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People have long been inspired by mega-engineering initiatives, whether they involve landing humans on Mars, identifying subatomic particles, or protecting the planet from natural disasters. Mega-engineering initiatives extend the bounds of human capabilities and the services they provide to society. They not only solve problems of great importance but also define new limits that become the technical “records to be broken” in the minds of the public and coming generations of engineers, scientists, and others dedicated to advancing our world. Mega-engineering deserves recognition because it shapes our future just as it has our past. Accordingly, public understanding of engineering requires that mega-engineering initiatives be seen as engineering—creating solutions to the problems of individuals and society.

The plenary lectures at the 2016 NAE annual meeting addressed distinctly different mega-engineering initiatives, spanning domains from inside the atom to the seven seas to human travel beyond this planet (www.nae.edu/Projects/Events/AnnualMeetings/115643/155515.aspx). Experts spoke on engineering challenges in the SpaceX human mission to Mars; the role of engineering in the design, development, and conduct of experiments on the Large Hadron Collider that revealed the Higgs boson; and the coastal engineering challenges of adapting to sea level rise.

The academy’s third annual video competition (E4U3) had a mega-engineering theme too. We thank ExxonMobil for its generous financial support of the video competition and for its participation on the prize selection committee. The winning selections are posted at www.nae.edu/e4u3/.

The technical forum, on “Adaptation to Sea Level Rise,” continued the theme of mega-engineering initiatives by bringing together an international panel of experts to address problems posed by sea level rise in different sectors of society. The forum presentations and discussion can be viewed at www.youtube.com/watch?v=LFVOBjBPzU&feature=youtu.be (part one) and www.youtube.com/watch?v=pzYfTxwEmQ&feature=youtu.be (part two).

The Grand Challenges for Engineering are global goals to deliver the 2008 vision of “continuation of life on the planet, making our world more sustainable, safe, healthy, and joyous.” Together with the Grand Challenges Scholars Program (GCSP), which prepares talent to address these mega-engineering problems, and the Global Grand Challenges Summits, they provide the right focus for an academy undertaking that addresses our strategic goals and meets our standards for an academy initiative. The leadership of other national academies and organizations around the world is needed to cultivate contributions to and achievement of the Grand Challenges.

Approaches to solving the Grand Challenges fall into two groups: An initiative group seeks contributions to the solution(s) of one or more of the Grand Challenges, and a talent group seeks to prepare a workforce to address the Grand Challenges and global problems like them. These two groups play collaborative roles in efforts to achieve the vision. To varying degrees, initiative group attention is currently being paid to all the Grand Challenges in the private sector and government. Targeted efforts with special facilities and substantial financial support particularly stand out; for instance, the Grand Challenge of the Obama administration to revolutionize understanding of the brain, as it was described in a press release when the Brain Initiative was launched in 2013, will contribute substantially to addressing the Grand Challenge to reverse-engineer the brain. In 2016 it received $300 million in federal support.
The need to develop the talent group led to the creation of the Grand Challenges Scholars Program, which seeks to prepare talent among students and others in every country and culture to undertake problems like the Grand Challenges. The program requires student competency in five areas not normally found in engineering curriculums while providing maximum local flexibility in program design. Each university determines how, and whether, its GCSP students sufficiently achieve the five competencies—research/creative, multidisciplinary, business/entrepreneurship, multicultural, and social consciousness—through their program and experiences in either the regular academic curriculum or arranged otherwise as determined by each student and university. Student engagement is invaluable to achieving each competency.

In 2015 more than 120 deans of engineering—about 1/3 of all engineering deans in the United States—signed a letter to President Obama committing to graduate more than 20,000 Grand Challenges Scholars within 10 years. The number of committed US deans increased in 2016, as did international interest: Grand Challenges Scholars Programs are under way in Australia, Botswana, China, Egypt, Hong Kong, India, Kuwait, Malaysia, and Singapore.

The NAE will further international outreach of the Grand Challenges by hosting the 2017 Global Grand Challenges Summit (GGCS) on July 18-20, together with the Chinese Academy of Engineering and the UK Royal Academy of Engineering. Some 900 participants are expected, half of them students from the three countries.

The GCSP and other independent programs of the NAE depend greatly on private philanthropy and the flexibility it provides. In his remarks at the annual meeting, NAE Chair Gordon England challenged NAE members to financially support the academy. Members in several sections responded to the Chairman’s Challenge by providing matching gift challenges for their own sections (see page 33 for details), as he has done for Section 1. We are also grateful for other generous gifts such as those of Sanjit K. Mitra (’03) and his family, who gave $100,000 to support the Frontiers of Engineering Education (FOEE) program and challenged members of the classes of 2013, 2014, 2015, and 2016 to collectively give $100,000 in 2016 to any NAE Fund; Ming (’15) and Eva Hsieh, who made a new $750,000 commitment to support the Global Grand Challenges Student Day Playoffs and the NAE Independent Fund, bringing their total giving to NAE to $1 million; and Boeing, Lockheed Martin, Northrop Grumman, and Shell, major sponsors of the 2017 Global Grand Challenges Summit with collective giving of over $3.25 million to support our Grand Challenges activities. We are pleased to recognize in this report all the members and friends whose philanthropic gifts help the NAE continue its substantial contributions to the well-being of the nation. I appreciate deeply your generous support.

In the following pages you will find additional information about the work undertaken by the NAE in 2016. Through our projects we pursue with passion our mission to advance the well-being of the nation. Thank you for your support in making it happen.

C. D. Mote, Jr.
President
In Service to the Nation

Every day our nation faces questions related to engineering and technology. What does the nation need to do to prosper in the global economy? What is the role of basic research and development in ensuring future economic development? How do we assess the importance of manufacturing in the United States to national prosperity? How can we ensure that students are aware of the nature of engineering and its importance to the nation, so they can make informed decisions about pursuing an engineering education? How do we ensure that undergraduate engineering education meets the needs of those students? How do we increase the diversity of the engineering workforce? As technology becomes an ever more critical discriminator for US success in the global marketplace for ideas, goods, and services, addressing these questions becomes increasingly important.

Since 1964 the National Academy of Engineering (NAE) has provided independent, objective advice to the nation on engineering-related topics and policies. The NAE operates under the same congressional act of incorporation that established the National Academy of Sciences, signed in 1863 by President Abraham Lincoln, to respond, “whenever called upon by any department or agency of the government, to investigate, examine, experiment, and report upon any subject of science or art.”

The NAE has 2,429 peer-elected members and foreign members, approximately 56 percent from academia, 36 percent from industry, and 8 percent from nonprofit institutions and government. NAE members are leaders in bioengineering, computer science and engineering, electronics, aerospace, earth resources, civil engineering, mechanical engineering, chemical engineering and engineering, industrial engineering, materials engineering, and interdisciplinary engineering. They serve as members of research and study committees, plan and conduct symposia and workshops, and assist in the work of the academy in many other ways. Activities include collaborative projects at home and abroad to examine technological problems, advising Congress and government agencies on engineering-related matters of national importance, and recognizing and honoring outstanding engineers for their contributions to the well-being of both the nation and the world.

The NAE not only responds to requests from the federal government but also engages in activities sponsored by foundations, industry, and state and local governments and funds projects through endowment funds supported by private contributions. Thus, the NAE is a unique organization that brings together distinguished engineers for the purpose of improving the lives of people everywhere.

The National Academy of Engineering, National Academy of Sciences, and National Academy of Medicine work together as the National Academies of Sciences, Engineering, and Medicine.

Mission Statement

The mission of the National Academy of Engineering is to advance the well-being of the nation by promoting a vibrant engineering profession and by marshalling the expertise and insights of eminent engineers to provide independent advice to the federal government on matters involving engineering and technology.
NAE Strategic Plan

In 2015, the NAE council developed and adopted a new 5-year strategic plan for the NAE. The plan’s preparation included soliciting input from the NAE membership, a two-day council retreat (supported by IBM’s planning services), and extensive work by council members and the president’s office drafting and refining the document prior to its formal adoption in August.

The 2015 strategic plan of the NAE sets forth the mission, long-term vision, and a five-year plan (2016–2020) for the academy building on an assessment of the strengths, weaknesses, opportunities and threats currently facing the organization. It elaborates six goals in support of the NAE mission and vision and identifies objectives and specific actions to realize these goals over the next five years.

The following six goals were drafted in support of the mission and vision.
1. membership Representation: increase the representation of business, female, younger, foreign, and underrepresented minority members;
2. industry collaboration: increase the value of the NAE to industry;
3. public understanding: demonstrate to the public how engineering creates a better quality of life;
4. ensuring engineering talent: promote and inspire highly competitive engineering talent in the US workforce;
5. global engagement: engage globally in support of national interests; and
6. effective advising: together with our sister Academies of Sciences and Medicine, enhance effective advice to the nation on technological and societal challenges.

NAE Annual Meeting

Engineering for You Video Contest (E4U3)
The NAE held its third Engineering for You Video Contest (E4U3), on mega-engineering projects, which typically address important needs of large populations and/or societies, require teams working across countries and cultures on a solution, and involve at least three disciplines including engineering. Participants were asked to submit a 1- to 2-minute video on a particular mega-engineering project, highlight its importance and contribution to people and society, and suggest ways to develop it. Approximately 300 videos were received in four categories: middle school and younger (K–8), high school (grades 9–12), tertiary education (2-year college through graduate school, full or part time), and the general public.

The contest winners were announced at the NAE annual meeting.

The Best Video Overall Award went to Nehemiah Mabry for his video “Future Cities with Intelligent Infrastructure,” which also won in the People’s...
Choice category. The video was a poetic call to action for addressing our nation’s crumbling infrastructure. A grand prize of $25,000 was awarded to Mabry in addition to the $5,000 People’s Choice prize.

Awards of $5,000 were given to the winners of the following categories:

- Middle School and Younger: “Wave Wings for the Future” by Catherine Tomasello
- High School: “The Ocean Cleanup Project” by Alexander Li, Kyle Fuller, and Leonardo Ko
- Tertiary Education: “Systems Engineering and the Refugee Crisis” by Clara Stoesser and Rachel Andrade
- Tertiary Education (Honorable Mention): “Engineering for You: Colonizing the Moon” by Nathan Benson

The winning videos are available to watch on the Engineering for You website at nae.edu/e4u3.

The E4U3 Contest, sponsored by the ExxonMobil Foundation, is part of the NAE’s effort to engage and inspire young people to become the engineers who will solve our world’s greatest challenges.

2016 NAE Annual Meeting Forum: Adaptation to Sea Level Rise

The annual meeting forum on October 10 convened an international panel of experts to address problems posed by sea level rise in different sectors of society: Prof. Robert J. Nicholls, Professor of Coastal Engineering, Faculty of Engineering and the Environment, Southampton University; Dr. Kathleen D. White, Team Lead of the Institute for Water Resources, Climate and Global Change, US Army Corps of Engineers; Rear Admiral Bret J. Muilenburg, Commander, Naval Facilities Engineering Command; Mr. David Pearce, department manager for Manhattan Regional Engineering, Consolidated Edison; and Mr. Bart de Jong, Counselor for Infrastructure and the Environment, Royal Netherlands Embassy. The discussion was moderated by Mr. Ali Velshi, global affairs and economics journalist.

The forum was complemented by Dr. Nicholls’ presentation during the previous day’s plenary session on Mega-Engineering Initiatives. He described approaches to sea level rise, which is partly caused by melting ice caps and glaciers. After explaining the impacts of subsidence (sinking of the Earth’s surface), which varies by location but averaged over the 20th century from 8 inches to 3 feet, he described adaptations such as flood barriers (e.g., dikes, floodgates), retreat from the coast, and elevation of structures above flood levels. Dr. White reviewed the Corps of Engineers’ proactive policies and technical guidance in its efforts to prepare both infrastructure and people to absorb disruptions as much as possible and recover quickly. Among other measures, the Corps uses infrastructure such as coastal levies, storm surge barriers, seawalls and revetments, and detached breakwaters to increase resilience. Admiral Muilenburg reported that the Navy is responding to more humanitarian crises and disaster relief and that in the future it may have to respond to more crises because of increased flooding, making it all the more important to have resilient bases so that the Navy can launch responses from them. To that end the Navy is improving its knowledge and risk management plans, mitigating hazards for current installations, and it has improved its design and construction criteria. Mr. Pearce explained that utilities’ mitigation strategies for flooding include barriers, relocation, and hardening of the infrastructure. He also made the case that utilities have a role in altering the trajectory of climate change, which contributes to sea level rise; he provided examples of steps to enhance energy efficiency. Mr. de Jong related lessons learned from the Netherlands’ centuries of experience with encroaching seas.
As threats of severe flooding rose in the 1990s, the country’s policies began to emphasize flood management instead of protection. Space has been created for river overflows, and there are now places in cities, including underground parking garages, where excess water can pool without causing damage. The speakers agreed on the need for careful planning and coordination across sectors and national boundaries.

A report of the forum will be released in 2017.

**PROGRAM REPORTS**

**Postsecondary Engineering Education**

**Frontiers of Engineering Education (FOEE)**

In September, 48 of the nation’s most innovative engineering educators took part in the eighth annual Frontiers of Engineering Education (FOEE) symposium. For 2½ days these mostly early-career faculty members, who are developing and implementing innovative educational approaches in a variety of engineering disciplines, shared ideas and learned from research on best practices in education. They left with a charter to further collaborate with their FOEE colleagues and to bring about improvements at their home institutions. The attendees were selected from a pool of highly qualified applicants nominated by NAE members and engineering deans. To date, FOEE has engaged more than 500 engineering faculty members from almost 150 institutions.

The FOEE community website (http://naefoee.org/) serves as a platform for networking and collaboration, hosts a collection of resources, and gives participants the opportunity to build on relationships formed at the annual symposium. Information is available for past and forthcoming symposia, and attendees can access resources before the symposium. In addition, the site provides a streamlined system for NAE members and engineering deans to nominate faculty members and for nominees to submit their applications.

The 2016 FOEE was sponsored by John McDonnell, Sanjit Mitra and his family, and the National Science Foundation. The FOEE symposia in 2012–2015 were sponsored by John McDonnell and
the JSM Trust. The first three FOEE symposia, held in November 2009, December 2010, and October 2011, were sponsored by the O’Donnell Foundation.

Understanding the Engineering Education–Workforce Continuum
This consensus study, funded by NSF, provides an expansive depiction of educational and career paths and related decision making of those formally trained in engineering (i.e., with a BS, MS, or PhD degree in engineering) as well as those with nonengineering degrees who are employed as engineers in the United States. Overseen and executed by a multidisciplinary committee of experts chaired by NAE member Jean-Lou Chameau, president of King Abdullah University for Science and Technology (KAUST) in Saudi Arabia, the study committee collected and synthesized data from national datasets, survey data, and other sources. In 2016 the committee drafted its consensus report, which will be released with briefings for key stakeholders in 2017.

Engagement of Engineering Societies in Undergraduate Engineering Education
This project, supported by the National Science Foundation, examines the engagement of engineering societies in undergraduate engineering education to ensure capacity in their fields. Among many roles, these societies may provide education opportunities to their members, set and maintain professional standards, help clarify the knowledge and skills needed by those practicing in the field, and serve as a bridge between employers and schools of engineering. The project is overseen by an ad hoc committee chaired by NAE member Leah Jamieson (Purdue University). In 2016 the committee held three meetings to review materials, oversee a survey of engineering societies and their activities, and plan a workshop. The materials included a revised literature review of the relevant research and a staff analysis of information on engineering societies’ websites about what they are doing in undergraduate engineering education. For the survey, responses were received from 58 of 121 societies contacted, and follow-up interviews were conducted with 30 societies to better understand their undergraduate education activities. The workshop, which will take place in early 2017, will be designed to encourage society officials and other stakeholders to share their insights, learn what others are doing, make new contacts, and scope out possible collaborations. Proceedings of the workshop, including a summary of the survey, will be published in 2017.

