Working Group 3: Municipal Options for Coming into Compliance with Water Quality Standards

At the request of the Department of Energy and Environmental Protection (DEEP), CASE is undertaking the task of Working Group 2. The goal is to develop a statewide methodology that can be applied to individual basins for setting site-specific phosphorus goals that support aquatic life uses considering other contributing stressors for any given stream in the state and use the Quinnipiac River basin as a test case for this methodology.
Project Start Date: *November 2013* Anticipated Project Completion Date: *January 2015*
Source: Connecticut Department of Energy and Environmental Protection

Connecticut Biomedical Research Program Analysis of Key Accomplishments: In 1998, Connecticut was among 46 states that entered into an agreement with the four largest tobacco companies to settle lawsuits related to Medicaid reimbursement and tobacco-related healthcare costs. The original settlement provided Connecticut with an initial upfront settlement payment of $45 million and average annual payments in perpetuity of $141 million. Connecticut established the Connecticut Tobacco Settlement Fund to receive settlement payments. The Connecticut Tobacco Settlement Fund provides funding for the Connecticut Biomedical Research Program through the Biomedical Research Trust Fund. The program is administered by the Connecticut Department of Public Health (DPH). DPH asked CASE to conduct a study to determine accomplishments achieved as a result of the research funded through Connecticut's Biomedical Research Program.
Project Start Date: *March 2014* Anticipated Project Completion Date: *July 2014*
Source: Connecticut Department of Public Health

Addressing Family Violence in Connecticut: Strategies, Tactics and Policies: There is concern in the general public and state leadership regarding family violence perpetrated by adolescents and adults in Connecticut, as well as across the United States. Efforts to reduce family violence are numerous, but many standard interventions to accomplish this goal achieve minimal benefits. Additionally, family violence, and in particular, the impact of such violence directed at elders, women, and children, is of particular concern. On behalf of the Public Health Committee of the Connecticut General Assembly, CASE will conduct a study to identify strategies, tactics and policies that can be employed in Connecticut to reduce the incidence of family violence perpetrated by adolescents and adults by targeting the common causes of violence. Several state task forces and studies on gun violence and related topics have recently been completed or are in process. This information will be used for background and guidance in refining the scope of the specific issues that will be addressed in the CASE report.
Project Start Date: *May 2014* Anticipated Project Completion Date: *June 2015*
Source: Connecticut General Assembly

Early Childhood Regression Discontinuity Study: Research conducted by the National Institute for Early Education Research (http://nieer.org/) on behalf of Connecticut education policy makers in 2009 identified the regression discontinuity approach as the best approach that would provide results that would be recognized as valid and reliable in identifying the impact of state

sponsored, school readiness prekindergarten. Based on the 2009 research, the Connecticut General Assembly (CGA) contracted with CASE to conduct a study, and as part of the study, to review the regression discontinuity approach. The objective of this study is to identify the effect that full day/school day state-funded preschool has on children's academic achievement and social skills at kindergarten entry. Following a meeting with representatives from the Office of Early Childhood, the Connecticut State Department of Education, and the CGA, the schedule for the fall 2014 collection of data from a random, representative sample of children attending prekindergarten and kindergarten, their teachers, and their parents was shifted to fall 2015.
Project Start Date: *May 2014* Anticipated Project Completion Date: *June 2016*
Source: Connecticut General Assembly

Winter Highway Maintenance: In 2006 CASE completed a study on *Improving Winter Highway Maintenance* for CTDOT with the goal of providing a literature-based best practices review. Following completion of the study, CTDOT changed its winter maintenance practices by adopting the use of a variety of salt-based materials and greatly reducing or eliminating the use of sand for the treatment of state roads and highways. Recent concerns have been raised about corrosion to vehicles as well as the impact of the use of salt on highway and bridge infrastructure. Based on Section 6 of Senate Bill 235, CTDOT contracted with CASE to conduct a study that will examine a range of winter maintenance areas and other issues for use in framing expectations and outcomes of the state's winter highway maintenance operations and practices. The study will also include a summary of past practices as compared with current practices.
Project Start Date: *June 2014* Anticipated Project Completion Date: *June 2015*
Source: Connecticut Department of Transportation

