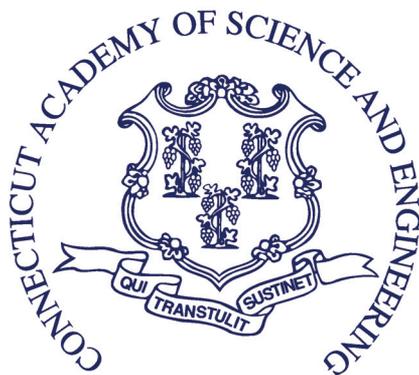


CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING



1976

ANNUAL REPORT
2011-2012

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING

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

VISION

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

MISSION STATEMENT

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

GOALS

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

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING
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The state of the Academy at the end of the 2012 fiscal year, June 30, 2012, continues to be excellent. The year was highlighted by projects conducted on behalf of state agencies, and others. Demand for Academy services remained strong from state agencies and the General Assembly. The state's two-year budget (FY12/FY13) included funding for the Academy to conduct a study each year on behalf of the General Assembly. Study topics are selected based on discussion with the leadership of General Assembly committees.

This year the Academy's membership continued to grow with the election of 39 new members and a total membership at year end of 321 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 2013 fiscal year.

The Academy's efforts in advising the state on issues of science and technology were highlighted this year through its efforts on several projects. These projects showcase the broad nature of the Academy's services on a wide range of issues of importance to the State of Connecticut including broadband strategic planning, energy, biomedical research, workforce strategies and transportation. The Public Policy Inquiries section of the annual report highlights project details of these and other projects conducted by the Academy this past year.

Dr. Yaakov Bar-Shalom, Marianne E. Klewin Professor in Engineering and Board of Trustees Distinguished Professor, University of Connecticut, was named the winner of the 2012 Connecticut Medal of Technology award in recognition of his seminal contributions to improving the sensitivity of remote sensors used for surveillance in the presence of background noise or clutter. He was selected for this honor by an Academy Committee and the award is presented on behalf of the state by the Board of Governors of Higher Education.

The Academy's quarterly *Bulletin* continues to inform the public and provide the state's government and business leadership and the general public with timely notice of developments of interest at both the state and national levels. This year the *Bulletin's* feature articles discussed a wide range of topics, including "Growing 'Green Chemistry' Movement Has Deep Roots in Connecticut," "The State of Innovation in Connecticut," "Pratt & Whitney's

New Engine Technology a Game Changer for Airline Industry,” and “Nanomanufacturing: Next ‘Big’ Thing for CT May be the Smallest Things Ever Made.” 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 school students that publishes articles about interesting science and technology topics and individuals throughout the school year.

The Academy welcomed Terri Clark, who joined CASE as Associate Director in October 2011, bringing 15 years of non-profit management experience from her time with the Connecticut Academy for Education in Mathematics, Science & Technology, Inc.

This year Gale Hoffnagle completed his two-year term as President of the Academy. Gale’s leadership and guidance has been invaluable in helping the Academy maintain financial stability and prosper throughout the state’s continuing financial challenges. The Academy’s financial position is excellent, our membership is growing and our services continue to provide significant value to the state. On behalf of the membership of the Academy I would like to thank Gale for his service and commitment to the Academy and its mission. Gale will continue his service to the Academy in his new role as Past President for the next two years.

Also, special recognition goes to Dr. Myron Genel who is completing his six years of service to the Academy as its Vice President, President, and finally as Past President this year.

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

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



Louis Manzione
President
July 1, 2012

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 2012 fiscal year were as follows:

Council of the Academy

Officers:

President: Gale F. Hoffnagle, TRC Environmental Corporation, Inc.
 Vice-President/President Elect: Louis Manzione, University of Hartford
 Treasurer: Treasurer: Phillip Gardner, Coherent, Inc. (ret.)
 Secretary: Sandra K. Weller, University of Connecticut Health Center
 Past President: Myron Genel, Yale School of Medicine

Councilors:

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

Chairmen of the Technical Boards:

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

Chairmen of the Standing Committees

Executive Committee: Gale F. Hoffnagle, TRC Environmental Corporation, Inc.
Membership Committee: Kathleen Maurer, Connecticut Department of
 Corrections
Nominating: Myron Genel, Yale School of Medicine

Council Advisors:

John P. Cagnetta, Northeast Utilities (ret.)
 Anthony J. DeMaria, Coherent*DEOS LLC (ret.)
 Alan C. Eckbreth, Consultant & United Technologies Research Center (ret.)
 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 2012 fiscal year were:

AGRICULTURE, FOOD AND NUTRITION:

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

BIOMEDICAL RESEARCH AND HEALTH CARE:

Andrew Arnold, University of Connecticut 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, University of Connecticut
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, University of Connecticut

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

ENVIRONMENT:

Ralph Lewis, University of Connecticut

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, University of Connecticut School of Medicine

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

TECHNOLOGY:

Francis R. Preli, Pratt & Whitney

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

TRANSPORTATION SYSTEMS:

George Foyt, United Technology Research Center (ret.)

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

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

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

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

Through its Bylaws, Academy membership is limited to 400. At the close of the 2012 fiscal year the Academy had a total of 321 members, including this year's 39 newly elected members, as follows:

Adams, Paul R.

Senior Vice President of Engineering and Operations, Pratt and Whitney

Alpay, S. Pamir

Professor, Chemical Materials and Biomolecular Engineering, University of Connecticut

Baserga, Susan J.

Professor of Molecular Biophysics and Biochemistry, Professor of Genetics, and Professor of Therapeutic Radiology, Yale University School of Medicine

Bockenstedt, Linda K.

Harold W. Jockers Professor of Medicine/Rheumatology and Director, Professional Development & Equity, Yale School of Medicine

Burlatsky, Sergei F.

Senior Research Fellow, United Technologies Research Center

Chandra, Subhash

Program Manager, ABWR System and Safety Analysis, Westinghouse Electric Company

Chazdon, Robin L.

Professor of Ecology and Evolutionary Biology, University of Connecticut

Colwell, Robert K.

Board of Trustees Distinguished Professor, Ecology & Evolutionary Biology, University of Connecticut

Cui, Sharon W.

Senior Research Scientist, Yale University

Danckwerth, Thomas M.

Director, Engineering and Technology, Goodrich ISR Systems

Camilli, Pietro De

Professor, Department of Cell Biology and Professor, Department of Neurobiology, Yale School of Medicine; Founding Director, Yale Program for Cellular Neuroscience, Neurodegeneration and Repair, Yale University

Duman, Ronald S.