The Supply Chain for Middle-Skill Jobs: Education, Training, and Certification Pathways
In January 2015 the NAE and Board on Science, Technology, and Economic Policy (STEP) began a project to examine coverage, effectiveness, flexibility, and coordination among the nation’s programs to prepare Americans for technically oriented, skilled jobs that demand nonroutine problem solving but do not require a baccalaureate or higher degree. Among the topics considered were gaps in coverage and market failures in this part of the labor market, public and private sector roles in financing and providing employment training and skills certification, and incentives and information for individuals to improve their work skills. The project committee, cochaired by former US Senator Jeff Bingaman and NAE member Katharine Frase (IBM, ret.), met concurrent with two public meetings that it organized, on “Agency Perspectives on Data, Labor Market Dynamics, and the Middle-Skill Workforce” and “Online Education: A Catalyst for Higher Education Reforms.” The committee spent much of 2016 drafting and reviewing a consensus report, scheduled for publication in early 2017.

Engineering Technology Education
The report of the NAE Committee on Engineering Technology Education cleared report review at the end of 2016 and will be publicly released in February 2017. With NSF funding, the project
examined both two- and four-year degree programs in this important but often overlooked segment of the technical workforce. The report summarizes the project’s data collection efforts, which included two national surveys—one of engineering technology educators and the other of employers of people with engineering technology degrees. Findings and recommendations address the nature of engineering technology and public awareness of the field; issues related to supply and demand; educational and employment pathways; and needs related to data collection and analysis. The 14-member study committee was cochaired by NAE members Katharine Frase (IBM, ret.) and Ron Latanision (Exponent, Inc.).

PreK–12 Engineering Education

**LinkEngineering**

*LinkEngineering*, an online tool intended to support implementation of engineering in preK–12 education, launched publicly in August 2015 and since then has grown to over 900 registered users and has an average of 2,000 visits per month. The NAE project, which began in late 2013, is funded by Chevron, and overseen by a 21-member committee that includes NAE members Bonnie Dunbar, University of Houston, and Jackie Gish, Northrop Grumman (ret.). In addition, five national organizations have been enlisted as partners: Achieve, Inc., National Science Teachers Association, American Association for Engineering Education, International Technology and Engineering Educators Association, and Council of State Science Supervisors. In 2016 NAE staff began to develop a collaboration with *TeachEngineering*, a website of engineering lessons and activities, that will increase activity on *LinkEngineering* by bringing some of *TeachEngineering*’s 3.5 million annual visitors to the NAE resource.

**Educator Capacity Building in PreK–12 Engineering Education**

The NAE, in collaboration with the National Academies of Sciences, Engineering, and Medicine Board on Science Education, is leading a consensus study to (1) determine what is known from the published literature about the preparation of preK–12 educators to teach about engineering, identifying areas of promising practice as well as those in need of further research; (2) catalogue US preservice and in-service programs that support the preparation and professional development of preK–12 engineering educators, describing the nature (e.g., curriculum) and history of the programs and, if known, the number of educators reached and evidence of impact (e.g., on individual teaching practice and the growth of preK–12 engineering education locally, regionally, or nationally); (3) review formal (e.g., state certification) and informal (e.g., “badging”) mechanisms that are being or might be used to recognize expertise and support career pathway options for PreK–12 teachers of engineering, noting practical and policy impediments and how they might be addressed; and (4) explore the potential for the postsecondary education community, including
but not limited to four-year engineering and engineering technology programs, to take a more active role in the preparation of teachers of preK–12 engineering. The committee, chaired by NAE member Ellen Kullman (DuPont, ret.), met for the first time in November 2016. NAE member Diran Apelian, Worcester Polytechnic Institute, is also on the committee.

Public Understanding of Engineering

Media Relations
The NAE media relations office handled inquiries from around the world in 2016 and actively pitched NAE-related stories and other engineering-related topics. Media placements featuring the NAE appeared in a variety of outlets, including the Huffington Post, Daily Iowan, Washington Post, Tennessean, Inside Higher Ed, Concord Monitor, Los Angeles Times, and Sydney Daily News.

In addition, we placed an op-ed, “A nontraditional approach to STEM,” in the Sunday edition of the Washington Post about a Fairfax County (Virginia) Public Schools high school program featuring the NAE Grand Challenges for Engineering.

NAE Communications Director Randy Atkins continued his weekly “Engineering Innovation” reports on the all-news radio station WTOP-FM (the most listened-to radio station in the Washington, DC region) and Federal News Radio. The reports can also be heard on the NSF’s Science360 Internet radio site. The NAE features these reports on its own website (www.nae.edu/radio), and podcasts of the radio stories are available to millions of subscribers via iTunes.

Public Relations
The NAE collaborated with the University of Southern California on a video (produced through Will Ferrell’s Funny or Die comedy video website), aimed at young people, that reimagined E! News as being about engineering instead of entertainment with a very positive message: “We get what we celebrate, so we should celebrate engineers at least as much as entertainers.” It was released during Engineers Week and just before the Oscars. During just two weeks of release, the video got over 305,000 views and was shared by organizations including the White House, Lockheed Martin, FIRST Robotics, SWE, ASEE, ASCE, Northrop Grumman, NASA, NSF, and the Smart Girls website, and it garnered news coverage in outlets such as the Washington Post.

The NAE continues to use social media to engage the public, building public awareness of engineering and its role in society along with the visibility of the NAE. NAE tweets are also sent to media, corporate partners, and universities to help spread the word about engineering and NAE activities.

The NAE “Spotlight on Engineering” e-newsletter provides information on engineering and activities of the broader National Academies, engineering news from around the world, special events, and other items of interest to thousands of subscribers.

Grand Challenges for Engineering
Activities inspired by the NAE’s Grand Challenges for Engineering (14 goals for the 21st century outlined in an influential 2008 NAE report) continue to grow.
The NAE Grand Challenges Scholars Program (GCSP), which combines curricular and extracurricular components to prepare students to take on the goals, is taking root at more and more colleges and universities across the country. The NAE began formation of an office to foster such growth as well as the development of a vibrant, self-sustaining GCSP Network; a director was hired in December, to begin in early 2017. The aim is to strengthen existing GCSP initiatives and support expansion to other institutions (both in the United States and internationally) while creating deep and permanent changes in engineering education. The first annual meeting of the GCSP was held, in collaboration with the White House, in October.

Use of the NAE Grand Challenges has continued to spread in K–12 education. For example, in September a new curriculum based on the NAE Grand Challenges was launched at a public high school in Virginia. The program integrates classes, breaking down traditional subject silos and teaching material as it is needed for students to tackle challenges posed—just as in real life.

More information about the Grand Challenges for Engineering is available at www.engineering-challenges.org.

Center for Engineering Ethics and Society (CEES)

In 2016 the CEES Advisory Group (AG) and individual members participated in planning and oversight for the Center and its projects. CEES chair Gerald Galloway (NAE) led planning and selection sessions for the project on Infusing Ethics into the Development of Engineers and the Workshop on Overcoming Challenges to Infusing Ethics in the Development of Engineers.

The Joint Advisory Group (JAG) for the Online Ethics Center (OEC), led by John Ahearne (NAE), met with staff and OEC editorial board leaders to review the OEC expansion project’s third-year activities, consider next steps, and develop its oversight report to NSF. W. Carl Lineberger (NAS) cochaired the meeting.

Following are reports of CEES’ major activities.
Becoming the Online Resource Center for Ethics in Engineering and Science

The NAE OEC is a repository of resources on science, engineering, and research ethics that help engineers, scientists, scholars, educators, students, and interested citizens understand and address ethically significant topics and problems that arise in the practice and results of science and engineering. With funds in NSF cooperative agreement 1355547 that began in 2014, the OEC has been transforming into the go-to online source of resources and support to address questions on ethics and ethics education in both science and engineering. The third project year (2016) saw significant functional enhancements to the OEC and the start of content expansion. Notable among the former are those that allow individuals and organizations to directly join the OEC (rather than having to contact staff) and to log in to edit the information they post. CEES expanded the site’s science-related materials by adding 53 NAP reports with information relevant to ethics. Also among the content additions are subject aids that provide brief introductions and annotated bibliographies for the topical terms on the site. Upcoming in 2017 are the addition of a 7th field component, devoted to Teaching and Learning, an OEC newsletter, and outreach for feedback from users as we implement these features.

A diverse, interdisciplinary project advisory group, six editorial boards, and an outreach group guide OEC efforts, assisted by three partner organizations: the Center for the Study of Ethics in the Professions at Illinois Institute of Technology; the Center for Biology and Society at Arizona State University; and the Center for Science, Ethics, & Public Policy at the University of Delaware.

Infusing Ethics into the Development of Engineers: Exemplary Education Activities and Programs

This NSF-funded project identified 25 exemplary ethics education programs that prepare students for ethical practice, research, or leadership in engineering. They range from short activities inserted in engineering courses to multiyear programs required of all students, and are available at the undergraduate and/or graduate level. All the programs connect ethics to technical engineering content and include assessment (quantitative or qualitative) of whether the educational goals are met. The exemplars were selected by an NAE committee that also considered each program’s potential for broader adoption and adaptation. The
resulting report includes descriptions of the 25 exemplary programs. Feedback from those who have downloaded the report indicates that it has been useful to faculty in engineering departments throughout the United States and officials in local and national government departments that employ engineers. It is currently the most downloaded report produced by CEES and is in the top 10 percent of reports published by the National Academies Press. Additional information about the exemplars has been included in the OEC collection of educational activities (onlineethics.org).

**Workshop on Overcoming Challenges to Infusing Ethics in the Development of Engineers**

This NSF-funded workshop focuses on addressing obstacles, identifying solutions, and developing institutional plans for effectively incorporating ethics in the curriculum and culture of engineering education. The workshop, scheduled for January 10–12, 2017, will convene current and emerging leaders in ethics and engineering who are working to improve the ethical development of engineering students. It is modeled on the NAE Frontiers of Engineering Education program to allow attendees to share their work, experiences, and lessons learned; discuss strategies for overcoming institutional and cultural challenges; and develop plans and collaborations for advancing efforts to infuse ethics into the development of engineers. Sessions have been planned to give attendees insight into effective practice and scholarship on creating cultural, institutional, and pedagogical change. Attendees will have both informal and guided opportunities to strategize and develop plans for incorporating ethics in engineering curricula. Sixteen interdisciplinary teams from 15 universities have been invited to the workshop. The information, expertise, mentoring, and facilitated discussions and collaboration at the workshop are designed to help attendees advance their work and develop effective plans for their own institutions. Workshop proceedings will be published in summer 2017.

**Integrated Network for Social Sustainability (INSS)**

CEES continues to assist the University of North Carolina–Charlotte with an Integrated Network for Social Sustainability (INSS), for researchers and practitioners, to bring attention to and refine public understanding of this subject. Broadly defined, social sustainability concerns aspects of human welfare associated with the public values of community, quality of life, social and environmental justice, democratic process, education, and health and safety. The fourth annual INSS meeting, on “Communities and Connections,” was held June 8–10, 2016, at eight sites, including the NAS building in Washington, DC. In panel sessions moderated by CEES AG chair Gerry Galloway and AG member Bill Kelly, participants focused on transportation and social sustainability in general and in urban areas, with a particular focus on Baltimore. Planning is under way for the fifth annual meeting, in June 2017.

**Sustainable Cities and Interdisciplinary International Education**

CEES is part of an NSF Partnership in International Research and Education (PIRE) grant led by Anu Ramaswami (University of Minnesota) that focuses on integrating approaches in interdisciplinary and cross-cultural research and education to develop low-carbon cities in the United States, China, and India. CEES assisted in organizing and hosting a workshop at the NAS Building in August 2015 that included a session on ethics and ethics education for sustainable urban futures and developed a video about that session. Called “Expanding Urbanization, Education, and Human Futures,” the video is available at www.onlineethics.org/Resources/36377.aspx.
Diversity of the Engineering Workforce

EngineerGirl Program

EngineerGirl is an interactive online platform designed to engage and excite middle school girls about the value of engineering to people and society, connect them with female engineering role models and like-minded students, and inspire them to consider engineering as a career. The website (www.EngineerGirl.org) was launched in 2001 as a project of the Committee on the Diversity of the Engineering Workforce and redesigned in 2012 to more effectively engage a modern audience. In 2016 the number of sessions—68,200 per month—and unique visits—57,200 per month—rose 15 percent from 2015.

EngineerGirl hosts a number of ongoing programs to provide answers and information for students. In 2016 a new organizations directory was developed for release in early 2017. The Directory of Women Engineers added 37 new profiles of practicing engineers, and through the Ask an Engineer section, where students can ask questions about a career from practicing engineers, 93 new answers were posted online.

In addition to supporting a wide variety of dynamic resources for students, EngineerGirl hosts an annual essay contest to encourage students to explore how engineers impact the world. The 2016 contest, on “Responsible Engineering,” invited girls and boys in grades 3–12 to consider a promising technology, describe its benefits and challenges to sustainability or human safety, health, or welfare, and propose an engineering approach to address the challenges. The 769 entries came from 42 US states and the District of Columbia as well as 13 foreign countries. First, second, and third prize winners were selected for each of three grade categories. The winners
received monetary prizes and certificates, and the winning essays are available online at www.EngineerGirl.org/2016Winners.aspx.

The large number of visits and engagement on the website suggest that girls around the world are gaining valuable information that will help them navigate their careers. Feedback from a participant survey of the 2016 essay competition confirmed that EngineerGirl continues to make a difference. Over 90 percent of the 508 student respondents—including more girls than boys—indicated that the site changed their view of engineering or led them to learn something they didn’t know. Girls were more likely than boys to say they would continue to visit the website and share it with friends (findings consistent with those of previous such surveys), and when asked how they first learned about engineering, 9 percent of girls (compared with 3 percent of boys) said they learned about it from researching the essay for their contest submission, demonstrating that EngineerGirl is reaching girls who have not yet been exposed to engineering.

Frontiers of Engineering

The Frontiers of Engineering (FOE) symposium series invites emerging engineering leaders from industry, academia, and government laboratories to discuss pioneering technical work and leading-edge research in various engineering fields and industrial sectors. The goals of the symposia are to (1) introduce outstanding early-career engineers (ages 30–45) to each other and promote the establishment of contacts among the next generation of engineering leaders, and (2) facilitate collaboration and the transfer of techniques and approaches across engineering fields in order to sustain and build US innovative capacity.

The annual US Frontiers of Engineering (US FOE) Symposium brings together approximately 100 engineers from across the country. There are also five bilateral programs: (1) German-American Frontiers of Engineering (GAFOE), in partnership with the Alexander von Humboldt Foundation; (2) Japan-America Frontiers of Engineering (JAFOE), in partnership with the Engineering Academy of Japan; (3) Indo-American Frontiers of Engineering (IAFOE), in partnership with the Indo-US Science and Technology Forum; (4) China-America Frontiers of Engineering (CAFOE), in partnership with the Chinese Academy of Engineering; and (5) EU-US Frontiers of Engineering (EU-US FOE), in partnership with the European Council of Applied Sciences, Technologies, and Engineering.