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 2014 for studies and technical assistance (also see Public Policy Inquiries):

- $166,365 from the Office of Legislative Management for the *Connecticut Disparity Study – Phase 1 and Phase 2*.
- $103,300 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.
- $93,713 from the Connecticut Department of Transportation for a study on *Energy Efficiency and Reliability Solutions for Rail Operations/Facilities*.
- $86,300 from the Connecticut Department of Energy and Environmental Protection for a study to regarding Connecticut waters for *Methods to Measure Phosphorus and Make Future Predictions*.
- $53,279 from the Office of Legislative Management for an *Early Childhood Regression Discontinuity Study*.
- $40,000 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.
- $18,000 from the Connecticut Department of Energy and Environmental Protection for *Peer Review of a CL&P/UConn Report Concerning Emergency Preparedness and Response at Selective Critical Facilities*.
- $11,404 from the Connecticut Department of Transportation for a study on *Winter Highway Maintenance.*
- $10,748 from the Office of Higher Education through the U.S. Department of Education Teacher Quality Program for *Project Connecticut Common Core State Standards: STEM*, a professional development program for teachers.
- $10,500 from the Connecticut Department of Public Health and Connecticut Innovations for the *Connecticut Biomedical Research Grant Program Accomplishments* study.
- $8,532 from the Connecticut Department of Transportation for the study on *Analyzing the Economic Impact of Transportation Projects*.
- $8,333 from the Office of Legislative Management for a study on *Addressing Family Violence in Connecticut: Strategies, Tactics and Policies.*
- $8,000 from the Office of Legislative Management 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
- CASE Endowment Fund: Donate
- Annual Report
- Contact Us
- News in Education

**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; Steven L. Suib, Board of Trustees Distinguished Professor and Head, Chemistry Department, UConn, 2011; and Thomas A. Steitz, Sterling Professor of Molecular Biophysics & Biochemistry and Professor of Chemistry and Howard Hughes Medical Institute Investigator, Yale University.

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.

2014 Connecticut Medal of Technology

Frederick J. Leonberger
Principal, EOvation Advisors LLC
Retired Senior Vice President and Chief Technology Officer, JDS Uniphase Corporation

In junior high and high school, during the post-Sputnik era, Fred Leonberger heard lots of talk about space exploration, microelectronics, and a new device—the laser. After all, he grew up near Washington, DC, in a neighborhood populated with NASA and Naval Laboratory engineers who

were ready role models for a boy interested in science and mathematics. However, his fascination did not end with high school, but instead, grew into a lifetime of work dedicated to researching and creating high-speed optical modulators that helped to make possible the modern means of broadband fiber optic communication used worldwide. Fred Leonberger's career has spanned nearly forty years of research and development of important optical devices —including leadership in product and business strategy—cultivating innovative ideas into functional and beneficial products.

Connecticut Medal of Technology winner Frederick J. Leonberger, center, is pictured with CASE President Louis Manzione and Dianna Roberge-Wentzell, Chief Academic Officer at the Connecticut State Department of Education. (Photo: Frank Labanca)

When Dr. Leonberger was considering which college to attend, he knew he would need some financial aid. His neighbor, Dr. Eugene Beach, encouraged him, in fact enabled him, to attend the University of Michigan. After Fred was admitted, Dr. Beach helped him get a part-time job in the university's nuclear engineering department, where he worked for all four years,"doing whatever was needed from answering phones to helping in the Engineering Library," until his junior year when he was able to do engineering work. He graduated with a bachelor's degree in electrical engineering, continuing his education at the Massachusetts Institute of Technology, where he earned a master's degree and a PhD in electrical engineering. He then worked at MIT's Lincoln Laboratory for ten years, serving during some of this time as an associate leader for a 60-person group that developed cutting-edge opto-electronic and photonic components.