Mear/Jameson Professor of Psychiatry, Pharmacology, and Neurobiology, Yale School of Medicine; Director Abraham Ribicoff Research Facilities, Connecticut Mental Health Center

Finch, Andrew

Technical Manager, JDSU

Fleming, Bonnie T.

Horace D. Taft Associate Professor of Physics, Yale University

Halvordson, Peter J.

Vice President - Engineering and Design, General Dynamics, Electric Boat

Han, Jung

Professor and Department Chair, Electrical Engineering, Yale University

Handelsman, Jo

Howard Hughes Medical Institute Professor, Yale University

Herold, Kevan C.

Professor of Immunobiology and Internal Medicine (Endocrinology), Yale School of Medicine

Hoch, Jeffrey C.

Professor, Department of Molecular, Microbial and Structural Biology, Director, Biophysical Core Facility and Director, Gregory P. Mullen NMR Structural Biology Facility, University of Connecticut Health Center

Howell, Amy R.

Professor and Head, Department of Chemistry, University of Connecticut

Hurley, Marja M.

Professor of Medicine and Orthopaedic Surgery, Special Assistant to the Dean, and Associate Dean, Health Career Programs, University of Connecticut School of Medicine

Jorgenson, William L.

Sterling Professor of Chemistry and Director of the Division of Physical Sciences and Engineering, Yale University

Keser, Milan

Manager, Millstone Environmental Laboratory, Northeast Utilities (ret.)

Lareau, John P.

Chief Engineer, WesDyne International

Lim, Eric J.

Manager, New Product Introduction, JDSU

Maric, Radenka

Connecticut Clean Energy Fund Professor of Sustainable Energy, University of Connecticut

McGroddy-Goetz, Kathleen

Vice President, Product Management and Application Middleware, IBM

Mina, Mina

Professor of Craniofacial Sciences and Division Chief, Pediatric Dentistry, University of Connecticut Health Center

Moran, Nancy A.

William H. Fleming Professor of Biology, Department of Ecology & Evolutionary Biology, Yale University

Saltzman, W. Mark

Goizueta Foundation Professor of Biomedical Engineering, Yale University

Seifert, Martin

President, Nufern Inc.

Sharma, Om P.

Senior Research Fellow, United Technologies Research Center

Singh, Prabhakar

UTC Chair Professor of Fuel Cell Technology and Director, Center for Clean Energy Engineering, University of Connecticut

Skolnik, Paul R.

Professor and Chairman of Medicine, University of Connecticut School of Medicine

Spielman, Daniel A.

Professor of Applied Mathematics and Computer Science, Yale University

Strobel, Scott A.

Professor and Vice President for West Campus Planning and Program Development, Yale University

Suib, Steven L.

Professor of Chemistry and Board of Trustees Distinguished Professor, University of Connecticut

Sultan, Sonia E.

Chair/Professor of Biology, Wesleyan University

Wilczynski, Vincent

Deputy Dean, Yale School of Engineering & Applied Science, 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 two-thirds 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.

Glenn Cassis was elected to Honorary Membership in recognition of his more than 20 years of service as the Executive Director of the Connecticut Pre-Engineering Program (CPEP) and for his support and stewardship of education programs as Executive Director of the African-American Affairs Commission (AAAC). CPEP is a non-profit educational program that encourages underrepresented minority and female middle and high school students to pursue careers in science, technology, mathematics and engineering. Under Cassis' leadership, CPEP expanded from a single school district serving 43 students to 12 urban school districts serving more than 9,000 students. Through grants and proposals, he was responsible for increasing the annual budget from \$20,000 to \$1.4 million. Since becoming Executive Director of the AAAC, Cassis has remained active in STEM initiatives, including serving on the Board of Directors of the Connecticut Academy for Education in Mathematics, Science and Technology as well as testifying before the General Assembly on STEM education issues. He also led and coordinated KnowHowToGo and College Goal Sunday, two statewide college preparation initiatives targeting first-generation students. Cassis holds a bachelor's degree in political science and a master's degree in arts administration from the University of Connecticut. He also completed coursework in higher education administration at the University of Massachusetts (Amherst) and worked in that field early in his career. He is active in several professional and non-profit organizations, including the American Society of Engineering Educators, the Education Advisory Board of the Urban League of Greater Hartford and the National Association of Pre-College Directors.



Glenn Cassis addresses the meeting after accepting Honorary Membership in the Academy. (Photo: Al Malpa)

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*):

Energy Assurance Planning, Capabilities, and Resources: The Connecticut Office of Policy and Management (OPM) contracted with CASE to assist the department in its U.S. Department of Energy stimulus-funded Energy Assurance Planning (EAP) project. The goal of the EAP project is to update the state's Energy Emergency Plan (16a-9 through 16a-11 of the General Statutes) that was last updated in 1994. The EAP will provide Connecticut with an informative plan that defines the state's role in protecting energy assets and responding to energy shortages, disruptions and emergencies. The project scope included five tasks:

- TASK 1.0: Development of a Project Management Plan (*Task Completed: October 2009*)
- TASK 2.0: Development of a Workforce Development Plan (*Task Completed: November 2009*)
- TASK 3.0: Revision of the Connecticut's Energy Assurance Plan (*Task Completed: September 2011*)
- TASK 4.0: Development of an Energy Supply Disruption Tracking Process (*Task Completed: August 2010*)
- TASK 5.0: Intra and Inter-State Energy Assurance Exercises (*Inter-State Exercise Completion Date: June 2011*); *Intra-State Exercise Completion Date: see note below*)

Project Start Date: *September 2009*. Project Completion Date: *September 2011* (Note: *following the end of FY11, the Energy Office of the Office of Policy and Management was reorganized into the Department of Energy and Environmental Protection. Due to this reorganization it was determined that the Energy Office would make final revisions to the EAP. Additionally, the Energy Office received authorization from US DOE to use the state's response to Tropical Storm Irene (August 2011) in lieu of conducting an Intra-State Exercise.*)

Source: Connecticut Office of Policy and Management

Advances in Nuclear Power Technology: The Connecticut Energy Advisory Board (CEAB) contracted with CASE to conduct a study entitled *Advances in Nuclear Power Technology*. The scope of the study encompassed a literature review to identify advances in nuclear power technology, an overview of nuclear power in the United States and other countries, fuel reprocessing and disposal issues, as well as issues surrounding nuclear safety and security, environmental impacts, import of nuclear power and nuclear power plant siting, among other topics. In addition, the study included an economic

impact analysis and a public survey regarding use of nuclear power.
Project Start Date: *June 2010*. Project Completion Date: *October 2011; Final Report Issued*
Source: Connecticut Energy Advisory Board

Guidelines for the Development of a Strategic Plan for Accessibility to and Adoption of Broadband Services in Connecticut: The State of Connecticut received funding from the federal government to create a *Strategic Plan for Accessibility to and Adoption of Broadband Services in Connecticut*. The Department of Public Utility Control (DPUC), in association with other state entities, contracted with CASE for the purposes of providing guidance—input and suggestions—for the state to use in its formulation of the strategic plan. The goal of this study was to identify the concepts, ideas, policies and public/private partnership initiatives that the state should consider for its strategic plan to assure that Connecticut has access to the type of service today and in the future that provides for the needs of its citizens and businesses.