Three symposia were held in 2016. The JAFOE symposium was held in June at the Beckman Center in Irvine, and the topics were urban mobility efficiency, nanotechnology in energy storage and conversion, additive manufacturing, and big data. The US FOE meeting, in September at the Beckman Center, featured presentations on high-performance computer graphics and vision; extreme autonomy in space, air, land, and underwater; water desalination and purification; and technologies for understanding and treating cancer. In October the EU-US FOE symposium was hosted by Technology Academy Finland at Aalto University near Helsinki, with presentations
on the road to future mobility; frontiers of carbon capture, utilization, and storage; integrated photonics; and smart systems for personalized and connected health care.

FOE encourages continuing interaction among symposium participants through ongoing outreach activities. Yearly proceedings—Frontiers of Engineering: Reports on Leading-Edge Engineering from the 2015 Symposium (published in February 2016)—are mailed to US FOE participants. The FOE website (www.naefrontiers.org) features a searchable database and directory of all FOE alumni, an FOE Community section where alumni can share news, an FOE Alumni Spotlight on participants’ research and technical work, and programs, papers, presentation slides, and video from the FOE symposia. An FOE alumni newsletter is published twice a year.

The Grainger Foundation Frontiers of Engineering Grants enable further pursuit of new interdisciplinary research and technical work stimulated by the conference and support participants’ continuing interactions. In 2016 these grants were awarded to two teams of individuals who attended the 2015 US FOE meeting. Yun Raymond Fu (Northeastern University) and Xue Han (Boston University) received a grant for research combining biological knowledge and novel machine learning techniques to advance understanding of the brain’s neural networks. Grace O’Connell (UC Berkeley) and Jeanette Garcia (IBM Almaden Research Center) received a grant to explore treatment solutions for patients with musculoskeletal system disease by evaluating bulk mechanical properties of 3D-printed soft polymers for intervertebral disc and cartilage repair and assessing the biocompatibility of those polymers for cell viability and growth on 3D-printed scaffolds. The Alexander von Humboldt Foundation provides support for ongoing collaborations among GAFOE participants.

Armstrong Endowment for Young Engineers—Gilbreth Lectures

The Armstrong Endowment for Young Engineers—Gilbreth Lectures, a related but independent program, selects outstanding engineers from among FOE speakers to give presentations at the NAE annual and national meetings.

In 2016 four speakers delivered Gilbreth lectures at the National Meeting on February 11 in Irvine. Shwetak Patel (University of Washington) spoke on “New Approaches to Sensing in the Home”; Claus Daniel (Oak Ridge National Laboratory) gave a presentation on “Lithium-Ion Batteries and Their Manufacturing Challenges”; Vijay Janapa Reddi (University Texas at Austin) spoke about “From Moore’s Law to Moore’s Crawl: Architecting the Next Generation of Mobile Computing Devices”; and Rebecca Moore (Google) gave a talk on “Google Earth Engine.”

Manufacturing, Design, and Innovation

Transformational changes are occurring in US-based manufacturing, design, and innovation. US manufacturing employment is significantly affected by increasing globalization and factory automation. At the same time, innovations in technologies and business models—such as additive manufacturing, advanced sensors, and “servitization”—present opportunities for new value creation. The NAE created the Manufacturing, Design, and Innovation (MDI) Initiative to understand the effects of these changes on US prosperity and employment and their implications for business practices, research, education, and public policy. In 2015 the MDI Initiative published its first report, Making Value for America: Embracing the Future of Manufacturing, Technology, and Work. Throughout 2016, study committee members and NAE staff undertook a number of activities—government briefings, webinars, and presentations—to disseminate the report’s findings and recommendations.

Making Value for America

As a follow-on to the Making Value for America report, in late 2016 the NAE launched a workshop project on the adaptability of the workforce. The 2015 report noted that individuals and organizations must become more adaptive and innovative—or risk being left behind. However, relatively little guidance is available to businesses, educators, and policymakers for developing the workforce skills, continuing education infrastructure, or organizational capabilities that enable adaptation in the face of increasing rates of change. An NAE-appointed steering committee will plan and convene a workshop in the fall of 2017 to examine (1) competencies that improve the ability of the US engineering and technical workforce to proactively adapt amid technological
change and changes to the standard business model, (2) education and organizational practices that enable lifelong learning, (3) workflow and organizational structures and culture that facilitate workforce adaptability, and (4) external factors in the ecosystem (policies and infrastructure) that facilitate or inhibit adaptability. Workshop proceedings will be produced to inform business leaders, educators, and policymakers as they seek to develop these capabilities.

Center-Based Engineering Research

This 21-month NSF-funded project, “A Vision for the Future of Center-Based, Multidisciplinary Engineering Research,” jointly overseen by the NAE and National Materials and Manufacturing Board, is examining the forces likely to shape engineering research, education, and technological innovation in the future, identifying associated challenges and opportunities and evaluating the most promising models and approaches to successfully address them. The committee held a symposium in April 2016 with presentations on the evolving global context for center-based engineering research, trends in undergraduate and graduate engineering education, new directions in university-industry interaction, and emerging best practices in translating university research into innovation. Proceedings of the symposium were published in September. The project aims to deliver its final report in April 2017. The 19-member committee is cochaired by NAE members Maxine Savitz (Honeywell, ret.) and David Walt (Tufts University). Other NAE members on the panel are Nadine Aubry (Northeastern University), Cheryl R. Blanchard (Microchips Biotech, Inc.), Robert Braun (University of Colorado), Philip M. Neches (Teradata Corp.), Richard F. Rashid (Microsoft Corp.), Shankara Sastry (University of California at Berkeley), and Yannis Yortsos (University of Southern California). NAS member Monica Olvera de la Cruz (Northwestern University) also serves on the committee.
Charles Stark Draper Prize for Engineering

Recognized as one of the world’s preeminent awards for engineering achievement, this prize honors an engineer or engineers whose contributions have significantly improved quality of life, enabled people to live more freely and comfortably, and/or permitted access to information. Presented annually, the prize carries a $500,000 cash award, an inscribed certificate, and a commemorative medallion.

Andrew J. Viterbi “for development of the Viterbi algorithm, its transformational impact on digital wireless communications, and its significant applications in speech recognition and synthesis and in bioinformatics.”

Bernard M. Gordon Prize for Innovation in Engineering and Technology Education

The Gordon Prize for Innovation in Engineering and Technology Education honors technology educators whose innovative programs have strengthened the engineering workforce by cultivating students’ leadership, creativity, and teamwork skills. The Gordon Prize is presented annually and awards a cash prize of $500,000, shared between the educator(s) and the educational institution, to support continuation of the award-winning program. The recipients also receive an inscribed certificate and a commemorative medallion.

Simon Ramo Founders Award

The Simon Ramo Founders Award is given in recognition of an NAE member or foreign member who has exemplified the ideals and principles of the NAE through professional, educational, and personal achievement and accomplishment. It is presented annually during the NAE annual meeting, and the recipient receives an inscribed certificate and a commemorative medal.

Ruzena K. Bajcsy

Ruzena K. Bajcsy “for seminal contributions to the fields of computer vision, robotics, and medical imaging, and technology and policy leadership in computer science education and research.”

Arthur M. Bueche Award

The Bueche Award honors an engineer who has been actively involved in advancing US science and technology policy, promoting US technological development, and enhancing relations between industry, government, and universities. It is presented annually during the NAE annual meeting, and the recipient receives an inscribed certificate and a commemorative medal.

Henry T. Yang

Henry T. Yang “for seminal research in aerospace, civil, and mechanical engineering; superb contributions to national science and technology policy; and enhancements to international technological development and cooperation.”
In February, the NAE elected 80 new members and 22 foreign members, bringing the total US membership to 2,275 and the number of foreign members to 232. Election to the National Academy of Engineering is among the highest professional distinctions accorded to an engineer. Academy membership honors those who have made outstanding contributions to “engineering research, practice, or education, including, where appropriate, significant contributions to the engineering literature,” and to “the pioneering of new and developing fields of technology, making major advances in traditional fields of engineering, or developing/implementing innovative approaches to engineering education.”

A list of the newly elected members and foreign members follows, with their primary affiliation at the time of the induction ceremony, October 9, 2016.

**NEW MEMBERS**

Anderson, Kevin R.  
Brunswick Corporation

Anderson, Thomas E.  
University of Washington

Bao, Zhenan  
Stanford University

Battel, Steven J.  
Battel Engineering, Inc.

Bergano, Neal S.  
TE SubCom

Blankenship Jr., Charles P.  
GE Appliances

Boneh, Dan  
Stanford University

Busalacchi Jr., Antonio J.  
University Corporation for Atmospheric Research

Carter, Emily A.  
Princeton University

Celia, Michael A.  
Princeton University

Chang, Frederick R.  
Southern Methodist University

Cherry, Simon R.  
University of California, Davis

Collins, Morton  
MCollins Ventures

Connelly Jr., Thomas M.  
American Chemical Society

Cornuéjols, Gérard P.  
Carnegie Mellon University

de Pablo, Juan J.  
The University of Chicago

Delp, Scott L.  
Stanford University

Dimotakis, Paul E.  
California Institute of Technology

Doherty, Michael F.  
University of California, Santa Barbara

Doyle, Fiona M.  
University of California, Berkeley

Ellison, Adam J.  
Corning Incorporated

Fauske, Hans K.  
Fauske and Associates, LLC

Gellings, Clark W.  
Clark W. Gellings, P.E.

Gottscho, Richard A.  
Lam Research

Greenberg, Albert G.  
Microsoft Corporation

Hatamian, Mehdi  
Broadcom Limited

Hawkins III, William A.  
Immucor, Inc.

Hipwell, M. Cynthia  
Bühler, Inc.

Ho, Teh C.  
ExxonMobil Research and Engineering Company

Hubbard Jr., James E.  
University of Maryland

Jacobs, Paul E.  
Qualcomm Incorporated

Jain, Anil K.  
Michigan State University

Joffe, Basil L.  
Spiral Software, Ltd.
<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Johnson, David S.*</td>
<td>Columbia University</td>
</tr>
<tr>
<td>Johnson, Kristina M.</td>
<td>Cube Hydro Partners</td>
</tr>
<tr>
<td>Kelley, Brian D.</td>
<td>Genentech</td>
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<td>Kim, Peter S.</td>
<td>Stanford University</td>
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<tr>
<td>Klein, Gary J.</td>
<td>Wiss, Janney, Eltner Associates, Inc.</td>
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<tr>
<td>Koszewnik, John J.</td>
<td>Achates Power, Inc.</td>
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<tr>
<td>Krein, Philip T.</td>
<td>University of Illinois, Urbana-Champaign</td>
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<tr>
<td>Leiserson, Charles E.</td>
<td>Massachusetts Institute of Technology</td>
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<tr>
<td>Lindsay, Bruce G.</td>
<td>IBM Almaden Research Center</td>
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<tr>
<td>Liu, Yilu</td>
<td>University of Tennessee and Oak Ridge National Laboratory</td>
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<tr>
<td>Magnusson, Jon D.</td>
<td>Magnusson Klemencic Associates</td>
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<td>Maidment, David R.</td>
<td>The University of Texas at Austin</td>
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<td>Maloney, Michael</td>
<td>Pratt and Whitney</td>
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<td>Moorman, Charles W.</td>
<td>Norfolk Southern Corporation</td>
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<td>Oliver, Warren C.</td>
<td>Nanomechanics, Inc.</td>
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<td>Oren, Shmuel S.</td>
<td>University of California, Berkeley</td>
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<td>Prabhakar, Arati</td>
<td>US Defense Advanced Research Projects Agency</td>
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<td>Pui, David Y.</td>
<td>University of Minnesota, Minneapolis</td>
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<td>Rawlings, James B.</td>
<td>University of Wisconsin-Madison</td>
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<td>Rebeiz, Gabriel M.</td>
<td>University of California, San Diego</td>
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<td>Reder, Wanda K.</td>
<td>S&amp;C Electric Company</td>
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<td>Rodriguez, Rodolfo R.</td>
<td>Advanced Animal Diagnostics</td>
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<td>Sachs, Emanuel M.</td>
<td>1366 Technologies Inc.</td>
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<td>Salamone, Ann Beal</td>
<td>Rochal Industries, LLC</td>
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<td>Santiesteban, José G.</td>
<td>ExxonMobil Research &amp; Engineering Company</td>
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<td>Scanlon, Bridget R.</td>
<td>The University of Texas at Austin</td>
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<td>Sedlak, David L.</td>
<td>University of California, Berkeley</td>
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<td>Shahidehpour, Mohammad</td>
<td>Illinois Institute of Technology</td>
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<td>Sinnett, Michael K.</td>
<td>Boeing Commercial Airplane</td>
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<td>Sridhar, K.R</td>
<td>Bloom Energy</td>
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<td>Steigerwald, Robert L.</td>
<td>Adirondack Power Processing, LLC</td>
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<td>Steltzner, Adam D.</td>
<td>Jet Propulsion Laboratory</td>
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<td>Stokes, Grant H.</td>
<td>MIT Lincoln Laboratory</td>
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<td>Sullivan, Kathryn D.</td>
<td>US Department of Commerce</td>
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<td>Sun, Yongkui</td>
<td>Merck &amp; Co., Inc.</td>
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<td>Swartzel, Kenneth R.</td>
<td>North Carolina State University</td>
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<td>Thakur, Ganesh C.</td>
<td>University of Houston</td>
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<td>Thomas, L. Kent</td>
<td>Upstream Technology</td>
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<td>Tompsett, Michael F.</td>
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<td>Treichler, John R.</td>
<td>Raytheon Applied Signal Technology</td>
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<td>Trimberger, Stephen M.</td>
<td>Xilinx, Inc.</td>
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<td>Van de Walle, Chris G.</td>
<td>University of California, Santa Barbara</td>
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<td>Weitz, David A.</td>
<td>Harvard University</td>
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<td>Welch, David F.</td>
<td>Infinera</td>
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<tr>
<td>West, Jennifer L.</td>
<td>Duke University</td>
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<td>Willner, Alan E.</td>
<td>University of Southern California</td>
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<tr>
<td>Yarymovych, Michael I.</td>
<td>Independent Consultant</td>
</tr>
</tbody>
</table>

*Deceased*
NEW FOREIGN MEMBERS

Amano, Hiroshi
Nagoya University; Japan
Ambani, Mukesh D.
Reliance Industries Ltd.; India
Andersson, Göran
ETH Zürich; Sweden
Burland, John B.
Imperial College London; United Kingdom
Detournay, Emmanuel
University of Minnesota, Minneapolis; Belgium
Doi, Masao
Beihang University; Japan
Gumbsch, Peter
Karlsruhe Institute of Technology; Germany
Hinton, Geoffrey E.
Google Inc.; Canada
Hipel, Keith W.
University of Waterloo; Canada
Jiang, Lei
Chinese Academy of Sciences; China
Kalender, Willi A.
University of Erlangen-Nürnberg; Germany
Michel, Bruno
IBM Research, Zürich; Switzerland
Milberg, Joachim
BMW AG; Germany
Pitroda, Satyan (Sam) G.
The Pitroda Group; India
Reis, Rui Luis
University of Minho; Portugal
Rowe, R. Kerry
Queen’s University; Canada
Shoichet, Molly
University of Toronto; Canada
Slingo, Julia
Met Office; United Kingdom
Stoica, Peter
Uppsala University; Sweden
Tikka, Kirsi, K.
American Bureau of Shipping; Finland
Whittle, Peter
University of Cambridge; New Zealand
Zhang, Yuzhuo S.
Shenhua Group Corporation Ltd.; China
NAE ANNIVERSARY MEMBERS

50 YEARS OR MORE
Names in bold celebrated their 50th year in 2016.

Leo L. Beranek*
Edward E. David, Jr.