In 1984, Dr. Leonberger joined the United Technologies Research Center (UTRC) in East Hartford, CT, as manager of Photonics and Applied Physics, where he was responsible for programs in six research groups. He led the development of a LiNbO3 integrated optic modulator, which has found extensive commercial applications in fiber optic communications, CATV signal transmission, fiber optic gyroscopes, and other applications. The major technologies developed in Leonberger's UTRC groups have all spawned commercial Connecticut businesses: United Technologies Photonics (UTP)

in Bloomfield; CiDRA, in Wallingford; and DEOS, now part of Coherent, in Bloomfield. Aggregate revenue of these businesses over the past 15 years is estimated to have exceeded $1 billion. After UTP was acquired by JDSU, Fred went on to become chief technology officer of that company. He currently heads his own technology advisory firm, EOvation Advisors, LLC.

"The world is changing very rapidly because of technology," says Dr. Leonberger, "Therefore it is important for young people to develop some understanding of a variety of technologies and their potential impact on future change." He is particularly excited about recent advancements in nano-electronics and -photonics, and in brain science and genomics. He suggests that young people "explore lots of different fields of study, especially including science and technology, and follow your passion that will allow you to make contributions to whatever endeavor you choose."

"Every place I've worked I have learned from others. My contributions and inventions have built on their work" states Dr. Leonberger. He enjoys the dynamism of multiple individuals coming together to grow each other's ideas, giving birth first to research and then to new products. Dr. Leonberger shares the belief stated so well by Sir Isaac Newton: "If I have seen future directions, it was by standing on the shoulders of giants."

This summary was adapted from Dr. Leonberger'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 & Engineering Fair, Connecticut Junior Science and Humanities Symposium, and the Connecticut Invention Convention at the Academy's Annual Meeting and Awards Dinner on June 5, 2014. 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 2014 H. Joseph Gerber Medal of Excellence was awarded to the winners of the Connecticut Science and Engineering Fair's Life Sciences and Physical Sciences Senior Divisions, and the High School Winner of the Fair's Urban School Challenge. Each of the winners received a solid silver medal, a $1,000 honorarium, and Certificates of Recognition. 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 winner and high school in recognition of this outstanding achievement. The 2014 Gerber Medal winners are:

Janine Kerr, Danbury High School, Danbury, CT
2014 Connecticut Science & Engineering Fair – 1st Place, Life Sciences-Senior Division
Project: *Biological Control of the Invasive Eurasian Watermilfoil Using Aquatic Weevils*

Isabelle Goldstein, Ridgefield High School, Ridgefield, CT
2014 Connecticut Science & Engineering Fair – 1st Place, Physical Sciences-Senior Division

Top (from left): CASE President Lou Manzione, Gerber Medal winner Janine Kerr, CCAT President & CEO Elliot Ginsberg, and Danbury High School science teacher Andrea LaRosa.

Middle (from left): From left: CASE President Lou Manzione, CCAT President & CEO Elliot Ginsberg, Gerber Medal winner Isabelle Goldstein, and Ridgefield High School science teacher Patrick Hughes.

Bottom (from left:) CASE President Lou Manzione, CCAT President & CEO Elliot Ginsberg, Gerber Medal winner William Tait, and Kirk Shadle of the Bridgeport Regional Aquaculture Center.

(Photos: Frank LaBanca)

Project: *Partitioning gamma-ray sources in Fermi Large Area Telescope observations for spatial and spectral analysis*

William Tait, Bridgeport Regional Aquaculture Science & Technology Education Center, Bridgeport, CT
2014 Connecticut Science & Engineering Fair - High School Winner, Urban School Challenge
Project: *Bio-sensor drug carrier for insulin*

Connecticut Science & Engineering Fair

The 2014 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 the following major categories, Life Sciences and Physical Sciences, and the Urban School Challenge, the Academy provides special awards each year to these top 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 middle school winner of the Urban School Challenge. Since 2013, The Urban School Challenge has ecognized 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. The Middle School winner is:

Maya Geradi, Worthington Hooker Middle School, New Haven, CT
Project: *Removal and Recycling of Phosphate from Water Using Various Methods: A Sustainability Project*

*Connecticut Junior Science and Humanities S***YMPOSIUM**

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

The 2014 symposium was held in March at the University of Connecticut. The symposium has been effective in enhancing student motivation, stimulating original research and promoting the setting for exciting scientific meetings. It is intended to recognize students who have demonstrated intellectual achievement and promise. This event provides a forum for

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

1st Place: Isha Walawalkar, Glastonbury High School, Glastonbury, CT
Project: *Studying the Role of Neutrophils in Preventing the Dissemination of Oral Listeria Monocytogenes Infection in the Intestinal Mucosa*

2nd Place: Isabelle Goldstein, Ridgefield High School, Ridgefield, CT
Project: *Spectral and Spatial Analysis of Fermi Large Area Telescope Observations to Investigate Weakly Interacting Massive Particle Dark Matter*

CASE Vice President and President-Elect Sandra Weller, right, presents 1st Place JSHS winner Isha Walawalkar with a certificate of recognition from US Rep. John Larson. Each student winner received a special certificates from their respective congressional representative. (Photo: Frank LaBanca)

3rd Place: Anubhuti Mathur, Glastonbury High School, Glastonbury, CT
Project: *Synthesis and Characterization of EGCG-PLGA Conjugates and Mixtures: A Novel Biomaterial for Tissue Engineering*

4th Place: Daniel Giebisch, Amity Regional High School, Woodbridge, CT
Project: *Designing a Circuit Board to Wirelessly Power a Left Ventricular Assist Device*

5th Place: Andrew Ma, Greenwich High School, Greenwich, CT
Project: *Temperature-Induced Concurrent Removal and Recovery of Wastewater Ammonia-Nitrogen*

These students and their schools were recognized at the 2014 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 student and each high school in recognition of this outstanding achievement.

Winners of the 2014 Connecticut Science & Engineering Fair, the Connecticut Junior Sciences & Humanities Symposium and the Connecticut Invention Convention. (Photo: Frank LaBanca)

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 2014, the Academy recognized the 15 middle and elementary school student winners of the Invention Convention with Certificates of Recognition and a $50 prize certificate for the purchase of scientific equipment, books, or other science, technology, engineering and/or mathematics-related materials.

CASE Member and Nobel Prize winner Robert J. Shiller addresses the 39th Annual Meeting, June 5, 2014. Shiller is the Sterling Professor of Economics and Professor of Finance at Yale University. (Photo: Frank LaBanca)

The thirty-ninth Annual Meeting and Dinner of the Academy was held June 5, 2014, at the Crowne Plaza Hotel in Cromwell. The event included a business meeting for members that provided a review of the activities and affairs of the Academy. Approximately 370 Academy members and guests had an opportunity to meet with student science competition award winners, who displayed their projects during the event's reception. The state's Chief Academic Officer, Dianna Roberge-Wentzell, presented the 2014 Connecticut Medal of Technology to Frederick J. Leonberger for his accomplishments in the fields of fiber-optics and photonics.

During dinner, thirty-one of the fifty newly elected members of the Academy were on hand to receive their certificates. Twenty-one high school and middle school students of science and technology competitions were presented with awards during the Academy's celebratory Student Science Competition Awards Ceremony. The students and schools recognized by the Academy are listed under the "Special Activities" section of this report. Approximately $10,000 was awarded to this year's winning students and their schools.

The event concluded with a keynote address from Nobel Prize-winning economist and newly elected CASE member Robert Shiller. Dr. Shiller is Yale University's Sterling Professor of Economics and Professor of Finance, as well as a Fellow at the International Center for Finance at Yale's School of Management. He spoke on "Speculative Asset Prices, Stocks and Real Estate," providing a condensed version of his Nobel Prize lecture.