Project Start Date: *August 2010*. Project Completion Date: *December 2011, Final Report Issued*

Source: Department of Public Utility Control, Office of Consumer Counsel, Office of the Governor, and Office of Policy and Management

Peer Review Proposal of Biomedical Research Proposals - 2011: The Connecticut Department of Public Health (DPH) contracted with CASE to conduct a peer review of 14 biomedical proposals in the fields of heart disease, cancer, and other tobacco-related diseases, diabetes and Alzheimer's disease. A panel of 24 reviewers consisting of CASE members and other experts from Connecticut and various out-of-state institutions served as reviewers for the project. The process included a Level 1 review with a primary and secondary reviewer for each proposal. In addition a Level 2 review study section was conducted which resulted in three of the 14 proposals being recommended for funding totaling \$968,998.

Project Period: *April 1, 2011*. Project Completion Date: *October 2011*

Source: Connecticut Department of Public Health

Alternative Methods for Safety Analysis and Intervention for Use by ConnDOT for Contracting Vehicles and Drivers for Transportation Projects and Services: ConnDOT asked CASE to study how other states assure the safety of trucks utilized on state contracts for transportation services and projects. The study examined the current method used by Connecticut, and will identify alternative methods to accomplish state safety goals.

Project Start Date: *May 2011*. Project Completion Date: *June 2012, Final Report Issued*

Source: Connecticut Department of Transportation

Benchmarking Connecticut's Transportation Infrastructure Capital Program with Other States: The purpose of this study is to benchmark Connecticut's performance in capital programming against other state DOTs, identify

ways to improve the performance and efficiency of the capital programming process and create a tool, a "Transportation Investment Dashboard," to communicate the performance of Connecticut's capital program to the state's transportation leadership.

Project Start Date: *July 2011*. Anticipated Project Completion Date: *September 2012*

Source: Connecticut Department of Transportation

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

Project Start Date: *December 2011*. Anticipated Project Completion Date: *December 2012*

Source: Connecticut General Assembly

2012 Connecticut Stem Cell Research Grant Program - Peer Review: The Connecticut Department of Public Health (DPH) contracted with CASE to manage the peer review process for the 2012 CT Stem Cell Research Grant Program. CASE provided administrative support to the Stem Cell Research Advisory Committee (SCRAC) and DPH throughout the process, which included recruitment of seven new members to join eight existing members on the Peer Review Committee. The committee reviewed a total of 88 proposals. The SCRAC met June 11, 2012, subsequent to the Peer Review Committee's finalization of the rankings in early May, and selected 19 proposals for funding totaling \$9.8M.

Project Start Date: *December 2011*. Project Completion Date: *June 2012*

Source: Connecticut Department of Public Health

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 2012 for studies and technical assistance (also see *Public Policy Inquiries*):

- \$160,952 from the Connecticut Department of Public Utility Control (as of July 1, 2011 known as the Connecticut Public Utilities Regulatory Authority, Connecticut Department of Energy and Environmental Protection) for a study on *Guidelines for the Development of a Strategic Plan for Accessibility to Broadband Services in Connecticut*
- \$4,900 from the Connecticut Energy Advisory Board for a study on *Advances in Nuclear Power Technology*.
- \$70,284 from the Connecticut General Assembly for *Strategies for a study on Evaluating the Effectiveness of Programs and Resources for Assuring Connecticut's Skilled Workforce Meets the Needs of Business and Industry Today and in the Future*.
- \$42,423 from the Connecticut Office of Policy and Management for the project *Energy Assurance Planning, Capabilities and Resources*.
- \$105,300 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.
- \$10,187 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.
- 84,764 from the Connecticut Department of Transportation for a study on *Benchmarking Connecticut's Transportation Infrastructure Capital Program with Other States*
- \$85,551 from the Connecticut Department of Transportation for a study on *Alternative Methods for Safety Analysis and Intervention for Use by ConnDOT for Contracting Vehicles and Drivers for Transportation Projects and Services*.
- \$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.

PATRONS

In addition to support from the State of Connecticut (see the section on *Contracts and Grants*), the Academy seeks support and financial contributions from leading industrial and commercial institutions headquartered or having major operations in Connecticut. The total received in fiscal year 2012 was \$18,000 for which the Academy is most appreciative.

The following Patrons of the Academy are recognized below for their support and financial contributions in fiscal year 2012. The Academy's Patrons receive all general literature and major reports of the Academy and are invited to its Annual Meeting.

Leading Patron

The Connecticut Light and Power Company

Annual Meeting Sponsors

Connecticut Center for Advanced Technology
Connecticut Economic Resource Center
Connecticut Innovations & Connecticut Development Authority
Connecticut Technology Council
Pratt & Whitney
United Technologies Research Center
University of Connecticut Health Center
University of Connecticut School of Engineering
Wesleyan University
Westinghouse Electric Company
Yale University

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

The Bulletin

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

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, University of Connecticut (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. Information available on the website includes the following:

- 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
- Membership Directory*
- Links
- Patrons
- Annual Report
- Contact Us

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

CONNECTICUT MEDALS OF SCIENCE AND TECHNOLOGY

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

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

Previous recipients of the Connecticut Medal of Science include Frederick M. Richards, Sterling Professor Emeritus of Molecular Biophysics and Biochemistry, Yale University, 1995; Ronald R. Coifman, Professor of Mathematics, Yale University, 1996; William C. Stwalley, Board of Trustees Distinguished Professor and Head, Physics Department, University of Connecticut, 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, University of Connecticut, 2009; and Steven L. Suib, Board of Trustees Distinguished Professor and Head, Chemistry Department, University of Connecticut, 2011.