45 TO 49 YEARS
Names in bold celebrated their 45th year in 2016.

R. Byron Bird
Harold Brown
Arthur E. Bryson
Ray W. Clough*
Malcolm R. Currie
Don U. Deere
Jay W. Forrester*
John S. Foster, Jr.
Robert A. Frosch
Earnest F. Gloyna
Roy W. Gould
Richard J. Grosh
Jerrier A. Haddad
William J. Hall
Christopher C. Kraft, Jr.
Robert G. Loewy
J. Ross Macdonald
John J. McKetta, Jr.
Brockway McMillan
Hilliard W. Paige
William J. Perry
Calvin F. Quate

40 TO 44 YEARS
Names in bold celebrated their 40th year in 2016.

H. Norman Abramson
William G. Agnew
Clarence R. Allen
Betsy Ancker-Johnson
Arthur G. Anderson
Alfredo H-S. Ang
Stephen D. Bechtel, Jr.
Daniel Berg
Donald L. Bitzer
Andrew H. Bobeck
Bruno A. Boley
Lewis M. Branscomb
John E. Breen
P.L. Thibault Brian
Frederick P. Brooks, Jr.
Norman H. Brooks
Robert H. Cannon, Jr.
Joseph V. Charyk*
Edward Cohen
Fernando J. Corbato
John F. Davidson
Anthony J. DeMaria
Robert M. Drake, Jr.
Mildred S. Dresselhaus*
Ira Dyer*
James L. Everett III
Joseph Feinstein
Steven J. Fenves
A.J. Field
Peter T. Flawn
Merton C. Flemings
Douglas W. Fuerstenau
Ivar Giaever
James F. Gibbons
Ralph E. Gomory
John B. Goodenough
Paul E. Gray
John C. Hancock
Thomas J. Hanratty*
Joseph M. Hendrie
John P. Hirth
Nick Holonyak, Jr.
Arthur E. Humphrey
James R. Johnson
Robert L. Johnson*
Gordon S. Kino
T. William Lambe
Milton Levenson
C. Gordon Little
Alan M. Lovelace
John D. Mackenzie
Enrique A. Marcatili
Hans Mark
Fujio Matsuda
Gordon H. Millar
James K. Mitchell
Gordon E. Moore
Joseph H. Newman
Norman F. Parker
Robert Plunkett
David S. Potter
Leslie E. Robertson
Harold A. Rosen
Ivan E. Sutherland
Morris Tanenbaum
Ping King Tien
Myron Tribus*
John B. Wachtman, Jr.
Johannes Weertman
James G. Wenzel
Robert L. Wiegel*
Herbert H. Woodson
Amnon Yariv
Alfred A. Yee
Lotfi A. Zadeh

35 TO 39 YEARS
Names in bold celebrated their 35th year in 2016.

Egil Abrahamsen
Andreas Acrivos
John G. Anderson
Seymour Baron
Lionel O. Barthold
Wallace B. Behnke
C. Gordon Bell
Donald C. Berkey
Elwyn Berlekamp
Erich Bloch*
William B. Bridges
Lloyd S. Cluff
W. Dale Compton
Harvey G. Cragon
Robert C. Crooke
Jose B. Cruz, Jr.
Robert C. Dean, Jr.
Daniel B. Debra
Raymond F. Decker
John E. Dolan
Rex A. Elder

*Deceased
Leo Esaki
Von R. Eshleman
Thomas E. Everhart

**John C. Fisher**
Yuan-Cheng B. Fung
Theodore V. Galambos
Robert G. Gallager
William J. Galloway
Richard L. Garwin
Welko E. Gasich
Ronald L. Geer

**Paul E. Green, Jr.**
**Dean B. Harrington**
Stephen E. Harris

**George A. Harter**
George N. Hatsopoulos
Robert W. Hellwarth
Edward E. Hood, Jr.
Charles L. Hosler, Jr.
Michel Hug
George W. Jeffs
Paul C. Jennings
William M. Kays
Bernard H. Kear
Jack L. Kerrebrock

**C. Judson King**
Leonard Kleinrock

**Donald E. Knuth**
Herwig Kogelnik

**Max A. Kohler**
Henry Kressel
William W. Lang*
Griff C. Lee
Edwin N. Lightfoot, Jr.
William R. Lucas
Robert W. Lucky
Artur Mager*

**James W. Mar**
Robert D. Maurer
John S. Mayo
Perry L. McCarty
William J. McCune, Jr.
Ross E. McKinney
Charles J. McMahon, Jr.
James D. Meindl
Harry W. Mergler
Johannes Moe

Carl L. Monismith
James J. Morgan
Walter E. Morrow, Jr.
Carl H. Norris
Simon Ostrach
C. Kumar N. Patel
Harold W. Paxton
J.R. Anthony Pearson
Marc J. Pelegrin
Stanford S. Penner*
Jacques Peters
Karl S. Pister
John M. Prausnitz
Ronald F. Probstein
James R. Rice
Herbert H. Richardson

**Gustavo Rivas-Mijares**
Lawrence G. Roberts
Anatol Roshko
Dale F. Rudd
Jean E. Sammet

**Irwin W. Sandberg**
Paul G. Shewmon
Masaobu Shinozuka
Mete A. Sozen
Roger W. Staehle
Theodore Stern

**Henry E. Stone**
Lawrence E. Swabb, Jr.
George W. Swenson, Jr.
Charles E. Taylor
Daniel M. Tellepsen
Kenneth Thompson
Marshall P. Tulin
Thomas A. VanderSlyke
Gregory S. Vassell*
Anestis S. Veletsos
Andrew J. Viterbi
Wilford F. Weeks
James Wei
Jasper A. Welch, Jr.
Lloyd R. Welch
Robert H. Wertheim
Albert R.C. Westwood
Gerald L. Wilson

**Takeo Yokobori**
Laurence R. Young

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**30 TO 34 YEARS**
_names in bold celebrated their 30th year in 2016._

Jan D. Achenbach
Mihran S. Agbabian
Dell K. Allen
William A. Anders
Arthur Ashkin
Norman R. Augustine
Arden L. Bement, Jr.

**David P. Billington**
Nicolaas Bloembergen
John G. Bollinger

**H. Kent Bowen**
Klaus D. Bowers

**Walter L. Brown**
**John F. Cashen**
Alfred Y. Cho
Anil K. Chopra
Jack V. Christiansen

**Robert P. Clagett**
John L. Cleasby
Philip M. Condit

**Richard A. Conway**
Paul M. Cook
James W. Dally
Paul de Mello

**Morton M. Denn**
Robert H. Dennard
James M. Duncan
Peter S. Eagleson
Charles A. Eckert
Richard E. Emmert
John V. Evans

**Edward A. Feigenbaum**
**John W. Fisher**
David Forney, Jr.
Charles A. Fowler*
Donald C. Fraser
Harry C. Gatos
Ralph S. Gener
Richard J. Goldstein
Hermann K. Gummel

**Bacharuddin J. Habibie**
Robert S. Hahn
Kent F. Hansen
Robert D. Hanson

---

*Deceased*
Kenneth E. Haughton
Robert C. Hawkins
Alfred J. Hendron, Jr.
Cyril Hilsum
David A. Hodges
William G. Howard, Jr.
John W. Hutchinson
Lee A. Iacocca
Anthony J. Iorillo
Erich P. Ippen
Irwin M. Jacobs
Robert B. Jansen
Trevor O. Jones
Angel G. Jordan
Thomas Kailath
Albert S. Kobayashi
James N. Krebs
Butler W. Lampson
Ronald M. Latanision
Kaye D. Lathrop
Shih-Ying Lee
George Leitmann
John W. Leonard
Peter W. Likins
Raymond C. Loehr
Joseph C. Logue
Dan Luss
John W. Lyons
Robert Malpas
Alan L. McWhorter
Carver A. Mead
Robert Mehrabian
Chiang C. Mei
Richard C. Messinger
Harold Mirels
Franklin K. Moore*
Joel Moses
Norman A. Nadel
Hyla S. Napadensky
George L. Nemhauser
Robin B. Nicholson
William G. Oldham
Morton B. Panish
Jacques I. Pankove*
J. Randolph Pauling
Thomas K. Perkins
Robert Plonsey
John William Poduska, Sr.
Michael Prats
Lawrence R. Rabiner
RajReddy
Eli Reshotko
Jerome G. Rivard
Walter L. Robb
Stanley T. Rolfe
Ronald E. Rosensweig
James F. Roth
Chih-Tang Sah
Eugene C. Sakhaug
John H. Schmertzmann
Lucien A. Schmit, Jr.
William R. Schowalter
Charles D. Scott
John H. Seinfeld
Eugene Sevin
Charles V. Shank
Eugene D. Shchukin
Merrill I. Skolnik
John Brooks Slaughter
George E. Smith
Kenneth A. Smith
Ponisseril Somasundaran
Ephraim M. Sparrow
Dale F. Stein
Fred Sterzer
Kenneth N. Stevens
Joseph F. Sutter*
Chung L. Tang
Nickolas J. Themelis
George L. Turin
Daniel L.C. Wang
Walter J. Weber, Jr.
Vern W. Weekman, Jr.
Sheldon Weinig
John F. Welch, Jr.
Willis S. White, Jr.
Sheila E. Widnall
Edward L. Wilson
John J. Wise
Theodore Y. Wu
Dante C. Youla
Paul Zia

25 TO 29 YEARS
Names in bold celebrated their 25th year in 2016.

Zhores I. Alferov
Richard C. Alkire
Stig A. Annestrand
Thomas R. Anthony
Frank F. Aplan
Minoru S. (Sam) Araki
Ali S. Argon
John A. Armstrong
Michael F. Ashby
Bishnu S. Atal
David H. Auston
Donald W. Bahr
Earl E. Bakken
William F. Ballhaus, Jr.
Robert G. Bea
George A. Bekey
Alexis T. Bell
John A. Betti
James R. Biard
Joel S. Bimbaum
Richard E. Blahut
Kenneth A. Blenkarn
Geoffrey Boothroyd
Donald A. Brand
James E. Broadwell
Roger W. Brockett
Robert W. Brodersen
Robert A. Brown
Robert D. Burnham
Robert L. Byer
James D. Callen
Robert P. Caren
William J. Carroll
John R. Casani
Kenneth E. Case
Ben H. Caudle
Nai Y. Chen
Herbert S. Cheng
William A. Chittenden
Richard M. Christensen
Jon F. Claerbout
Rodney J. Clifton
G. Wayne Clough

*Deceased
Keith H. Coats*  
James M. Coleman  
Bruce G. Collipp  
Harry M. Conger  
Robert W. Conn  
Lynn A. Conway  
Harry E. Cook  
Edward J. Cording  
Lawrence B. Curtis  
Ernest L. Daman  
Robert W. Conn

Donald P. Greenberg  
Keith E. Gubbins  
Donald L. Hammond  
Howard R. Hart, Jr.  
Juris Hartmanis  
Michael Hatzakis  
Siegfried S. Hecker  
L. Louis Hegedus  
Adam Heller  
Robert J. Herman  
Arthur H. Heuer  
Edward A. Hiler  
Narain G. Hingorani  
George J. Hirasaki  
Yu-Chi Ho  
Lester A. Hoel  
John E. Hopcroft  
Izzat M. Idriss  
James F. Jackson  
Stephen C. Jacobsen*

Marvin E. Jensen  
James O. Jirsa  
Ellis L. Johnson  
G. Frank Joklik  
Frank D. Judge  
Robert E. Kahn  
Melvin F. Kanninen  
Charles K. Kao  
Frank E. Karasz  
George E. Keller II  
Robert P. Kennedy  
Makoto Kikuchi  
Robert H. Kingston  
Bernard L. Koff  
David J. Kuck  
Roger Lacroix  
James Lago  
Leslie B. Lamport  
Louis J. Lanzerotti  
Gerald D. Laubach  
L. Gary Leal  
James U. Lemke  
Martin P. Lepselter  
Norman N. Li  
Barbara H. Liskov  
John D.C. Little  
Benjamin Y.H. Liu  
Walter B. Loewenstein  
Daniel P. Loucks  
Albert Macovski  
Thomas L. Magnanti  
Frederick J. Mancheski  
George A. Maneatis  
Robert C. Marini  
John L. Mason  
Robert F. Mast  
James F. Mathis  
Shiro Matsuoka  
Adolf D. May  
John C. McDonald  
Eugene R. McGrath  
James C. McGroddy  
David G. Messerschmitt  
William F. Miller  
Keith K. Millheim  
James W. Mitchell  
Sanjoy K. Mitter  
Joe H. Mize  
James E. Monsees  
L. David Montague  
C.D. (Dan) Mote, Jr.  
Van C. Mow  
Earl M. Murman  
Roddam Narasimha  
Albert Narath  
Stuart O. Nelson  
Robert M. Nerem  
Arun N. Netravali  
J. Nicholas Newman  
William D. Nix  
Ronald P. Nordgren  
J. Tinsley Oden  
Alan V. Oppenheim  
Robert B. Ormsby, Jr.  
Carel Otte  
Frank L. Parker  
Ronald R. Parker  
Bradford W. Parkinson  
Donald R. Paul  
Val P. Peline  
Arno A. Penzias

*Deceased
Donald E. Petersen
Dennis J. Picard
R. Byron Pipes
William R. Prindle*
Donald E. Procknow*
Edwin P. Przybylowicz
Robert A. Rapp
W. Harmon Ray
Robert H. Rediker
Kenneth F. Reinschmidt
Ronald L. Rivest
Richard J. Robbins
Enders A. Robinson
Ignacio Rodriguez-Iiturbe
Larry A. Roesner
Ronald A. Rohrer
Robert K. Roney
Murray W. Rosenthal
William B. Rouse
Della M. Roy
Eli Ruckenstein
T.W. Fraser Russell
Elbert L. Rutan
Gavriel Salvendy
Harold N. Scherer, Jr.
Warren G. Schlinger
Alan Schriesheim
Frank J. Schuh
Norman R. Scott
Laurence C. Seifert
F. Stan Settles
Don W. Shaw
Michael L. Shuler
Leonard M. Silverman
R. Wayne Skaggs
Henry I. Smith
Leroy H. Smith, Jr.
Helmut E. Sobieczky
James J. Solberg
William J. Spencer
Fred I. Stalkup
Hermann Statz
Richard S. Stein
Charles V. Sternling
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Ben G. Streetman
John H. Sununu
Zehev Tadmor
Byron D. Tapley
Robert E. Tarjan
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Robert W. Taylor
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Rao R. Tummala
Jeffrey D. Ullman
Walter G. Vincenti
Raymond Viskanta
Irv Waaland
Dianzuo Wang
Kuo K. Wang
William J. Ward III
Julia R. Weertman
Irwin Welber*
Arthur W. Westerberg
John A. White, Jr.
Robert M. White
Sheldon M. Wiederhorn
Janusz S. Wilczynski
Forman A. Williams
James C. Williams
Ward O. Winer
Eugene Wong
Jerry M. Woodall
David A. Woolhiser
Israel J. Wygnanski
Loring A. Wylie, Jr.
Henry T.Y. Yang
John A. Young
Abe M. Zarem
Jacob Ziv

*Deceased
I am pleased to report on a very robust fundraising year for the NAE. Thanks to the generosity of 639 members and friends, we raised over $7.1 million in new cash and pledges in 2016 to support our efforts to promote a vibrant engineering profession and increase public awareness of the importance of engineering to our national prosperity. Both unrestricted and restricted contributions were well ahead of 2015 totals. Over $2.5 million was raised for unrestricted purposes, including $1.9 million to the NAE Independent Fund and $626,000 for the President’s Initiatives Fund. This would equate to a $42.9 million endowment equivalent, assuming a 4.5% draw that could be used as flexible funds. Unrestricted support not only provides core support but also allows us to initiate important new projects that lack federal funding and help expand the scope and impact of current programs.