The Academy recognizes and thanks the following companies and organizations for their generous donations in support of the Annual Meeting: Bristol-Myers Squibb; Connecticut Center for Advanced Technology; Connecticut Economic Resource Center; Connecticut Science Center; Connecticut Technology Council; Pfizer; Pratt & Whitney; R&D Dynamics Corporation; TRC Environmental Corporation, Inc.; UConn Health Center; UConn School of Engineering; United Technologies Research Center; Wesleyan University and Yale University.

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING, INCORPORATED

Financial Statements

YEAR ENDED JUNE 30, 2014
(with comparative totals for 2013)

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

CONTENTS

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, 2014, 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, 2014, 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 2013 financial statements, and my report dated December 4, 2013, 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, 2013, 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 November 25, 2014, 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
November 25, 2014

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CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING INCORPORATED

STATEMENT OF FINANCIAL POSITION
JUNE 30, 2014
(with comparative totals for 2013)

	2014	2013
ASSETS:		
Current Assets:		
Cash and cash equivalents (Notes 2 and 3)	$337,607	$331,004
Investments (Notes 2 and 4)	25,108	19,967
Accounts receivable contracts (Note 2)	34,075	10,684
Unbilled amounts earned under contracts (Note 2)	119,412	155,453
Other assets	6,329	2,633
Total current assets	522,531	519,741
Fixed Assets:		
Furniture and equipment	17,011	15,743
Less accumulated depreciation	(5,440)	(2,123)
Net furniture and equipment	11,571	13,620
Other Assets:		
Investments, board designated endowment	139,398	125,213
TOTAL ASSETS	$673,500	$658,574
LIABILITIES AND NET ASSETS:		
Current Liabilities:		
Accounts payable and accrued expenses	$72,961	$97,555
Contract revenue received in advance (Notes 2 and 5)	19,864	4,917
Total current liabilities	92,825	102,472
Net Assets (Notes 2 and 6):		
Unrestricted:		
Board designated endowment	144,274	125,213
Undesignated	400,990	397,590
Total unrestricted	545,264	522,803
Temporarily restricted	35,411	33,299
Total net assets	580,675	556,102
TOTAL LIABILITIES AND NET ASSETS	$673,500	$658,574

See notes to financial statements

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING INCORPORATED

STATEMENT OF ACTIVITIES
YEAR ENDED JUNE 30, 2014
(with comparative totals for 2013)

	2014			
	Unrestricted	Temporarily Restricted	Total	2013 Total
REVENUES				
Contracts (Note 5)	$625,450		$625,450	$751,468
Contributions (Note 2)	32,360	9,565	41,925	36,085
Membership dues	33,200		33,200	30,300
Interest income	3,792		3,792	894
Investment gains(loss)	5,097		5,097	(1,176)
Report fees and miscellaneous income	500		500	350
Contributed services (Note 2)	19,614		19,614	57,679
TOTAL REVENUES BEFORE NET ASSETS RELEASED FROM RESTRICTIONS	720,013	9,565	729,578	875,600
Net assets released from restrictions (Note 6):	7,453	(7,453)	0	0
TOTAL REVENUES	727,466	2,112	729,578	875,600
EXPENSES (Note 2):				
Program services:				
Publications	31,919	0	31,919	30,517
Technical guidance and information	472,157	0	472,157	622,901
Awards	15,870	0	15,870	9,656
Total program services	519,946	0	519,946	663,074
Support Services:				
Management and general	184,858	0	184,858	194,448
Fund raising	201	0	201	193
Total support services	185,059	0	185,059	194,641
TOTAL EXPENSES	705,005	0	705,005	857,715
CHANGE IN NET ASSETS	22,461	2,112	24,573	17,885
NET ASSETS, BEGINNING OF YEAR	522,803	33,299	556,102	538,217
NET ASSETS, END OF YEAR	$545,264	$35,411	$580,675	$556,102

See notes to financial statements

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING INCORPORATED

STATEMENT OF FUNCTIONAL EXPENSES
YEAR ENDED JUNE 30, 2014
(with comparative totals for 2013)