Previous recipients of the Connecticut Medal of Technology include H. Joseph Gerber, founder of Gerber Scientific, Inc., 1995; Charles H. Kaman, founder and CEO of Kaman Corporation, 1996; Anthony J. DeMaria, Chief Scientist, Coherent-DEOS, LLC, 2004; Gene Banucci, Founder and Chairman, ATMI, Inc., 2006; Tso-Ping Ma, Raymond John Wean Professor of Electrical Engineering, Yale University, 2008; and Jonathan M. Rothberg, Chairman, CEO and Founder, Ion Torrent™, 2010.

2012 Connecticut Medal of Technology

Yaakov Bar-Shalom

*Marianne E. Klewin Professor in Engineering and Board of Trustees Distinguished Professor
University of Connecticut*

When Yaakov Bar-Shalom was a teenager in Romania, he enjoyed listening to the BBC or



Yaakov Bar-Shalom accepts the Medal of Technology.

Voice of America – a dangerous activity under the then-Communist regime. However, by the time he was nineteen, Bar-Shalom and his family had emigrated to Israel, where he earned Bachelor’s and Master’s Degrees in Electrical Engineering from Technion in Haifa. Following this, he earned his PhD from Princeton University.

According to Anthony DeMaria, 2004 recipient of the Connecticut Medal of Technology and retired Chief Scientist of Coherent-DEOS, LLC, Professor Bar-Shalom is regarded as the “chief architect of probability-based methods for estimating the paths of moving objects.”

Professor Bar-Shalom notes that a turning point in his career came two years after he received his PhD and was working for a company on developing a tracking algorithm that could work in presence of “clutter.” At the time, his direct manager believed he was “wasting company time” and recommended that he be fired. Fortunately, the company vice president stepped in and asked a professor from a well known university to evaluate the work. The professor declared that Bar-Shalom’s algorithm “made sense,” thus saving his job! Before his work in the early 1970s, the field of multiple target tracking was largely dependent upon ad-hoc algorithms with little theoretical foundation. In the mid-1970s, Bar-Shalom introduced the Probabilistic Data Association and Joint Probabilistic Data Association, both of which were theoretically sound and practical for application. Professor Bar-Shalom’s research is particularly significant for national defense because it permits early detection of approaching hostile targets, making a timely counterattack possible. His work also solved a very challenging problem for airports, which have numerous objects that can confuse a conventional tracking algorithm. The sensors based on his algorithms enhance air transport safety and are used by Raytheon in their airport surface detection radars operating at numerous airports from Boston to New Delhi.

Bar-Shalom credits his high school math teacher with first inspiring his interest in pursuing a mathematical career. “Fortunately, I managed to retain everything this math teacher taught.” After completing high school at age 16, Professor Bar-Shalom studied at the Polytechnic Institute in Bucharest, Romania, for his first three college years before continuing his studies in Israel. There, his professor, who taught electromagnetics, showed him “the elegance of mathematical modeling and instilled in me the desire to pursue new ideas.”

Professor Bar-Shalom believes that “young people should develop the stamina to pursue the study of mathematics, science, and engineering because it is rewarding and is the key to society enjoying the benefits of modern technology.” He cites Theodore von Karman, an aerospace engineer awarded the first National Medal of Science, who said “Scientists discover the world that exists; Engineers create the world that never was.”

[Adapted from Dr. Bar-Shalom’s narrative for the Connecticut Science Center Medal Project, written by Wendy Millstein, and other materials.]

SPECIAL ACTIVITIES

The Academy sponsors, supports, or participates in a number of special activities in response to the mandate of its Charter to: "... promote interest in science and engineering on the part of the public, especially young people." This year the Academy recognized students of the Connecticut Science Challenge, Connecticut Science Fair, Connecticut Junior Science and Humanities Symposium, and the Connecticut Invention Convention at the Academy's Annual Meeting and Awards Dinner on May 31, 2012. 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 2012 H. Joseph Gerber Medal of Excellence was awarded to the winners of the Connecticut Science Challenge and the Connecticut Science Fair's Life Sciences and Physical Sciences Senior Divisions. Each of the winners received a solid silver medal and a \$1,000 honorarium.

John Solder, Staples High School, Westport, CT

2012 Connecticut Science Fair – 1st Place, Life Sciences - Senior Division

Project: *Optogenetic Interrogation of Prefrontal Cortex Dopamine D1 Receptor-Containing Neurons as a Technique to Restore Timing: A Novel Approach to Treat Prefrontal Disorders*



Ryota Ishizuka, Greenwich High School, Greenwich, CT
Connecticut Science Fair – 1st Place, Physical Sciences – Senior Division

Project: *An Organic Thin Film Transistor and Elastic Organic Solar Cell Based Electronic Skin for Biochemical and Tactile Sensing*

Above (l-r), CASE Vice President Louis Manzione, Ryota Ishizuka, Tom Maloney of CCAT, John Solder, and David Gerber, son of Joseph Gerber, representing the Gerber family. (Photo: Al Malpa)

Ryota Ishizuka, Greenwich High School, Greenwich, CT
2012 Connecticut Science Challenge – 1st Place

Project: *Optimization of a Microbial Fuel Cell to Drive a Bioelectrochemically Assisted Wastewater Treatment Reactor*

National Intel Science Talent Search and the Connecticut Science Challenge

The national Intel Science Talent Search, administered by Science Service, is sponsored by the world's largest chipmaker, Intel Corporation. Formerly known as the Westinghouse Science Talent Search, the national contest is America's oldest and most highly regarded science competition for high

school seniors that is intended to stimulate student interest in science, math and technology. High school students from around the United States participate in this prestigious annual science project competition. Additionally, the projects of the state's finalists and semifinalists are subsequently judged for state honors in the Connecticut Science Challenge.

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

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

The 2012 Connecticut Science Challenge first place winner and recipient of an Academy H. Joseph Gerber Medal of Excellence was **Ryota Ishizuka** of Greenwich High School for his project, *Optimization of a Microbial Fuel Cell to Drive a Bioelectrochemically Assisted Wastewater Treatment React.* (Please see the H. Joseph Gerber Medal of Excellence for a listing of the winners of this award.)