We also received $4.5 million for projects (restricted), including support for the Global Grand Challenges Summit, the Grand Challenges Scholars Program (GCSP) Network and general Grand Challenges activities, LinkEngineering, the Center for Engineering Ethics and Society, EngineerGirl, this year’s E4U Video Contest, Frontiers of Engineering (FOE), Frontiers of Engineering Education (FOEE), prizes, and other programs. Approximately 56% of the funding came from corporations and/or foundations. We had 100% giving participation from the NAE Council for a second year in a row—a sincere gesture of commitment by our leadership.

We are also happy to welcome quite a few new members to our giving societies. In 2016 the NAE recognized 9 new Einstein Society members (lifetime giving of $100,000+), 20 new Golden Bridge Society members (lifetime giving of $20,000–$100,000), and 3 new Heritage Society members and others making a second planned gift or increasing their estate commitments.

This extraordinary philanthropic support provides for 30% of the NAE’s annual budget, and we are grateful for our donors’ confidence in our ability to use their contributions to serve the engineering community, students, policymakers, and the public. As a nonprofit organization, the NAE receives no government appropriation for operations.

February Council Dinner and Financial, Tax, and Estate Planning Session
The NAE hosted its annual February Council Dinner in Newport Beach, the night before the national meeting. This dinner is an opportunity for members, donors, and friends in the area to interact with the NAE Council and meet, socialize, and hear about developments at the NAE. For the 4th time, the NAE also hosted a Financial, Tax, and Estate Planning seminar just before the dinner, led by Jamie Killorin, director of planned giving. This seminar has become popular during the annual meeting in Washington, and we want to offer members on the West Coast opportunities to learn more about making tax-wise estate plans and how best to incorporate their philanthropic priorities.

Golden Bridge Society Dinner
During the 2016 NAE annual meeting President Mote and his wife Patsy hosted some of the NAE’s most generous members and friends at the Golden Bridge Society Dinner, held at the Smithsonian Castle on Sunday, October 9. We welcomed a dozen new donors into the academy’s three lifetime recognition societies.
Noteworthy Contributions
The NAE received some remarkable gifts in 2016. While all contributions are greatly appreciated and make a difference in the academy’s work, the following gifts show extraordinary commitment to the NAE:

Corporate or Organizational Gifts
• The Boeing Charitable Trust gave $1 million in support of the Grand Challenges Scholars Program (GCSP) and the Global Grand Challenges Summit to be held July 18–20, 2017, in Washington, DC.
• Chevron Corporation committed $500,000 to sustain LinkEngineering, an online resource and community of educators interested in providing meaningful engineering experiences to preK–12 students of all abilities.
• The Charles Stark Draper Laboratory contributed over $237,000 to cover the operating costs and selection committee’s work for the Draper Prize for Engineering.
• ExxonMobil contributed $100,000 to support the E4U video contest.
• General Electric Corporation contributed $100,000 to support Making Value for America.
• Lockheed Martin committed another $500,000 to support the Global Grand Challenges Summit, bringing their total to $1 million.
• Northrop Grumman committed $1 million to sponsor the Global Grand Challenges Summit.
• The Shell Company gave $250,000 to the Global Grand Challenges Summit.

Individual Gifts
• Lenore and Rob (’14) Briskman funded a charitable gift annuity (CGA) at the NAE. This is their second CGA at the NAE.
• David (’00) and Susan Daniel notified us that the NAE is a beneficiary in their estate plans.
• Dotty and Gordon (’12) England committed $100,000 to fund the Chairman’s Challenge and to support the NAE Independent Fund, and notified us that they have included the NAE in their estate plans.
• William L. (’93) and Mary Kay Friend notified us that they have included NAE in their estate plans.
• Ming (’15) and Eva Hsieh made a new $750,000 commitment to support the Global Grand Challenges Student Day Playoffs and the NAE Independent Fund.
• John F. McDonnell gave $125,000 in support of Frontiers of Engineering Education.
• Sanjit K. (’03) and Nandita Mitra gave $100,000 to Frontiers of Engineering Education and initiated a matching gift challenge for newer members.
• James Truchard (’07) made a $100,000 gift to the Independent Fund in response to the Chairman’s Challenge to fund a challenge for Section 7.
• Andrew Viterbi (’78) directed his $500,000 Draper Prize cash award to the NAE—the first time in the Draper Prize’s almost 30-year history—to support the President’s Initiatives Fund for activities aimed at attracting bright young people to engineering education and careers.

If you are interested in making a gift to the NAE, please contact Radka Nebesky, NAE director of development, at 202.334.3417 or RNebesky@nae.edu.

Loyal Donors
Gifts made regularly each year to the NAE demonstrate genuine commitment to our mission and goals. As a long-time donor who understands that every donation to the NAE is a choice to support an organization whose work I believe matters greatly, I thank the Loyalty Society members (pages 37–38) who have contributed to the NAE for 20 years or more.

I am a big believer in explaining what your generosity has allowed the NAE to accomplish and the impact of your philanthropic investments. Below are two examples of what philanthropic support helped accomplish in 2016:
• With support from Boeing, Lockheed Martin, Northrop Grumman, Shell, and several individuals, the NAE began planning the 3rd Global Grand Challenges Summit (in Washington, DC, July 18–20, 2017) to extend and inspire international cooperation in addressing the most pressing issues
of our time. The NAE Grand Challenges for Engineering have become an international movement
inspiring young people and professionals alike to focus on major issues facing everyone around the
world in this century, such as clean water and secure cyberspace, plus 12 others.
• With support from Boeing and several individuals, the NAE focused on the Grand Challenges
  Scholars Program (GCSP), a supplemental education model designed to engage and prepare
  students to undertake problems like the Grand Challenges. The program engages students in
  research and in interdisciplinary learning with clients and mentors; exposes them to viable business
  creation and innovation experiences; helps them gain global and cross-cultural perspectives; and
  encourages them to develop social consciousness through service learning. In addition to hiring Dr.
  B.L. “Rama” Ramakrishna, the first director of the Grand Challenges Scholars Program Network,
  2016 saw the first annual meeting of the GCSPs in conjunction with the White House Office of
  Science and Technology Policy, to discuss best practices, increasing visibility, and connecting.

Looking Ahead
In 2017 we will focus on the long-term financial health of the academy, by increasing both current
use and endowment support, which provides a sustained stream of income. We will continue to offer
opportunities to learn about charitable tools for planned giving by conducting seminars on financial and
estate planning and regularly communicating about this topic. If you are interested in making a planned
gift to the NAE, or if you have made a gift provision in your estate plans but not yet notified us, please
contact Jamie Killorin, director of gift planning, at 202.334.3833 or JKillerin@nas.edu so that we can
recognize and celebrate your generosity.

Your philanthropic support enables the NAE to have a solid foundation from which to sustain its
important projects and spearhead the creation of new and timely programs. The energetic participation of
our members has always driven the NAE forward with crucial time, effort, and ideas. Our members are
also vital to our fundraising success, both by making financial contributions of their own and by serving
as advocates for the NAE and engineering to their peers. We sincerely appreciate your generosity and
continued support.

On behalf of the NAE Council, President Dan Mote, and myself, thank you very much for your
contributions in 2016. Our supporting members, friends, partner corporations, foundations, government
sponsors, and other organizations make all the difference in our ability to educate both national and
international policymakers and the public about the value of engineering’s contributions. I am grateful for
your contributions and look forward to your continued involvement in 2017.

Corale L. Brierley

Corale L. Brierley
2016 HONOR ROLL OF DONORS

ANNUAL GIVING SOCIETIES

The National Academy of Engineering gratefully acknowledges the following members and friends who made charitable contributions to the NAE and those NAE members who supported the Committee on Human Rights, a joint committee of the three academies, during 2016. The collective, private philanthropy of these individuals has a great impact on the NAE and its ability to be a national voice for engineering. We acknowledge contributions made as personal gifts or as gifts facilitated by the donor through a donor-advised fund, matching gift program, or family foundation.

During the 2016 annual meeting, Chairman Gordon England announced the creation of a $100,000 Chairman’s Challenge for Section 1 that he is personally funding and asked others to join him in creating matching gift challenges for each section by the 2017 annual meeting. Donors who participated in the Chairman’s Challenge are noted with the # symbol.

Fran Ligler, a member of the NAE Council, and her husband George pledged $100,000 in 2015 to encourage new and increased giving by Section 2 members for five years, or until the $100,000 goal is reached. Donors who participated in the Ligler Challenge are noted with the ‡ symbol.

The Sanjit K. Mitra Family Challenge encouraged members in the classes of 2013–2016 to support the NAE and our programs. Donors who participated in the Mitra Challenge are noted with the ◊ symbol.

In response to the Chairman’s Challenge, James Truchard gave $100,000 to fund a challenge for Section 7. Donors who participated in the Section 7 Challenge are noted with the % symbol.

CATALYST SOCIETY

$50,000*
Craig and Barbara Barrett
Daniel and Frances Berg
G. Wayne Clough
Dotty and Gordon England
Ming and Eva Hsieh◊
Robin K. and Rose M. McGuire
Sanjit K. and Nandita Mitra
Raymond S. Stata
James J. Truchard%
Andrew and Erna* Viterbi

Friends
John F. McDonnell

ROSETTE SOCIETY

$25,000 to $50,000
Gordon Bell
Paul F. Boulos◊
Nicholas M. Donofrio◊
James O. Ellis, Jr. and Elisabeth Paté-Cornell◊
George and Ann Fisher
Albert G. Greenberg◊
John O. Hallquist
Narayana and Sudha Murty
Jonathan J. Rubinstein

Friends
David E. Shaw
Christopher B. Galvin

CHALLENGE SOCIETY

$10,000 to $25,000
Ruth and Ken Arnold
Bharati and Murty Bhavaraju◊
Barry W. Boehm
Chau-Chyun Chen
Josephine Cheng
Uma Chowdhry
Ross and Stephanie Corotis
Ruth A. David◊
Lance and Susan Davis
Jeffrey Dean
Olivia and Peter Farrell◊
Douglas W. and Margaret P. Fuerstenau
Martin E. and Lucinda Glicksman

Friends
Robert W. Gore
Paul and Judy Gray◊
Chad and Ann Holliday
Michael W. Hunkapiller
John and Nancy Junkins
Kent Kresa◊
Jane and Norman N. Li

*Chairman’s Challenge
‡Ligler Challenge
◊Mitra Challenge
%Section 7 Challenge
*Deceased
Fran and George Ligler
Burn-Jeng Lin
Clayton Daniel and Patricia L. Mote
Ronald and Joan Nordgren
Roberto Padovani
Larry* and Carol Papay
Leonard Pinchuk
Julie and Alton D. Romig, Jr.
Jonathan M. Rothberg
Henry and Susan Samuels
Robert E. and Mary L. Schafrik
Richard J. Stegemeier
David W. Thompson
Adrian Zaccaria
Y.H. Gandhi

**Chairman’s Challenge**
**Ligler Challenge**
**◊Mitra Challenge**
**%Section 7 Challenge**
**‡Deceased**

**CHARTER SOCIETY**

$1,000 to $9,999

Linda M. Abriola
Andreas and Juana Acrivos
Rodney C. Adkins
Ronald J. Adrian
William G. Agnew
Kyle T. Alfrey
Montgomery and Ann Alger
John and Pat Anderson
John C. Angus
Seta and Diran Apelian
Frank F. Aplan
R. Lyndon Arscott
Ken Austin
Wanda M. and Wade Austin
William F. Baker
James B. Bassingthwaighte
Steven Battel
Craig and Karen Benson
Leo L. Beranek
Josephine F. and Robert R.* Berg
Thomas and Becky Bergman
Elwyn and Jennifer Berlekat
Peter J. Bethell
Mark and Kathy Board
Diane and Samuel W. Bodman
Mark T. Bohr
Rudolph Bonaparte
Carl de Boor
Kathleen and H. Kent Bowen
Craig T. Bowman
Lewis M. Branscomb
Corale L. Brierley
James A. Brierley
Lenore and Rob Briskman
Andrei Z. Broder
Alan C. Brown
George* and Virginia Bugliarello
M. Elizabeth Cannon
François J. Castaing
Corbett Caudill
Sigrid and Vint Cerf
Selim A. Chacour
Don B. Chaffin
Jean-Lou A. Chameau
Stephen Z.D. Cheng
Weng C. Chew
Sunlin Chou
Richard M. Christensen
Paul Citron and Margaret Carlson
Citron
Philip R. Clark
James J. Coleman
Morton Collins
Joseph M. Colucci
Rosemary L. and Harry M. Conger
Stuart L. Cooper
Gary L. Cowger
Natalie W. Crawford
Robert L. Crippen
Steven L. and Karen L. Crouch
David E. Daniel
L. Berkley Davis
Pablo G. Debenedetti
Mary and Raymond Decker
Robert H. Dennard
Emmanuel Detournay
George E. Dieter
Stephen W. Director
Albert A. and Joan Dorman
Elisabeth M. Drake
James J. Duderstadt
Robert and Cornelia Eaton
Farouk El-Baz
Derek Elsworth
Gerard W. Elverum
Iraj Ershaghi
John V. Evans
Robert R. Everett
Thomas E. Everhart
Hans K. Fauske
Robert E. Fenton
Leroy M. Fingerson
Bruce A. Finlayson
Anthony E. Fiorato
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Edith M. Flanigen
Samuel C. Florman
G. David Forney, Jr.
Robert C.* and Marilyn G. Forney
John S. Foster, Jr.
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Samuel H. Fuller
Huajian Gao
Donald P. Gaver
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Arthur Gelb
Arthur and Helen Geoffrion
Louis V. Gerstner, Jr.
Nan and Chuck Geschke
Paul H. Gilbert
Eduardo D. Glandt
George J. Gleghorn
Earnest F. Gloyna
Dan M. Goebel
Arthur L. and Vida F. Goldstein
Mary L. Good
Joseph W. Goodman
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Paul E. Gray
Hermann K. Gummel
Eliyahou Harari
James S. Harris, Jr.
Wesley L. Harris
Janina and Siegried Hecker
Chris T. Hendrickson
John L. Hennessy
Robert and Paula Henry
Janet G. Hering
Grace and Thom Hodgson
Urs Hölzle
Edward E. Hood, Jr.
John R. Howell
Evelyn L. Hu and David R. Clarke
J. Stuart Hunter
Ray R. Irani
Mary Jane Irwin
Irwin and Joan Jacobs
Wilhelmina and Stephen Jaffe
Leah H. Jamieson
George W. Jeffs

**Friends**

Y.H. Gandhi
NAE GIVING CHALLENGES

During his first annual meeting address, Chairman Gordon England said that his “goal as chairman is to secure sustainable funding for the academy as the means to continuously improve the engineering profession and the standing of the profession in the world. We are uniquely situated to foster the growing momentum of the Grand Challenges for Engineering program so we can tackle major issues and inspire students to pursue engineering.” He then announced the creation of a $100,000 Chairman’s Challenge for Section 1 that he is personally funding, and asked others to join him in creating matching gift challenges for each section by the 2017 annual meeting. In addition to the outright gift, he joined the Heritage Society by notifying us that the NAE is a beneficiary in his estate plans.