	2014								
	PROGRAM SERVICES				SUPPORT SERVICES				
	Publications	Technical Guidance & Information	Awards	Total Program Services	Management & General	Fund Raising	Total Support Services	2014 Total Program & Support	2013 Total
Professional services	$24,714	$415,469	$336	$440,519	$115,349	$0	$115,349	$555,868	$675,516
Professional services in-kind (Note 2)	0	19,614	0	19,614	0	0	0	19,614	57,679
Employee benefits	575	19,958	53	20,586	20,248	0	20,248	40,834	37,153
Rent (Note 7)	312	624	0	936	2,886	78	2,964	3,900	3,900
Office expenses	565	1,886	16	2,467	15,605	0	15,605	18,072	21,678
Insurance	226	453	0	679	2,095	57	2,152	2,831	2,730
Travel and subsistence	0	3,215	81	3,296	1,007	0	1,007	4,303	6,483
Council activities	0	0	0	0	3,449	0	3,449	3,449	3,611
Membership activities	0	0	0	0	19,792	0	19,792	19,792	22,885
Awards and prizes	0	0	15,384	15,384	0	0	0	15,384	9,255
Loss disposal of furniture and equipment	0	0	0	0	0	0	0	0	420
Printing	5,262	10,407	0	15,669	672	0	672	16,341	10,809
Sponsorships	0	0	0	0	1,200	0	1,200	1,200	3,000
Miscellaneous	0	0	0	0	100	0	100	100	0
Depreciation (Note 2)	265	531	0	796	2,455	66	2,521	3,317	2,596
TOTAL EXPENSES	$31,919	$472,157	$15,870	$519,946	$184,858	$201	$185,059	$705,005	$857,715

See notes to financial statements.

Statement of Cash Flows

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING INCORPORATED

STATEMENT OF CASH FLOWS
YEAR ENDED JUNE 30, 2014
(with comparative totals for 2013)

		2014
CASH FLOWS FROM OPERATING ACTIVITIES		
Change in net assets	$	24,573
Adjustments to reconcile change in net assets to net cash provided by operating activities:		
Net unrealized (gains) losses on investments		(5,097)
Loss disposal of furniture and equipment		0
Depreciation		3,317
Change in operating assets and liabilities:		
Accounts receivable contracts		(23,391)
Unbilled amounts earned under contracts		36,041
Other assets		(3,696)
Accounts payable and accrued expenses		(24,594)
Contract revenue received in advance		14,947
Total adjustments		(2,473)
Net cash provided by operating activities		22,100
CASH FLOWS FROM INVESTING ACTIVITIES		
Proceeds from investments		98,950
Purchase of investments		(113,179)
Purchase of furniture and equipment		(1,268)
Net cash provided by (used in) investing activities		(15,497)
INCREASE IN CASH AND CASH EQUIVALENTS		6,603
CASH AND CASH EQUIVALENTS, BEGINNING OF YEAR		331,004
CASH AND CASH EQUIVALENTS, END OF YEAR	$	337,607

See notes to financial statement

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS
JUNE 30, 2014
(with comparative totals for 2013)

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 and cash equivalents represent cash in checking accounts, money market funds or short-term investments with original maturities of three months or less, other than those held in the board designated investment endowment account.

Investments

The Academy records investments in marketable securities with readily determinable fair values at their fair values in the statements of financial position. Realized and unrealized gains and losses are reported in the statement of activities.

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (cont.)

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, 2014 and 2013 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 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 $19,614 and $57,679 for the years ended June 30,

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (cont.)

2014 and 2013, 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, 2010 through 2013 are open for examination by the Internal Revenue Service.

Use of Estimates

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

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES (cont.)

Reclassifications

Certain amounts in the 2014 financial statements have been reclassified to conform to the 2013 financial statement presentation.

Subsequent Events

Management has evaluated subsequent events through November 25, 2014, 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, 2014, approximately $146,983 of accounts receivable and unbilled amounts earned under contracts is due from governmental agencies.