Second place honors, including a \$500 award, went to national finalist **Zizi Yu** of Amity Regional High School in Woodbridge, CT, for her project *Investigating the Hygiene Hypothesis: A Case-Control Study of Food Allergies and Age of Food Allergen Exposure in High School Teenagers*

Honorable mention, including a \$250 award, went to **William B. Hallisey** of Greenwich High School for his project *Electrified Nanoscale Architecture in Mixed Matrix Membranes as a Means of Rapid Throughput Water Sterilization*

Connecticut Science Fair

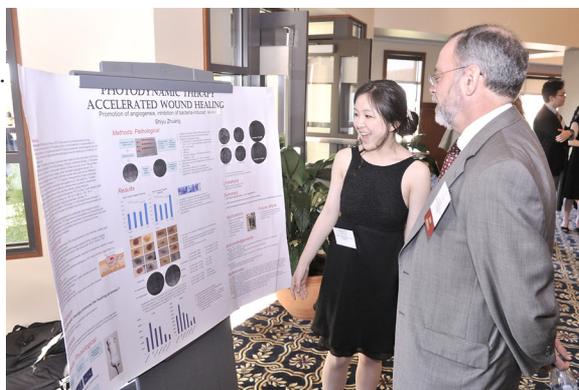
The 2012 Connecticut Science Fair was held in March at Quinnipiac College in Hamden. To promote interest in science and engineering, and to recognize those high school students whose science projects are judged to be the best of the senior division in each of the two major categories, Life Sciences and Physical Sciences, the Academy provides special awards each year to the top two winners of the Connecticut Science Fair.

The winners received the H. Joseph Gerber Medal of Excellence, including a solid silver medal and a \$1,000 honorarium. The Gerber Medal is presented by the Academy in partnership with the Connecticut Center for Advanced Technology. In addition, the winners 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.)

Connecticut Junior Science and Humanities Symposium

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

The 2012 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



2nd Place winner Shiyu Zhuang from Amity High School in Woodbridge explains her project – Photodynamic Therapy Accelerates Wound Healing – to meeting attendee Bruce Carlson. (Photo: Al Malpa)

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: Ryota Ishizuka, Greenwich High School, Greenwich, CT

Project: An Organic Thin Film Transistor and Elastic Organic Solar Cell Based Electronic Skin for Biochemical and Tactile Sensing

2nd Place: Shiyu Zhuang, Amity Regional High School, Woodbridge, CT

Project: Photodynamic Therapy Accelerates Wound Healing

3rd Place: Yiyuan Hu, Hamden High School, Hamden, CT

Project: Role of MyD88 in DNA Damage Response

4th Place: John Solder, Staples High School, Westport, CT

Project: Optogenetic Interrogation of Prefrontal Cortex Dopamine D1 Receptor-Containing Neurons as a Technique to Restore Timing: A Novel Approach to Treat Prefrontal Disorders

5th Place: Brooke Davis, Darien High School, Darien, CT

Project: Use of Formant Values in Classifying Vocalizations of Beluga Whales (Delphinapterus leucas)

These students and their schools were recognized at the 2012 Annual Meeting and Dinner of the Academy. The students received Certificates of Recognition and a \$250 honorarium. Each high school was also recognized with a Letter of Commendation and a \$500 donation to its science department to further science and mathematics education from the Academy. Additionally, Governor Dannel P. Malloy issued an Official Statement to each high school in recognition of this outstanding achievement.

Connecticut Invention Convention

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

For 2012, the Academy recognized the 15 middle and elementary school student winners of the Invention Convention with Certificates of Recognition and a Connecticut Science Center annual membership.



Winners of the 2012 Connecticut Science Challenge, Connecticut Science Fair, Connecticut Junior Science and Humanities Symposium, and the Connecticut Invention Convention. (Photo: Al Malpa)



CASE member Paul R. Adams, Senior Vice President, Engineering and Operations at Pratt & Whitney, addresses the 37th Annual Meeting on May 31, 2012, on Pratt and Whitney's new Geared Turbofan™ Engine. (Photo: Al Malpa)

The thirty-seventh Annual Meeting and Dinner of the Academy was held May 31, 2012, at the University of Connecticut. The event included a business meeting for members that provided a review of the activities and affairs of the Academy. More than 300 Academy members and guests had an opportunity to meet with student science competition award winners, who displayed their projects during the event's reception. During dinner, the thirty-nine newly elected members of the Academy were recognized.

High school and middle school students of science and technology competitions were presented with awards during the Academy's Celebratory Student Science Competition Awards Ceremony. The students and schools recognized by the Academy are listed under the "Special Activities" section of this

report. Approximately \$6,000 was awarded to this year's winning students and their schools.

The event concluded with a keynote address on Pratt & Whitney's legacy of innovation that was delivered by newly elected Academy member Paul R. Adams, Senior Vice President, Engineering and Operations at Pratt & Whitney. Adams has more than 29 years of leadership in program management and engineering with extensive, global experience in the aircraft engine industry. He highlighted the game-changing technology of the company's new Geared Turbofan™ engine.

The Academy recognizes and thanks the following companies and organizations for their generous donations in support of the Annual Meeting: Connecticut Center for Advanced Technology; Connecticut Economic Resource Center; Connecticut Innovations & Connecticut Development Authority; Connecticut Light and Power Company; Connecticut Technology Council; Pratt & Whitney; United Technologies Research Center; University of Connecticut Health Center; University of Connecticut, School of Engineering; Wesleyan University; Westinghouse Electric Company; and Yale University.

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

Financial Statements

**YEAR ENDED JUNE 30, 2012
(with comparative totals for 2011)**

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

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INDEPENDENT AUDITOR'S REPORT

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

Independent Auditor's Report

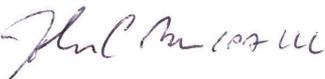
Council of the Academy
Connecticut Academy of Science
and Engineering, Incorporated
Rocky Hill, Connecticut

I have audited the accompanying statement of financial position of the Connecticut Academy of Science and Engineering, Incorporated (Academy) as of June 30, 2012 and the related statements of activities, cash flows, and functional expenses for the year then ended. These financial statements are the responsibility of the Academy's management. My responsibility is to express an opinion on these financial statements based on my audit. The prior year summarized comparative information has been derived from the Academy's June 30, 2011 financial statements and, in our report dated September 28, 2011, we expressed an unqualified opinion on those financial statements.

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

In my opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Connecticut Academy of Science and Engineering, Incorporated as of June 30, 2012, and the changes in its net assets and its cash flows for the year then ended in conformity with accounting principles generally accepted in the United States of America.

In accordance with Government Auditing Standards, I have also issued my report dated November 30, 2012, on my consideration of the Academy's internal control over financial reporting and on my tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements and other matters. The purpose of that report is to describe the scope of my testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with Government Auditing Standards and should be considered in assessing the results of my audit.