Here are the giving challenge results as of December 31, 2016:

Section 1 raised $106,000 in new gifts and pledges.

Section 2: The Fran and George Ligler Challenge for Section 2 continued to inspire Section 2 members to make new and increased gifts. Started in 2015, the goal is to raise $100,000 by 2019. In 2016, 30 Section 2 members made gifts that qualified for the match, totaling over $45,000. Thus far $80,000 has been raised—we are 80% to reaching the goal and on track to reach it 2 years early.

Section 3: Section 4: $25,000 challenge funded by Paul Boulos

Section 5: $100,000 challenge funded by Gordon Bell, Tom Leighton, and Bob Sproull

Section 7: $100,000 challenge funded by James Truchard. By end-2016 the challenge had raised $887,000.

The Sanjit K. Mitra Family Challenge for Newer Members was launched with a $100,000 gift to encourage members in the classes of 2013–2016 to support the NAE and our programs. Sanjit’s passion has been engineering education, and it was fitting that he directed his gift to support the Frontiers of Engineering Education program. The Mitra Challenge raised over $171,000 in new cash and $835,000 in new pledges from 76 donors.
Philip T. Krein
Ellen J. Kullman
Derrick M. Kuzak
Louis J. and M. Yvonne De Wolf
Lanzerotti
David C. Larbalestier
Shih-Ying Lee
James U. Lemke
Ronald K. Leonard
Frederick J. Leonberger
Helmut List
Jack E. Little
J. David Lowell
William J. MacKnight
Thomas and Caroline Maddock
Asad M., Gowhartaj, and Jamal Madni
Arunava Majumdar
Thomas J. Malone
Henrique S. Malvar
Hans Mark
David A. Markle
W. Allen Marr
John L. Mason
Dan and Dalia* Maydan
Jyotirmoy Mazumder
Kishor C. Mehta
Edward W. Merrill
Richard A. Meserve
Joahim Milberg
Richard B. Miles
Richard K. Miller
James K. and Holly T. Mitchell
Duncan T. Moore
Charles W. Moorman
William B. Morgan
Edward and Stephanie Moses
Van and Barbara Mow
Cherry A. Murray
Albert Narath
Jaya and Venky Narayananmurti
Robert M. and Marilyn R. Nerem
Paul D. Nielsen
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Celestino R. Pennoni
John H. Perepezko
Thomas K. Perkins
Lee and Bill Perry

Julia M. Phillips and John A. Connor
Nelson L. de S. Pinto
James D. Plummer
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H. Vincent Poor
Stephen and Linda Pope
Dana A. Powers
William F. Powers
Donald E. Procknow
William R. Pulleyblank
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Simon Ramo
Buddy D. Ratner
Wanda K. Reder
Kenneth and Martha Reifsnider
Gintaras V. Reklaitis
Eli Reshotko
Thomas J. Richardson
Ronald L. Rivest
Richard J. and Bonnie B. Robbins
Bernard I. Robertson
C. Paul Robinson
Thomas E. Romesser
William B. Russel
Steve* and Kathryn Sample
Linda S. Sanford
Maxine L. Savitz
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Geert W. Schmid-Schoenbein
Ronald V. Schmidt
Fred B. Schneider and Mimi Bussan
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Lyle H. Schwartz
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Robert F. and Lee S. Sproull
Arnold and Constance Stancell
Gunter Stein
Dean E. Stephan
Gregory Stephanopoulos
Kenneth E. Stinson
William D. Streater
Ronald D. Sugar
Virginia and Carl Sulzberger
John and Janet Swanson
Charlotte and Morris Tanenbaum
Eva Tardos
Gaye and Alan Taub
Peter and Vivian Teets
James M. Tien and Ellen S. Weston
Matthew V. Tirrell
Gary and Diane Tooker
Gavin P. Towler
John J. Tracy
James A. Trainham and Linda D. Waters
John R. Treichler
Richard H. Truly
Robert C. Turnbull
A. Galip Ulsoy
Raymond Viskanta
Thomas H. Vonder Haar
Robert and Robyn Wagoner
John C. Wall
David Walt and Michele May
Darsh T. Wasan
Warren and Mary Washington
Robert and Joan Wertheim
David and Tilly Whelan
Robert M.* and Mavis E. White
Willis S. White, Jr.
Alan N. Willson
Ward O. Winer
Herbert H. Woodson
Edgar S. Woolard, Jr.
Richard N. Wright
Wm. A. Wulf
Israel J. Wygnanski
Beverly and Loring Wylie
KeChang Xie
David D. Yao
William W-G. Yeh
Paul G. Yock
Yannis C. Yortsos
A. Thomas Young
William and Sherry Young
Ben T. Zinn
Mary Lou and Mark D. Zoback
Stacey I. Zones
Anonymous (1)

Friends
Thomas Barnish
Kristine L. Bueche
Marjorie R. Friedlander
Evelyn S. Jones
Toby Wolf

*Chairman’s Challenge
‡Ligler Challenge
◊Mitra Challenge
%Section 7 Challenge
*Deceased

34
OTHER INDIVIDUAL DONORS

Hiroyuki Abe
H. Norman Abramson‡
Hadi Abu-Akeel
Bernard Amadei
Cristina H. Amon
John G. Anderson
Mary P. Anderson
Kristi S. Anseth‡
George E. Apostolakis
Ali S. Argon
Frances H. Arnold
Daniel and Monica Atkins◊
Teresa and Harry Atwater◊
Jamal J. Azar
Donald W. Bahr
Ruzena K. Bajcsy
Clyde and Jeanette Baker
Grigory I. Barenblatt
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On February 16, 2016, the NAE awarded the Charles Stark Draper Prize for Engineering to NAE member and telecommunications pioneer Andrew J. Viterbi at a gala dinner in Washington, DC, “for development of the Viterbi algorithm, its transformational impact on digital wireless communications, and its significant applications in speech recognition and synthesis and in bioinformatics.” The “Viterbi algorithm has led to significant benefits to the health, safety, and well-being of the world’s citizens,” said NAE President C. D. Mote, Jr. “Dr. Viterbi’s work embodies the prize’s mission to recognize an engineer whose accomplishment has meaningfully impacted society.”

Recognized as one of the world’s preeminent awards for engineering achievement, the biennial Charles Stark Draper Prize for Engineering honors an engineer whose accomplishment has had a significant impact on society by improving quality of life, providing the ability to live freely and comfortably, and/or permitting access to information.

The prize confers a $500,000 cash award. Viterbi declined the monies and directed that the entire amount be transferred to the NAE Fund to support the NAE President’s Initiative Fund. The funds, distributed to activities aimed at attracting bright young people to engineering education and careers, will enable the NAE to be proactive in initiatives important to the welfare of the nation and the engineering profession.

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Lenore and Rob Briskman (’04) are enthusiastic about supporting the NAE, now and for the future. Each year, they make a gift to the NAE Independent Fund and, on the 2016 Day of Giving, they made their second planned gift to the NAE with a charitable gift annuity.

As members of the Heritage Society, the Briskmans believe in helping to secure the financial future of the NAE because “contributions to the NAE mission are vital, since engineering progress is the key to mitigating mankind’s problems.”
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Inspiring the next generation of engineers and the public to address some of the most pressing challenges and opportunities facing the planet is the theme of the 14 Global Grand Challenges for Engineering and the 2017 Global Grand Challenges for Engineering Summit, which the NAE will host July 18–20 in Washington, DC.

This is the third in a collaborative international series cohosted with the UK Royal Academy of Engineering and the Chinese Academy of Engineering. The first two summits took place in London (2013) and Beijing (2015).

With support from four generous corporate sponsors—founding sponsor Lockheed Martin, Boeing Charitable Trust, Northrop Grumman Foundation, and Shell Oil Company—the 2017 summit will bring together engineers, industry leaders, students, policymakers, educators, and artists from around the world to brainstorm ways to harness global cooperation to solve common challenges surrounding sustainability, health, security, joy of living, education, and public engagement.

Many of the student participants are part of Grand Challenges Scholars Programs, which are offered at dozens of engineering schools and provide a combined curricular and extracurricular approach to prepare students to tackle objectives that could dramatically improve quality of life around the world.
Annual

In recognition of foundations, corporations, or other organizations that made gifts or grants to support the National Academy of Engineering in 2016.

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Silicon Valley Community Foundation
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TBL Foundation
TIAA-CREF
Triangle Community Foundation
Two Sigma Investments, LP
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We have made every effort to list donors accurately and according to their wishes. If we have made an error, please accept our apologies and contact the Development Office at 202.334.2431 or giving@nae.edu so we can correct our records. Thank you.
Independent Auditor’s Report

To the Board of Trustees
National Academy of Engineering Fund
Washington, D.C.

Report on the Financial Statements
We have audited the accompanying financial statements of National Academy of Engineering Fund (the Fund), which comprise the statements of financial position as of December 31, 2016 and 2015, and the related statements of activities and cash flows for the years 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
Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we 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, we 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.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion
In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of National Academy of Engineering Fund as of December 31, 2016 and 2015, and the changes in its net assets and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

RSM US LLP
Washington, D.C.
June 12, 2017

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# National Academy of Engineering Fund

## Statements of Financial Position

### December 31, 2016 and 2015

<table>
<thead>
<tr>
<th>Assets (Note 1)</th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current assets:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td>$2,205,778</td>
<td>$866,005</td>
</tr>
<tr>
<td>Contributions receivable</td>
<td>239,066</td>
<td>154,561</td>
</tr>
<tr>
<td>Prepaid expenses</td>
<td>29,389</td>
<td>34,596</td>
</tr>
<tr>
<td>Short-term investments (Note 3)</td>
<td>1,468,991</td>
<td>2,970,062</td>
</tr>
<tr>
<td>Investment draw receivable</td>
<td>1,324,611</td>
<td>577,884</td>
</tr>
<tr>
<td>Promises to give (Note 2)</td>
<td>1,845,124</td>
<td>1,066,231</td>
</tr>
<tr>
<td><strong>Total current assets</strong></td>
<td>$7,112,959</td>
<td>$5,659,339</td>
</tr>
<tr>
<td><strong>Non-current assets:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promises to give – long-term portion, net (Note 2)</td>
<td>2,160,739</td>
<td>2,410,457</td>
</tr>
<tr>
<td>Beneficial interest in split interest agreements (Note 3)</td>
<td>394,439</td>
<td>346,517</td>
</tr>
<tr>
<td>Investments (Note 3)</td>
<td>66,320,487</td>
<td>64,379,511</td>
</tr>
<tr>
<td><strong>Total non-current assets</strong></td>
<td>$68,875,665</td>
<td>$67,136,485</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td>$75,988,624</td>
<td>$72,795,824</td>
</tr>
</tbody>
</table>

| Liabilities and Net Assets (Note 1) |            |            |
| **Current liabilities:** |            |            |
| Accounts payable – due to National Academy of Sciences (Note 6) | $1,471,509 | $1,015,422 |
| **Net assets:** |            |            |
| Unrestricted | 26,445,945 | 26,833,405 |
| Temporarily restricted (Note 4) | 18,292,315 | 15,166,140 |
| Permanently restricted (Notes 4, 5) | 29,778,855 | 29,780,857 |
| **Total net assets** | $74,517,115 | $71,780,402 |
| **Total liabilities and net assets** | $75,988,624 | $72,795,824 |

See notes to financial statements.
### National Academy of Engineering Fund

**Statement of Activities**

**Year Ended December 31, 2016**

<table>
<thead>
<tr>
<th>支持和收入：</th>
<th>无限制</th>
<th>暂时限制</th>
<th>永久限制</th>
<th>总计</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contriubutions (Note 1)</td>
<td>1,174,868</td>
<td>5,755,319</td>
<td>200</td>
<td>6,930,387</td>
</tr>
<tr>
<td>Realized gain on investments (Note 3)</td>
<td>197,145</td>
<td>263,085</td>
<td>-</td>
<td>460,230</td>
</tr>
<tr>
<td>Interest and dividends (Note 3)</td>
<td>128,577</td>
<td>197,637</td>
<td>-</td>
<td>326,214</td>
</tr>
<tr>
<td>Membership dues</td>
<td>118,580</td>
<td>-</td>
<td>-</td>
<td>118,580</td>
</tr>
<tr>
<td>Registration fees</td>
<td>170,560</td>
<td>-</td>
<td>-</td>
<td>170,560</td>
</tr>
<tr>
<td>Miscellaneous revenue</td>
<td>5,624</td>
<td>-</td>
<td>-</td>
<td>5,624</td>
</tr>
<tr>
<td>Net assets released from restrictions:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction of program restrictions</td>
<td>4,643,159</td>
<td>(4,643,159)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Satisfaction of time restrictions</td>
<td>181,830</td>
<td>(181,830)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total support and revenue</strong></td>
<td>6,620,343</td>
<td>1,391,052</td>
<td>200</td>
<td>8,011,595</td>
</tr>
</tbody>
</table>

|费用： |
|----------------|---------|---------|------|
| Program services: | | | |
| Programs | 3,257,928 | - | - | 3,257,928 |
| Awards | 1,394,524 | - | - | 1,394,524 |
| Member programs | 531,196 | - | - | 531,196 |
| Support for NRC and NAS | 273,707 | - | - | 273,707 |
| **Total expenses** | 5,457,355 | - | - | 5,457,355 |

| | | | |
| Support services: | | | |
| Operations | 1,540,582 | - | - | 1,540,582 |
| Fundraising | 1,282,366 | - | - | 1,282,366 |
| **Total expenses** | 2,822,948 | - | - | 2,822,948 |

|净资产变动： |
|----------------|---------|---------|------|
| Change in net assets | (1,659,960) | 1,391,052 | 200 | (268,708) |
| Unrealized gain on investments (Note 3) | 1,272,500 | 1,735,123 | (2,202) | 3,005,421 |
| **Change in net assets** | (387,460) | 3,126,175 | (2,002) | 2,736,713 |

|期末收入： |
|----------------|---------|---------|------|
| Beginning | 26,833,405 | 15,166,140 | 29,780,857 | 71,780,402 |
| Ending | $26,445,945 | $18,292,315 | $29,778,855 | $74,517,115 |