NOTE 4 - INVESTMENTS

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

	2014		2013	
	Cost	Fair Value	Cost	Fair Value
Certificates of deposit	$ 0	$ 0	$ 40,000	$ 39,934
Money market funds	37,715	37,715	81,623	81,623
Corporate bonds	122,864	126,791	24,724	23,623
	$160,579	$164,506	$146,347	$ 145,180

NOTE 5 – CONTRACT ARRANGEMENTS AND SUBSEQUENT FUNDING RISKS

During the years ended June 30, 2014 and 2013 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 $1,389,572 and $721,848 during the years ended June 30, 2014 and 2013, 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, 2014 consisted of the following:

Agency	Accounts Receivable-Contracts	Unbilled Amounts Earned Under Contracts	Contract Rev. Year End June 30, 2014
Connecticut Department of Public Health	$0	$1,500	$153,800
Connecticut Center for Advanced Technology	0	0	3,000
Connecticut Department of Transportation	27,571	0	115,878
Connecticut General Assembly	0	61,612	235,977
Connecticut Department of Energy & Environmental Protection	0	56,300	104,300
Connecticut Science Center	0	0	500
Albertus Magnus College	6,504	0	11,995
Totals	$ 34,075	$119,412	$625,450

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 $7,453 and $5,683 for the years ended June 30, 2014 and 2013, respectively.

NOTE 6 - NET ASSETS (cont.)

Temporarily restricted net assets at June 30, 2014 consist of $35,411 for Student Awards. Net assets temporarily restricted at June 30, 2013 consist of $33,299 for Student Awards.

Unrestricted board designated net assets at June 30, 2014 and 2013 consist of amounts set aside for the Academy Endowment.

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 $6,464 and $6,319 for the years ended June 30, 2014 and 2013, 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, 2014 and 2013, respectively.

The following is a schedule by years of future minimum rentals under the leases at June 30, 2014:

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

NOTE 9 - FAIR VALUE MEASUREMENTS (cont.)

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.

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, 2014	Fair value measurement using input considered as:			
	Level 1	Level 2	Level 3	Total
Money market funds	$ 37,715	$ 0	$ 0	$ 37,715
Corporate bonds	0	126,791	0	126,791
	$ 37,715	$126,791	$ 0	$164,506

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:			
	Level 1	Level 2	Level 3	Total
Certificates of deposit	$ 39,934	$ 0	$ 0	$ 39,934
Money market funds	81,623			81,623
Corporate bonds	0	23,623	0	23,623
	$121,557	$ 23,623	$ 0	$145,180

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 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:

NOTE 10 - BOARD DESIGNATED ENDOWMENT (cont.)

	Board-Designated Unrestricted	Total
Endowment assets, June 30, 2012	$ 45,350	$ 45,350
Net asset transfers	70,596	70,596
Investment return:		
Investment income	245	245
Unrealized losses	(1,138)	(1,138)
Total investment return	(893)	(893)
Additions to endowment funds	15,160	15,160
Amounts appropriated for expenditure	(5,000)	(5000)
	10,160	10,160
Endowment assets, June 30, 2013	125,213	125,213
Investment return:		
Investment income	2,704	3,842
Unrealized gains	4,147	3,009
Total investment return	6,851	6,851
Additions to endowment funds	17,210	17,210
Amounts appropriated for expenditure	(5,000)	(5,000)
	12,210	12,210
Endowment assets, June 30, 2014	$ 144,274	$ 144,274

Endowment assets are comprised of the following at June 30,:

	2014	2013
Money market fund	$ 42,591	$ 81,623
Certificates of deposit	0	19,967
Corporate bonds	101,683	23,623
Total endowment	$ 144,274	$125,213

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, 2014 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 November 25, 2014.

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 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.

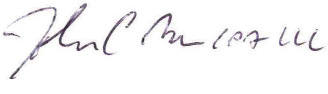
My consideration of internal control was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control that might be material weaknesses or significant deficiencies. Given these limitations, during my audit I did not identify 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
November 25, 2014

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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's *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, 2014. 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 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, 2014.

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.