November 30, 2012

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STATEMENT OF FINANCIAL POSITION

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING INCORPORATED

STATEMENT OF FINANCIAL POSITION YEAR ENDED JUNE 30, 2012 (with comparative totals for 2011)

	<u>2012</u>	<u>2011</u>
<u>ASSETS</u>		
Cash, Including Interest-Bearing Deposits of \$487,669 in 2012 and \$484,700 in 2011 (Note 3)	\$487,669	\$484,700
Accounts Receivable – Contracts (Note 2)	13,905	1,905
Unbilled Amounts Earned Under Contracts (Note 2)	60,284	135,985
Prepaid Expenses	7,604	9,153
Other Assets	324	380
Furniture and Equipment, Net of Accumulated Depreciation of \$10,770 in 2012 and \$8,632 in 2011 (Note 2)	<u>2,808</u>	<u>3,985</u>
TOTAL ASSETS	<u><u>\$572,594</u></u>	<u><u>\$636,108</u></u>
<u>LIABILITIES AND NET ASSETS</u>		
<u>LIABILITIES</u>		
Accounts Payable and Accrued Expenses	\$31,377	\$77,414
Contract Revenue Received in Advance (Notes 2 and 5)	<u>3,000</u>	<u>63,051</u>
TOTAL LIABILITIES	<u>34,377</u>	<u>140,465</u>
<u>NET ASSETS (Notes 2 and 6)</u>		
<u>Unrestricted:</u>		
Board Designated	45,350	39,475
Undesignated	<u>392,234</u>	<u>363,965</u>
TOTAL UNRESTRICTED NET ASSETS	437,584	403,440
<u>Temporarily Restricted:</u>	<u>100,633</u>	<u>92,203</u>
TOTAL NET ASSETS	<u>538,217</u>	<u>495,643</u>
TOTAL LIABILITIES AND NET ASSETS	<u><u>\$572,594</u></u>	<u><u>\$636,108</u></u>

See notes to financial statements

STATEMENT OF ACTIVITIES

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING INCORPORATED

STATEMENT OF ACTIVITIES YEAR ENDED JUNE 30, 2012 (with comparative totals for 2011)

	2012			2011
	Unrestricted	Temporarily Restricted	Total	Total
<u>Revenues and Other Support</u>				
Contracts (Note 5)	\$579,106	\$0	\$579,106	\$492,84
Contributions (Note 2)	23,920	13,380	37,300	39,17
Membership Dues	28,800	0	28,800	25,94
Interest Income	2,406	685	3,091	4,31
Report Fees and Miscellaneous Income	518	0	518	55
Contributed Services (Note 2)	19,236	0	19,236	9,67
Total	653,986	14,065	668,051	572,53
<u>Net Assets Released from Restrictions (Notes 2 and 6):</u>				
Satisfaction of Program Restrictions	5,635	(5,635)	0	
Total Revenues and Other Support	659,621	8,430	668,051	572,53
<u>Expenses (Note 2):</u>				
<u>Program Services:</u>				
Publications	32,039	0	32,039	31,45
Technical Guidance and Information	400,487	0	400,487	351,97
Awards	10,911	0	10,911	10,64
Total Program Services	443,437	0	443,437	394,07
<u>Support Services:</u>				
Management and General	181,874	0	181,874	176,23
Fund Raising	166	0	166	27
Total Support Services	182,040	0	182,040	176,50
Total Expenses	625,477	0	625,477	570,58
Change in Net Assets	34,144	8,430	42,574	1,94
Net Assets at Beginning of Year	403,440	92,203	495,643	493,65
Net Assets at End of Year	\$437,584	\$100,633	\$538,217	\$495,64

See notes to financial statements

STATEMENT OF FUNCTIONAL EXPENSES

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING INCORPORATED

STATEMENT OF FUNCTIONAL EXPENSES YEAR ENDED JUNE 30, 2012 (with comparative totals for 2011)

	PROGRAM SERVICES			2012
	Publications	Technical Guidance & Information	Awards	Total Program Services
Professional Services	\$25,858	\$349,536	\$1,792	\$377,186
Professional Services – In-Kind (Note 2)	0	19,236	0	19,236
Employee Benefits	547	19,381	320	20,248
Rent and Parking (Note 7)	312	624	0	936
Office Expenses	733	1,571	0	2,304
Insurance	178	356	0	534
Travel and Subsistence	0	4,594	0	4,594
Council Activities	0	0	0	0
Membership Activities	0	0	0	0
Awards and Prizes	0	0	8,799	8,799
Printing	4,240	4,847	0	9,087
Total Expenses before Depreciation	31,868	400,145	10,911	442,924
Depreciation (Note 2)	171	342	0	513
Total Expenses	\$32,039	\$400,487	\$10,911	\$443,437

See notes to financial statements

STATEMENT OF FUNCTIONAL EXPENSES

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING INCORPORATED

STATEMENT OF FUNCTIONAL EXPENSES YEAR ENDED JUNE 30, 2012 (with comparative totals for 2011)

<u>SUPPORT SERVICES</u>				
<u>Management & General</u>	<u>Fund Raising</u>	<u>Total Support Services</u>	<u>2012 Total Program & Support</u>	<u>2011 Total</u>
\$121,391	\$0	\$121,391	\$498,577	\$447,062
0	0	0	19,236	9,671
18,843	0	18,843	39,091	30,562
2,886	78	2,964	3,900	10,403
13,701	0	13,701	16,005	16,306
1,647	45	1,692	2,226	2,326
2,395	0	2,395	6,989	10,318
4,284	0	4,284	4,284	4,042
13,682	0	13,682	13,682	19,736
0	0	0	8,799	8,775
<u>1,463</u>	<u>0</u>	<u>1,463</u>	<u>10,550</u>	<u>9,267</u>
180,292	123	180,415	623,339	568,468
<u>1,582</u>	<u>43</u>	<u>1,625</u>	<u>2,138</u>	<u>2,116</u>
<u>\$181,874</u>	<u>\$166</u>	<u>\$182,040</u>	<u>\$625,477</u>	<u>\$570,584</u>

See notes to financial statements

STATEMENT OF CASH FLOWS

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING INCORPORATED

STATEMENT OF CASH FLOWS YEAR ENDED JUNE 30, 2012 (with comparative totals for 2011)