See notes to financial statements.
# National Academy of Engineering Fund

## Statement of Activities

**Year Ended December 31, 2015**

<table>
<thead>
<tr>
<th>Support and revenue:</th>
<th>Unrestricted</th>
<th>Temporarily Restricted</th>
<th>Permanently Restricted</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributions (Note 1)</td>
<td>$1,106,753</td>
<td>$2,678,256</td>
<td>$13,742</td>
<td>$3,798,751</td>
</tr>
<tr>
<td>Realized gain on investments (Note 3)</td>
<td>349,378</td>
<td>467,863</td>
<td>-</td>
<td>817,241</td>
</tr>
<tr>
<td>Interest and dividends (Note 3)</td>
<td>112,922</td>
<td>168,155</td>
<td>-</td>
<td>281,077</td>
</tr>
<tr>
<td>Membership dues</td>
<td>717,980</td>
<td>-</td>
<td>-</td>
<td>717,980</td>
</tr>
<tr>
<td>Registration fees</td>
<td>146,485</td>
<td>-</td>
<td>-</td>
<td>146,485</td>
</tr>
<tr>
<td>Miscellaneous revenue</td>
<td>3,988</td>
<td>-</td>
<td>-</td>
<td>3,988</td>
</tr>
<tr>
<td>Net assets released from restrictions:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction of program restrictions</td>
<td>5,612,097</td>
<td>(5,612,097)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Satisfaction of time restrictions</td>
<td>106,455</td>
<td>(106,455)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total support and revenue</strong></td>
<td>8,156,058</td>
<td>(2,404,278)</td>
<td>13,742</td>
<td>5,765,522</td>
</tr>
</tbody>
</table>

| Expenses: | | | | |
| Program services: | | | | |
| Programs | 3,798,566 | - | - | 3,798,566 |
| Awards | 1,959,986 | - | - | 1,959,986 |
| Member programs | 504,443 | - | - | 504,443 |
| Support for NRC and NAS | 262,312 | - | - | 262,312 |
| **Total program expenses** | 6,525,307 | - | - | 6,525,307 |

| Support services: | | | | |
| Operations | 1,330,250 | - | - | 1,330,250 |
| Fundraising | 1,039,385 | - | - | 1,039,385 |
| **Total support services expenses** | 2,369,635 | - | - | 2,369,635 |

| **Total expenses** | 8,894,942 | - | - | 8,894,942 |

| Change in net assets before unrealized loss on investments | (738,884) | (2,404,278) | 13,742 | (3,129,420) |

| Unrealized loss on investments (Note 3) | (559,525) | 386,878 | - | (172,647) |

| **Change in net assets** | (1,298,409) | (2,017,400) | 13,742 | (3,302,067) |

| Net assets: | | | | |
| Beginning | 28,131,814 | 17,183,540 | 29,767,115 | 75,082,469 |

| Ending | $26,833,405 | $15,166,140 | $29,780,857 | $71,780,402 |

See notes to financial statements.
National Academy of Engineering Fund
Statements of Cash Flows

Years Ended December 31, 2016 and 2015

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash flows from operating activities:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in net assets</td>
<td>$2,736,713</td>
<td>$(3,302,067)</td>
</tr>
<tr>
<td>Adjustments to reconcile change in net assets to net cash used in operating activities:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Realized gain on investments</td>
<td>$(460,230)</td>
<td>$(817,241)</td>
</tr>
<tr>
<td>Unrealized (gain) loss on investments</td>
<td>(3,005,421)</td>
<td>172,647</td>
</tr>
<tr>
<td>Increase (decrease) in discount on promises to give</td>
<td>10,005</td>
<td>(31,112)</td>
</tr>
<tr>
<td>Contributions restricted to investment in perpetuity</td>
<td>(200)</td>
<td>(13,742)</td>
</tr>
<tr>
<td>Changes in assets and liabilities:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Increase) decrease in:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contributions receivable</td>
<td>$(84,505)</td>
<td>$(54,452)</td>
</tr>
<tr>
<td>Promises to give</td>
<td>$(549,180)</td>
<td>977,762</td>
</tr>
<tr>
<td>Beneficial interest in split interest agreements</td>
<td>(13,120)</td>
<td>-</td>
</tr>
<tr>
<td>Prepaid expenses</td>
<td>5,207</td>
<td>14,731</td>
</tr>
<tr>
<td>Increase (decrease) in:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts payable – National Academy of Sciences</td>
<td>456,087</td>
<td>$(117,024)</td>
</tr>
</tbody>
</table>

| Net cash used in operating activities | $(904,644) | $(3,170,498) |

Cash flows from investing activities:

|                                | 2016            | 2015            |
| Proceeds from sale of investments | 25,579,756     | 23,630,604      |
| Purchases of investments         | $(22,588,812)   | $(23,827,518)   |
| Investment draw in transit       | $(746,727)      | 3,343,211       |

| Net cash provided by investing activities | 2,244,217 | 3,146,297 |

Cash flows from financing activities:

|                                | 2016      | 2015      |
| Contributions restricted to investment in perpetuity | 200       | 13,742    |

| Net cash provided by financing activities | 200       | 13,742    |

| Net increase (decrease) in cash and cash equivalents | 1,339,773 | (10,459) |

Cash and cash equivalents:

|                                | 2016      | 2015      |
| Beginning                      | 866,005   | 876,464   |

| Ending                         | $2,205,778 | $866,005  |

Supplemental disclosure of cash flow information:

| Cash paid for taxes            | $11,837    | $5,961    |

See notes to financial statements.
Note 1. Nature of Activities and Significant Accounting Policies

Nature of activities: National Academy of Engineering Fund (the Fund) is an independent nonprofit organization established by National Academy of Engineering (NAE) to collect and disburse funds for accomplishing the goals of NAE. NAE operates within the charter and framework of the National Academy of Sciences (NAS), which accounts for NAE’s expenses. The operating expenditures of NAE are accounted for by offices of NAS and are offset by reimbursement from funds received from the Fund and from contracts and grants administered by NAS. The net expenditures of NAE are paid by the Fund to balance accounts with NAS.

A summary of the Fund’s significant accounting policies follows:

Basis of accounting: The Fund’s financial statements are prepared using the accrual basis of accounting in accordance with the generally accepted accounting principles in the United States of America (U.S. GAAP), whereby unconditional support is recognized when notification of the contribution is received, revenue is recognized when earned and expenses are recognized when incurred.

Basis of presentation: The Fund follows the Not-for-Profit Entities Topic of the Financial Accounting Standards Board (FASB) Accounting Standards Codification (the Codification). Under this Topic, the Fund is required to report the information regarding its financial position and activities according to three classes of net assets: unrestricted net assets, temporarily restricted net assets and permanently restricted net assets. The three classes of net assets are as follows:

Unrestricted net assets: Unrestricted net assets generally result from revenue derived from providing services, receiving unrestricted contributions, unrealized and realized gains and losses and receiving dividends and interest from investing in income-producing unrestricted assets, less expenses incurred in providing services, raising contributions and performing administrative functions.

Temporarily restricted net assets: Temporarily restricted net assets consist of amounts that are subject to donor-imposed time or purpose restrictions and income earned on temporarily and permanently restricted net assets. The Fund is permitted to use or expend the donated assets in accordance with the donor restriction.

Permanently restricted net assets: Permanently restricted net assets consist of assets whose use is limited by donor-imposed restrictions that neither expire by the passage of time nor can be fulfilled or otherwise removed by action of the Fund. The restrictions stipulate that resources be maintained permanently, but permit the Fund to expend the income generated in accordance with the provisions of the agreement. Permanently restricted net assets consist of the following:

Gordon Prize represents an endowment given by the donor for the purpose of establishing and awarding an annual prize in honor of Bernard M. Gordon. It is the Fund’s intention to use the investment earnings of the endowment to cover the expenses incurred in connection with administration of the prize and in providing the honorarium awarded with the prize.

Draper Prize represents an endowment given by the donor for the purpose of establishing and awarding an annual prize in honor of the memory of Charles Stark Draper. It is the Fund’s intention to use the investment earnings of the endowment to cover the expenses incurred in connection with administration of the prize and in providing the honorarium awarded with the prize.

Wm. A. Wulf Initiative for Engineering Excellence represents an endowment to ensure the future of programs that Bill Wulf instituted as president and provide his successor some flexibility in addressing the most pressing issues before the engineering community and the nation at any given time.
Note 1.  Nature of Activities and Significant Accounting Policies (Continued)

Capital Preservation and Hans Reissner represent endowments requiring principal be maintained in perpetuity and that only the income be used for general operations of NAE.

Senior Scholar represents an endowment to support an outstanding member of industry or another field working as an advisor and assistant to the president of NAE in the management and execution of NAE’s programmatic activities.

Young Engineer represents an endowment to support programs aimed at engaging engineers at a younger age in the activities of NAE and to provide an opportunity to identify nominees from industry for membership in NAE.

Simon Ramo Founders Award represents an endowment requiring that the principal be maintained in perpetuity and that the income be used to support the “Simon Ramo Founders Award” given each year at the annual meeting.

Industry Scholar represents an endowment to support fellowships for recently retired corporate executives to assist with strategy and management of program activities in NAE and the National Research Council (NRC).

Hollomon represents an endowment requiring that the principal be maintained in perpetuity and that the income be used to support the Hollomon Fellow.

Cash and cash equivalents: For purposes of reporting cash flows, the Fund considers all investments purchased with an original maturity of three months or less to be cash equivalents, except for the cash in the investment portfolio, which will be reinvested on a long-term basis and which are reported with investments.

Contributions receivable: Contributions receivable include contributions collected near or at year-end by NAS for the Fund but not yet received by the Fund as of December 31, 2016 and 2015.

Short-term investments: These investments consist of money market accounts that are used to fund normal operations of the Fund. The money market accounts are not publicly traded and are therefore held at cost.

Investment draw receivable: The Fund is eligible to draw 5% from one of its investment funds annually. This transfer crosses fiscal years and is recorded as a receivable until the cash is received by the Fund.

Promises to give: Unconditional promises to give are recognized as revenue and receivables in the period the promises are received. Unconditional promises to give that are expected to be collected within one year are recorded at their net realizable value. Unconditional promises to give that are expected to be collected in future years are recorded at the present value of their estimated future cash flows. The discounts on those amounts are computed using rates commensurate with the risk involved applicable to the years in which the promises are received. The discount rates used range from 2.3% and 0.21% for the years ended December 31, 2016 and 2015. Amortization of the discounts is included in contribution revenue. Based on management’s evaluation of the collectability of receivables, there is no provision for doubtful promises to give at December 31, 2016 and 2015. Conditional promises to give are not included as support until the conditions are substantially met.
Note 1. Nature of Activities and Significant Accounting Policies (Continued)

Beneficial interest in split interest agreements: Charitable gift annuity agreements are classified as a beneficial interest in split interest agreements in the statements of financial position. The Fund has been notified that it was designated as the remainder beneficiary for several charitable remainder trusts. The Fund has an agreement with NAS, where NAS, rather than the Fund, serves as the trustee of the assets for all. The Fund has recorded an asset and contribution revenue equal to the present value of the remainder interest.

The remainder interest was determined by using the fair market value of trust assets, less the estimated distributions by NAS to the income beneficiary over the Trust term. Upon termination of an annuity, the remainder interest in the asset is available for use by the Fund as restricted or unrestricted assets in accordance with the donor’s designation. On an annual basis, the Fund re-measures the value of the asset using current assumptions. Any change in such value is recorded as a change in value of split-interest agreements included within unrealized (loss) gain on the statements of activities.

Investments: Investments are carried at fair market value, as discussed in Note 3. Investment income or loss is included in the change in unrestricted net assets unless the income is restricted by donor or law. Unrealized gains and losses are reflected separately within the statements of activities.

Financial risk: The Fund maintains its cash and cash equivalents and short-term investments in bank deposit accounts which, at times, may exceed federally insured limits. The Fund has not experienced any losses in such accounts. The Fund believes it is not exposed to any significant credit risk on cash.

The Fund invests in professionally managed portfolios that contain equity and fixed income mutual funds, common shares of publicly traded companies, exchange traded funds, hedge funds, fund of funds, a limited partnership and private equity funds. Such investments are exposed to various risks such as interest rate, market and credit risk. Due to the level of risk associated with such investments and the level of uncertainty related to change in the value of such investments, it is at least reasonably possible that changes in risks in the near term would materially affect investment balances and the amounts reported in the financial statements.

Support and revenue: The Fund reports gifts of cash and other assets as restricted support if they are received with donor stipulations that limit the use of the donated assets. When a donor restriction expires, (that is, when a stipulated time restriction ends or purpose restriction is accomplished) temporarily restricted net assets are reclassified to unrestricted net assets and reported in the statements of activities as net assets released from restrictions. Unrestricted gifts of cash and other assets are recorded in revenue, gains and other support when received or in the period in which such amounts are estimable. Membership dues are recognized as a contribution in the year it is received. Revenues from special events are recognized at the time the event occurs.

Allocation of expenses: The costs of providing various programs and other activities have been summarized on a functional basis in the statement of activities. Accordingly, certain costs have been allocated among the programs and supporting services benefited as follows:

Programs: Programs that address relevant issues in the engineering field including, but not limited to: Education, Engineering Practice and the Engineering Workforce; Engineering and the Environment; Engineering, the Economy and Society; Information Technology and Society; National Security and Crime Prevention; and Public Policy and Program Reviews.
Note 1. Nature of Activities and Significant Accounting Policies (Continued)

Awards: NAE presents five awards: the Bernard M. Gordon Prize, the Charles Stark Draper Prize for Engineering, the Fritz J. and Dolores H. Russ Prize, the Arthur M. Bueche Award and the Simon Ramo Founders Award. Activities include soliciting nominations, selection of the recipients, announcement of the recipients and presentation of the prizes.

Member Programs: Organization and administration of the Annual Meeting and publication of NAE Memorial Tributes.

Support for NRC and NAS: Contributions to joint activities of the National Academies, including, but not limited to, the NAS/NAE/NAM Committee on Human Rights, the African American History Program, Community Service Projects and the International Visitors Office.

Operations: Includes the functions necessary to provide an adequate working environment, provide coordination and articulation of the Fund’s programs, secure proper administrative function of the Board of Trustees, maintain competent legal services for program administration and manage the financial and budgetary responsibilities of the Fund.

Fundraising: Provides the structure necessary to encourage and secure private financial support from individuals, foundations and corporations.

Income taxes: The Fund is incorporated under the District of Columbia Non-Profit Corporation Act and is exempt from income taxes under Section 501(c)(3) of the Internal Revenue Code. In addition, the Fund has been determined by the Internal Revenue Service not to be a private foundation. The Fund is required to remit income taxes to the federal government and the District of Columbia for unrelated business income. For the years ended December 31, 2016 and 2015, there was unrelated business income of $6,623 and $995, respectively.

The Fund complies with the accounting standard on accounting for uncertainty in income taxes, which addresses the determination of whether tax benefits claimed or expected to be claimed on a tax return should be recorded in the financial statements. Under this guidance, the Fund may recognize the tax benefit from an uncertain tax position; only if it is more likely than not that the tax position will be sustained on examination by taxing authorities, based on the technical merits of the position. The tax benefits recognized in the financial statements from such a position are measured based on the largest benefit that has a greater than 50% likelihood of being realized upon settlement. The guidance on accounting for uncertainty in income taxes also addresses de-recognition, classification, interest and penalties on income taxes and accounting in interim periods. The Fund had no such positions recorded in the financial statements at December 31, 2016 and 2015. Generally, the Fund is no longer subject to U.S. federal income tax positions by tax authorities for years before 2013.

Use of estimates: In preparing financial statements in conformity with U.S. GAAP, management is required to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and revenue and expenses during the reporting period. The most significant assumptions relate to the realization of pledges receivable and the fair value measurement of investments. Actual results could differ from those estimates.
Note 1. Nature of Activities and Significant Accounting Policies (Continued)

Upcoming accounting pronouncement: In August 2016, the FASB issued Accounting Standards Update (ASU) 2016-14, Not-for-Profit Entities (Topic 958): Presentation of Financial Statements of Not-for-Profit Entities. The amendments in this ASU make improvements to the information provided in financial statements and accompanying notes of not-for-profit entities. The amendments set forth the FASB’s improvements to net asset classification requirements and the information presented about a not-for-profit entity’s liquidity, financial performance, and cash flows. The ASU will be effective for fiscal years beginning after December 15, 2017. Earlier application is permitted. The changes in this ASU should generally be applied on a retrospective basis in the year that the ASU is first applied. The Fund has not evaluated the impact of this ASU on the financial statements.

Subsequent events: The Fund evaluated subsequent events through June 12, 2017, which is the date the financial statements were available to be issued.