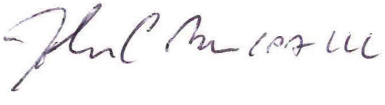
A deficiency in internal control over compliance exists when the design or operation of a control over compliance does not allow management or employees, in the normal course of performing their assigned functions, to prevent, or detect and correct, noncompliance with a type of compliance requirement 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 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, 2014, and have issued my report thereon dated November 25, 2014, 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
November 25, 2014

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CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING, INCORPORATED

SCHEDULE 1

SCHEDULE OF EXPENDITURES OF STATE FINANCIAL ASSISTANCE
YEAR ENDED JUNE 30, 2014

State Grantor Pass–Through Grantor Program/Contract Title	State Grant Program Core-CT Number	Expenditures
Connecticut Department of Public Heath:		
Biomedical Research Trust Fund:		
Connecticut Biomedical Research Program:		
Analysis of Key Accomplishments	35008-DPH48820-40001	$10,500
Biomedical Research Grant Program Peer Review	35008-DPH48820-40001	40,000
Stem Cell Research Grant Program Peer Review	12060-DPH48574-35324	43,500
Stem Cell Research Grant Program Peer Review –Peer Reviewer Payments	12060-DPH48555-35324	59,800
Connecticut Department of Energy & Environmental Protection		
Clean Water Fund:		
Study of Methods to Measure Phosphorus and Make Future Projections	21014-DEP43720-40001	86,300
Peer Review of a Report Concerning Emergency Preparedness and Response at Selective Critical Facilities	12006-DEP44720-10020	18,000
Connecticut Department of Transportation:		
Analyzing the Economic Impacts of Transportation Projects Study	12001-DOT57192-12017	3,108
Energy Efficiency and Reliability Solutions for Rail Operations/Facilities Study	12062-DOT57196-22106	13,877
General Additional Services	12062-DOT57196-22106	1,557
General Additional Services	12062-DOT57196-22106	25,000
Winter Highway Maintenance Study	12062-DOT57196-22106	3,690
Connecticut General Assembly Office Legislative Management:		
Addressing Family Violence in Connecticut Study	11000-OLM10000-12384	8,333
Connecticut Disparity Study	11000-OLM10000-12384	166,365
Connecticut Early Childhood Regression Discontinuity Study	11000-OLM10000-12384	53,279
Health Impact Assessments Study	11000-OLM10000-12384	8,000
Total State Financial Assistance		$541,309

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, 2014

NOTE 1 - GENERAL

State of Connecticut funding is provided from the Connecticut Department of Public Health, the Connecticut Department of Energy and Environmental Protection, Connecticut Department of Transportation, and the Connecticut General Assembly Office of Legislative Management operating budgets through Personal Service Agreements and letters of agreement.

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.

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

SCHEDULE OF FINDINGS AND QUESTIONED COSTS
FOR THE YEAR ENDED JUNE 30, 2014

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

Any 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:

State Grantor and Program/Contract	State Core-CT Number	Expenditures
Connecticut Department of Public Heath:		
Stem Cell Research Grant Program Peer Review	12060-DPH48574-35324	43,500
Stem Cell Research Grant Program Peer Review –Peer Reviewer Payments	12060-DPH48555-35324	59,800
Connecticut General Assembly Office Legislative Management:		
Addressing Family Violence in Connecticut Study	11000-OLM10000-12384	8,333
Connecticut Disparity Study	11000-OLM10000-12384	166,365
Connecticut Early Childhood Regression Discontinuity Study	11000-OLM10000-12384	53,279
Health Impact Assessments Study	11000-OLM10000-12384	8,000

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

2014

- Peer Review of a CL&P/UConn Report Concerning Emergency Preparedness and Response at Selective Critical Facilities
- Connecticut Disparity Study: Phase 2

2013

- Analyzing the Economic Impact of Transportation Projects
- Health Impact Assessments Study
- Connecticut Disparity Study: Phase I
- Connecticut Stem Cell Research Program Accomplishments

2013

- Alternative Methods for Safety Analysis and Intervention for Contracting Commercial Vehicles and Drivers in Connecticut
- 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

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