	<u>2012</u>	<u>2011</u>
<u>Cash Flows from Operating Activities</u>		
Change in Net Assets	\$ 42,574	\$ 1,948
Adjustments to Reconcile Change in Net Assets to		
<u>Net Cash Provided by (Used) in Operating Activities:</u>		
Depreciation	2,138	2,116
<u>Change In:</u>		
Accounts Receivable - Contracts	(12,000)	90,009
Unbilled Amounts Earned Under Contracts	75,701	(90,924)
Prepaid Expenses and Other Assets	1,605	(779)
Accounts Payable and Accrued Expenses	(46,037)	34,465
Contract Revenue Received in Advance	<u>(60,051)</u>	<u>13,726</u>
Total Adjustments	<u>(38,644)</u>	<u>48,613</u>
Net Cash Provided by (Used in) Operating Activities	<u>3,930</u>	<u>50,561</u>
 <u>Cash Flows from Investing Activities</u>		
Additions to Furniture and Equipment	<u>(961)</u>	<u>(955)</u>
Net Cash Used in Investing Activities	<u>(961)</u>	<u>(955)</u>
Net Increase in Cash	2,969	49,606
Cash - Beginning of Year	<u>484,700</u>	<u>435,094</u>
Cash - End of Year	<u>\$ 487,669</u>	<u>\$ 484,700</u>

See notes to financial statements

NOTES TO FINANCIAL STATEMENTS

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS JUNE 30, 2012

(with comparative totals for 2011)

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 consist of net assets over which the governing board has control to use in carrying out the operations of the Academy in accordance with its charter and bylaws and are neither permanently restricted nor temporarily restricted by donor-imposed restrictions. The governing board has designated \$45,350 and \$39,475 of unrestricted net assets for the Academy's Endowment for the years ended June 30, 2012 and 2011, respectively

Temporarily Restricted Net Assets

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

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS

JUNE 30, 2012

(with comparative totals for 2011)

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES
(continued)

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

Contributions

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

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 totalled \$19,236 and \$9,671 for the years ended June 30, 2012 and 2011, respectively.

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

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS
JUNE 30, 2012
(with comparative totals for 2011)

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES
(continued)

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, 2012 and 2011 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.

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.

Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles requires management to make estimates

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS
JUNE 30, 2012
(with comparative totals for 2011)

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES
(continued)

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.

Subsequent Events

Management has evaluated subsequent events through November 30, 2012, 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

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 Agency's informational returns for the years ended June 30, 2009 through 2012 are subject to examination by the Internal Revenue Service.

NOTE 3 - CONCENTRATION OF CASH CREDIT RISK

The Academy maintains cash accounts at various local banks. Accounts at the banks are insured by the Federal Deposit Insurance Corporation (FDIC) up to \$250,000. At June 30, 2012 and 2011, cash balances at banks covered by FDIC insurance aggregate \$487,669 and \$482,232, respectively and amounts not insured aggregated approximately \$201,726 and \$164,865, respectively.

NOTE 4 - DEFINED CONTRIBUTION PLAN

The Academy maintains a simple defined contribution plan for its employees. The Academy matches 100% of the first 3% of each employee's contributions. The amount contributed by the Academy was \$5,888 and \$5,290 for the years ended June 30, 2012 and 2011, respectively

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS
JUNE 30, 2012
(with comparative totals for 2011)

NOTE 5 – CONTRACT ARRANGEMENTS AND SUBSEQUENT FUNDING RISKS

During the years ended June 30, 2012 and 2011 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 \$357,663 and \$558,089 during the years ended June 30, 2012 and 2011, respectively

Future similar operations beyond June 30, 2012 are dependent on continued funding from the State or other similar organizations.

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

Contracts, accounts receivable — contracts and contract revenue as of and for the year ended June 30, 2012 consisted of the following:

<u>Agency</u>	<u>Accounts Receivable- Contracts</u>	<u>Unbilled Amounts Earned Under Contracts</u>	<u>Contract Rev. Year End June 30, 2011</u>
Connecticut Department of Public Health	\$6,160	\$0	\$3,000
Connecticut Center for Advanced Technology	0	0	3,000
Connecticut Department of Energy and Environmental Protection	0	0	203,375
Connecticut Department of Transportation	0	15,000	174,315
Connecticut Energy Advisory Board	0	0	4,900
Connecticut General Assembly	0	45,284	70,284
Connecticut Science Center	500	0	500
Albertus Magnus	7,245	0	7,245
Totals	<u>\$13,905</u>	<u>\$ 60,284</u>	<u>\$ 579,106</u>

CONNECTICUT ACADEMY OF SCIENCE
AND ENGINEERING, INCORPORATED

NOTES TO FINANCIAL STATEMENTS
JUNE 30, 2012
(with comparative totals for 2011)

NOTE 6 - NET ASSETS

Net assets released from donor-restriction by incurring expenses satisfying the purposes of contributions restricted to various Academy programs or restricted as to time periods, amounted to \$5,635 and \$5,732 for the years ended June 30, 2012 and 2011, respectively. At June 30, 2012 and 2011, net assets of \$100,633 and \$92,203, respectively, were temporarily restricted.

Net assets temporarily restricted at June 30, 2012 consisted of \$70,596 and \$30,037 for the Endowment and Student Awards, respectively. Net assets temporarily restricted at June 30, 2011 consisted of \$64,036 and \$28,167 for the Endowment and Student Awards, respectively

NOTE 7 - OPERATING LEASE OBLIGATIONS

The Academy leases office space and office equipment under various noncancelable operating leases. Operating lease expense amounted to \$5,858 and \$11,307 for the years ended June 30, 2012 and 2011, respectively.

The following is a schedule by years of future minimum rentals under the leases at June 30, 2012::

:

2013	\$ 3,908
2014	1,958
2015	1,306

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

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

Independent Auditor's Report

Council of the Academy
Connecticut Academy of Science
and Engineering, Incorporated
Rocky Hill, Connecticut

I have audited the financial statements of the Connecticut Academy of Science and Engineering, Incorporated (Academy), as of and for the year ended June 30, 2012, and have issued my report thereon dated November 30, 2012. I conducted my audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States.

Internal Control Over Financial Reporting

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

A 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.

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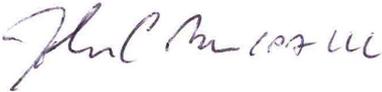
jcburnscpa@aol.com

My consideration of internal control over financial reporting 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 financial reporting that might be deficiencies, significant deficiencies or material weaknesses. I did not identify any deficiencies in internal control over financial reporting that I consider to be material weaknesses, as defined above.

Compliance and other Matters

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

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



John C Burns CPA, LLC
November 30, 2012

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

Independent Auditor's Report on Compliance with Requirements
That Could Have a Direct and Material Effect on Each Major
Program and On Internal Control Over Compliance in Accordance
With the State Single Audit Act and on the Schedule
of Expenditures of State Financial Assistance

Independent Auditor's Report

Council of the Academy
Connecticut Academy of Science
and Engineering, Incorporated
Rocky Hill, Connecticut

Compliance

I have audited the Connecticut Academy of Science and Engineering, Incorporated's (Academy) compliance with the types of compliance requirements described in the Office of Policy and Management Compliance Supplement/Contract that could have a direct and material effect on each of the Academy's major state programs for the year ended June 30, 2012. The major state programs are identified in the summary of auditors' results section of the accompanying schedule of findings and questioned costs. Compliance with the requirements of laws, regulations, contracts and grants applicable to each of its major state programs is the responsibility of the Academy's management. My responsibility is to express an opinion on the Academy's compliance based on my audit.

I conducted my audit of compliance in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in Government Auditing Standards, issued by the Comptroller General of the United States; and the State Single Audit Act (C.G.S. 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

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such other procedures, as I considered necessary in the circumstances. I believe that my audit provides a reasonable basis for our opinion. My audit does not provide a legal determination on the Academy's compliance with those requirements.

In my opinion, the Academy complied, in all material respects, with the 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, 2012.

Internal Control Over Compliance

Management of the Academy is responsible for establishing and maintaining effective internal control over compliance with requirements of laws, regulations, contracts and grants applicable to state programs. In planning and performing my audit, I considered the Academy's internal control over compliance with the requirements that could have a direct and material effect on a major state program to determine the auditing procedures for the purpose of expressing my opinion on compliance 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.

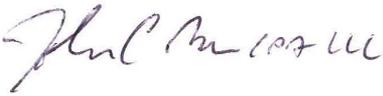
My consideration of the internal control over compliance was for the limited purpose described in the first paragraph of this section and was not designed to identify all deficiencies in internal control over compliance that might be deficiencies, significant deficiencies or material weaknesses. I did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

Schedule of Expenditures of State Financial Assistance

I have audited the financial statements of the Connecticut Academy of Science and Engineering, Incorporated as of and for the year ended June 30, 2012, and have issued my report thereon dated November 30, 2012, which contained an unqualified 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 basic 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 our 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.

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



John C Burns CPA, LLC
November 30, 2012

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SCHEDULE OF EXPENDITURES OF STATE FINANCIAL ASSISTANCE

CONNECTICUT ACADEMY OF SCIENCE, SCHEDULE 1 AND ENGINEERING, INCORPORATED

SCHEDULE OF EXPENDITURES OF STATE FINANCIAL ASSISTANCE YEAR ENDED JUNE 30, 2012

State Grantor Pass - Through Grantor <u>Program Title</u>	State Grant Program Identification <u>Number</u>	<u>Expenditures</u>
Connecticut Department of Energy and Environmental Protection		
Strategic Plan for Accessibility to Broadband Services In Connecticut	None (Note A)	\$160,952
A Study of Connecticut Energy Assurance Planning, Capabilities, and Resources	None (Note A)	42,423
Connecticut Department of Public Health		
Review of Grants-In-Aid For Biomedical Research	None (Note A)	10,187
Stem Cell Research Grant Program Peer Review	None (Note A)	105,300
Connecticut Department of Transportation		
Alternative Methods for Safety Analysis for Contracting Commercial Vehicles and Drivers in Connecticut	None (Note A)	85,551
General Additional Services	None (Note A)	4,000
Capital Benchmarking Study	None (Note A)	84,764
Connecticut Energy Advisory Board		
A Study of Advances in Nuclear Power Technologies	None (Note A)	4,900
Connecticut General Assembly Office		
Legislative Management		
Connecticut Skilled Workforce Study	None (Note A)	<u>70,284</u>
Total State Financial Assistance		<u>\$568,361</u>

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

NOTES TO SCHEDULE OF EXPENDITURES OF STATE FINANCIAL ASSISTANCE

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING, INCORPORATED

NOTES TO SCHEDULE OF EXPENDITURES OF STATE FINANCIAL ASSISTANCE FOR THE YEAR ENDED JUNE 30, 2012

NOTE 1 - GENERAL

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

NOTE 2 - SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES

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

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

Basis of Accounting

The expenditures reported on the Schedule of Expenditures of State Financial Assistance are reported on the accrual basis of accounting. In accordance with Section 4-236-22 of the Regulations to the State Single Audit Act, certain grants, Personal Service Agreement and letters of agreement are not dependent on expenditure activity, and accordingly, are considered to be expended in the fiscal year of receipt. These grant program receipts are reflected in the expenditures column of the Schedule of Expenditures of State Financial Assistance

SCHEDULE OF FINDINGS AND QUESTIONED COSTS

CONNECTICUT ACADEMY OF SCIENCE AND ENGINEERING, INCORPORATED

SCHEDULE OF FINDINGS AND QUESTIONED COSTS YEAR ENDED JUNE 30, 2012

I. - SUMMARY OF AUDITOR'S RESULTS

Financial Statements

Type of auditor's report issued was unqualified.

Internal control over financial reporting:

- Material weakness(es) identified - none
 - Significant deficiency(ies) identified - none
- Noncompliance material to financial statements noted - none

State Financial Assistance

Internal control over its major programs:

- Material weakness(es) identified - none
- Significant deficiency(ies) identified - none

Type of auditor's report issued on compliance for its major programs was unqualified.

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

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

<u>State Grantor and Program</u>	<u>State Grant and Program Identification Numbers</u>	<u>Expenditures</u>
Connecticut Department of Transportation: Alternative Methods for Safety Analysis for Contracting Commercial Vehicles and Drivers in Connecticut	None (Note A)	\$ 85,551
General Additional Services	None (Note A)	4,000
Capital Benchmarking Study	None (Note A)	84,764
Connecticut Department of Public Health		
Review of Grants-In-Aid For Biomedical Research	None (Note A)	\$10,187
Stem Cell Research Grant Program Peer Review	None (Note A)	105,300
<ul style="list-style-type: none"> • Dollar threshold used to distinguish between type A and type B programs 		100,000

MAJOR STUDIES OF THE ACADEMY

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 University of Connecticut Health Center Facilities Plan

2007

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

2006

- Energy Alternatives and Conservation
- Evaluating the Impact of

Supplementary Science, Technology, Engineering and Mathematics Educational Programs

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

2005

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

2004

- A Study of Railcar Lavatories and Waste Management Systems

2003

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

2002

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

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