Note 2. Promises to Give

Promises to give are unconditional and deemed fully collectible as follows at December 31, 2016:

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unrestricted</td>
<td>Restricted</td>
<td>Total</td>
</tr>
<tr>
<td>Unconditional promises to give</td>
<td>$ 798,303</td>
<td>$ 3,304,229</td>
<td>$ 4,102,532</td>
</tr>
<tr>
<td>Less unamortized discount</td>
<td>(46,378)</td>
<td>(50,291)</td>
<td>(96,669)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$ 751,925</td>
<td>$ 3,253,938</td>
<td>$ 4,005,863</td>
</tr>
</tbody>
</table>

Amounts due in:

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>$ 161,624</td>
<td>$ 1,683,500</td>
<td>$ 1,845,124</td>
</tr>
<tr>
<td>1 to 5 years</td>
<td>590,301</td>
<td>1,570,438</td>
<td>2,160,739</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$ 751,925</td>
<td>$ 3,253,938</td>
<td>$ 4,005,863</td>
</tr>
</tbody>
</table>

Promises to give are unconditional and deemed fully collectible as follows at December 31, 2015:

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unrestricted</td>
<td>Restricted</td>
<td>Total</td>
</tr>
<tr>
<td>Unconditional promises to give</td>
<td>$ 268,370</td>
<td>$ 3,284,981</td>
<td>$ 3,553,351</td>
</tr>
<tr>
<td>Less unamortized discount</td>
<td>(2,776)</td>
<td>(83,887)</td>
<td>(86,663)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$ 265,594</td>
<td>$ 3,201,094</td>
<td>$ 3,466,688</td>
</tr>
</tbody>
</table>

Amounts due in:

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>$ 179,981</td>
<td>$ 876,250</td>
<td>$ 1,056,231</td>
</tr>
<tr>
<td>1 to 5 years</td>
<td>85,613</td>
<td>2,324,844</td>
<td>2,410,457</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$ 265,594</td>
<td>$ 3,201,094</td>
<td>$ 3,466,688</td>
</tr>
</tbody>
</table>
Note 3.  Investments  
Investments consist of the following at December 31:

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash and money market*</td>
<td>$6,055,074</td>
<td>$2,832,231</td>
</tr>
<tr>
<td>Money market fund</td>
<td>96,930</td>
<td>4,637,970</td>
</tr>
<tr>
<td>Equity securities</td>
<td>8,475,793</td>
<td>7,841,105</td>
</tr>
<tr>
<td>Mutual funds</td>
<td>5,112,650</td>
<td>5,087,610</td>
</tr>
<tr>
<td>Exchange traded funds</td>
<td>5,276,932</td>
<td>2,054,448</td>
</tr>
<tr>
<td>Alternative investments</td>
<td>42,772,099</td>
<td>44,896,209</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>67,789,478</strong></td>
<td><strong>67,349,573</strong></td>
</tr>
<tr>
<td>Less short-term investments</td>
<td>(1,468,991)</td>
<td>(2,970,062)</td>
</tr>
<tr>
<td><strong>Net total</strong></td>
<td><strong>$66,320,487</strong></td>
<td><strong>$64,379,511</strong></td>
</tr>
</tbody>
</table>

*Cash and money market accounts held at cost.

Investment return consists of the following for the years ended December 31:

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest and dividends</td>
<td>$326,214</td>
<td>$281,077</td>
</tr>
<tr>
<td>Unrealized gain (loss)</td>
<td>3,005,421</td>
<td>(172,647)</td>
</tr>
<tr>
<td>Realized gain</td>
<td>460,230</td>
<td>817,241</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$3,791,865</strong></td>
<td><strong>$925,671</strong></td>
</tr>
</tbody>
</table>
Note 3. Investments (Continued)

The Fair Value Measurement Topic of the Codification defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The Fund utilizes valuation techniques to maximize the use of observable inputs and minimize the use of unobservable inputs. Assets and liabilities recorded at fair value are categorized within the fair value hierarchy based upon the level of judgment associated with the inputs used to measure their value. The fair value hierarchy gives the highest priority to quoted prices in active markets for identical assets or liabilities (Level 1) and the lowest priority to unobservable inputs (Level 3). Inputs are broadly defined as assumptions market participants would use in pricing an asset or liability. The three levels of the fair value hierarchy are described below:

**Level 1**: Valuations based on unadjusted quoted prices in active markets for identical assets or liabilities that the reporting entity has the ability to access at the measurement date. The types of investments included in Level 1 include listed equities and listed derivatives. As required by the guidance provided by the Codification, the Fund does not adjust the quoted price for these investments, even in situations where the Fund holds a large position and a sale could reasonably impact the quoted price.

**Level 2**: Valuations based on inputs other than quoted prices within Level 1 that are observable for the asset or liability, either directly or indirectly and fair value is determined through the use of models or other valuation methodologies. Investments which are generally included in this category include corporate bonds and loans, less liquid and restricted equity securities and certain over-the-counter derivatives. A significant adjustment to a Level 2 input could result in the Level 2 measurement becoming a Level 3 measurement.

**Level 3**: Valuations based on inputs that are unobservable for the asset or liability and include situations where there is little, if any, market activity for the asset or liability. The inputs into the determination of fair value are based upon the best information in the circumstances and may require significant management judgment or estimation.

All transfers between fair value hierarchy levels are recognized by the Fund at the end of each reporting period. In certain cases, the inputs used to measure fair value may fall into different levels of the fair value hierarchy. In such cases, an investment’s level within the fair value hierarchy is based on the lowest level of input that is significant to the fair value measurement. The Fund’s assessment of the significance of a particular input to the fair value measurement in its entirety requires judgment and considers factors specific to the investment. The inputs or methodology used for valuing financial instruments are not necessarily an indication of the risks associated with investing in those instruments.
**Note 3. Investments (Continued)**

Investments and other assets measured at fair value on a recurring basis are as follows at December 31, 2016:

<table>
<thead>
<tr>
<th>Investments:</th>
<th>Total</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mutual funds:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International equity fund</td>
<td>$2,594,483</td>
<td>$2,594,483</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Short-term bond fund</td>
<td>2,518,167</td>
<td>2,518,167</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5,112,650</td>
<td>5,112,650</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Equity securities:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer goods</td>
<td>2,450,904</td>
<td>2,450,904</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Services</td>
<td>126,845</td>
<td>126,845</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Technology</td>
<td>1,526,034</td>
<td>1,526,034</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Healthcare</td>
<td>1,204,101</td>
<td>1,204,101</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Financial</td>
<td>1,393,345</td>
<td>1,393,345</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Basic materials</td>
<td>237,085</td>
<td>237,085</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Industrial goods</td>
<td>1,267,372</td>
<td>1,267,372</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Energy</td>
<td>248,948</td>
<td>248,948</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Real estate</td>
<td>21,159</td>
<td>21,159</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8,475,793</td>
<td>8,475,793</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Exchange traded funds:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large growth</td>
<td>1,700,335</td>
<td>1,700,335</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Large value</td>
<td>3,576,597</td>
<td>3,576,597</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>5,276,932</td>
<td>5,276,932</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Money market funds</strong></td>
<td>96,930</td>
<td>96,930</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total investments held at fair value</strong></td>
<td>18,962,305</td>
<td>17,261,970</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Beneficial interest in split interest agreements</strong></td>
<td>394,439</td>
<td>-</td>
<td>-</td>
<td>394,439</td>
</tr>
<tr>
<td><strong>Total assets held at fair value</strong></td>
<td>$19,356,744</td>
<td>$17,261,970</td>
<td>$ -</td>
<td>$394,439</td>
</tr>
<tr>
<td><strong>Total investments:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Held at fair value</td>
<td>$18,962,305</td>
<td>$ -</td>
<td>-</td>
<td>$394,439</td>
</tr>
<tr>
<td>Held at net asset value (NAV) (a)</td>
<td>42,772,099</td>
<td>$ -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Held at cost</td>
<td>6,055,074</td>
<td>$ -</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$67,789,478</td>
<td>$ -</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Note 3. Investments (Continued)

Investments and other assets measured at fair value on a recurring basis are as follows at December 31, 2015:

<table>
<thead>
<tr>
<th>Investments:</th>
<th>Total</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mutual funds:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International equity fund</td>
<td>$3,771,822</td>
<td>$3,771,822</td>
<td>$ -</td>
<td>$ -</td>
</tr>
<tr>
<td>Long-term bond fund</td>
<td>1,315,788</td>
<td>1,315,788</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>5,087,610</td>
<td>5,087,610</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Equity securities:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumer goods</td>
<td>1,851,464</td>
<td>1,851,464</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Services</td>
<td>1,993,441</td>
<td>1,993,441</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Technology</td>
<td>1,161,419</td>
<td>1,161,419</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Healthcare</td>
<td>1,129,169</td>
<td>1,129,169</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Financial</td>
<td>634,194</td>
<td>634,194</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Basic materials</td>
<td>596,995</td>
<td>596,995</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Industrial goods</td>
<td>474,423</td>
<td>474,423</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>7,841,105</td>
<td>7,841,105</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Exchange traded funds:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High yield</td>
<td>2,054,448</td>
<td>2,054,448</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Money market funds</td>
<td>4,637,970</td>
<td>4,637,970</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total investments held at fair value</td>
<td>19,621,133</td>
<td>19,621,133</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Beneficial interest in split interest agreements</td>
<td>346,517</td>
<td>-</td>
<td>-</td>
<td>346,517</td>
</tr>
<tr>
<td>Total assets held at fair value</td>
<td>$19,967,650</td>
<td>$19,621,133</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total investments:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Held at fair value</td>
<td>$19,621,133</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Held at net asset value (NAV) (a)</td>
<td>44,896,209</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Held at cost</td>
<td>2,832,231</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$67,349,573</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) In accordance with Codification Topic 820-10, certain investments that are measured at fair value using the net asset value (NAV) per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the amounts presented in the statements of financial position.
Note 3. Investments (Continued)

The following is a description of the valuation methodologies used for assets measured at fair value. There have been no changes in the methodologies used at December 31, 2016 and 2015.

*Mutual funds, equity securities, money market funds and exchange traded funds* are publicly traded on the exchanges and therefore are considered Level 1 items.

*Beneficial interests in split-interest agreements* held by others are measured at the present value of future cash flows considering the estimated return on the invested assets during the expected term of the agreements, the contractual payment obligations under the agreement and a discount rate commensurate with the risks involved. Split-interest agreements held by others are classified as Level 3 within the fair value hierarchy.

The table below sets forth a summary of changes in fair value of the Fund’s Level 3 assets, the beneficial interests in split-interest agreements, for the years ended December 31, 2016 and 2015:

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Split Interest Agreement</td>
<td>Split Interest Agreement</td>
<td></td>
</tr>
<tr>
<td>Balance, beginning of year</td>
<td>$346,517</td>
<td>$413,045</td>
</tr>
<tr>
<td>New split interest agreement gifts</td>
<td>13,120</td>
<td>-</td>
</tr>
<tr>
<td>Change in value of split interest agreements</td>
<td>34,802</td>
<td>(66,528)</td>
</tr>
<tr>
<td>Balance, end of year</td>
<td>$394,439</td>
<td>$346,517</td>
</tr>
</tbody>
</table>
Note 3. Investments (Continued)

The table below presents additional information for the Fund’s investments, as of December 31, 2016 and 2015, whose fair value is estimated using the NAV per share (or equivalent) practical expedient and presents the nature and risk of assets with fair values estimated using NAV.

| Fund of hedge funds – multi-strategies (a) | Fair Value at December 31, 2016 | $22,726,931 | Fair Value at December 31, 2015 | $23,496,420 | Unfunded Commitment | $ | Redemption Frequency | Annually | Redemption Notice Period | 75 days |
| Fund of hedge funds – multi-strategies, multi-vehicles (b) | 7,137,726 | 7,756,558 | 500,000 | Monthly – annually, or upon dissolution of the fund | 30 – 125 days |
| Hedge funds – long equity (c) | 5,993,757 | 7,648,293 | - | Quarterly and after lock-up period | 30 days – 5 years |
| Private equity – multiple strategies (d) | 1,738,527 | 2,830,102 | 313,323 | Upon liquidation of the fund | None |
| Hedge funds – restructuring and value (e) | 2,379,062 | 2,665,390 | 113,626 | Quarterly | 60 days |
| Limited partnership (f) | 220,396 | 277,184 | 37,521 | Upon dissolution of the partnership | None |
| Private equity – single strategy (g) | 2,575,700 | 222,262 | 1,691,313 | Upon dissolution of the partnership | None |
| Total | $42,772,099 | $44,896,209 | $2,655,783 |

(a) This category includes investments in funds of hedge funds that use multiple strategies to obtain total returns on a leveraged basis. The funds invest in a broad range of equity instruments, including international, domestic and private equity. The funds also invest in fixed income and alternative asset classes. The fund’s portfolio is designed to achieve equity-like returns at fixed income risk levels. The funds are subject to an initial two-year lock up and are limited to annual redemptions thereafter. Withdrawals require a minimum 75 days’ notice and are subject to specific considerations as outlined in the Limited Partnership Agreement.

(b) This category includes investments in a multi-strategy, multi-vehicle hedge fund with the objective of maximizing long-term, risk adjusted returns and capital appreciation. The funds have investments in multiple investees which trade in various financial instruments such as, but not limited to, domestic and international securities, fixed income debt, government securities, real estate investment trusts and derivatives. 12% of the investments in this category are available for redemption monthly, 47% of the investments are available for redemption quarterly, 19% of the investments are available for redemption annually and 22% of the investments are available for redemption upon dissolution. Notice periods range from 30-125 days’ notice. Shares are redeemable at their NAV as of the end of the respective month, quarter, year or at the time of dissolution.
Note 3. Investments (Continued)

(c) Investment funds in this strategy invest primarily in publicly-traded common stocks but its investments may, at times, include positions in publicly-traded, domestic or foreign common stocks, stock warrants and rights. The Fund’s investments may include investment in small capitalization companies as well as mature companies. Investments representing approximately 28% of the investments in this category are available for redemption quarterly with 30 days’ notice. The remaining 72% of investments in this category are available for redemption without penalty after an initial five-year lock-up period.

(d) This category includes investments in private equity, venture capital and distressed securities and other non-traditional categories on a global basis. The other fund makes indirect investments in emerging private markets including private equity and distressed securities. These investments can never be redeemed with the funds. Instead, the nature of the investments in these categories is that distributions are received through the liquidation of the underlying assets of the fund. As of December 31, 2016, it is probable that the investments in these categories will be liquidated at an amount different from the NAV of the Fund’s ownership interest in partners’ capital. Investments in the underlying funds are reported at their estimated fair value, as determined in good faith by the fund manager. Fair value is based on the information provided by the respective general partner of each of the underlying funds, including audited financial statements, which reflects the fund’s share of the fair value of the net assets of the respective underlying fund and any other relevant factors determined by the fund manager. The fund has applied the fair value guidance for measuring its investments in the underlying funds, using the practical expedient. As such, the fund fair values its investments using the underlying funds’ NAV without any further adjustments. The value reported by the Fund is the value of its ownership share.

(e) Investment funds in this strategy invest in securities of companies that are believed to be significantly undervalued, some of which are in Chapter 11 bankruptcy. The other fund invests in equity and debt of companies it deems to be undervalued. Both funds invest in a master fund which includes derivatives. Investments are available for redemption quarterly with 60 days’ notice. Shares are redeemable at their NAV as of the end of the quarter.

(f) This category includes investment in a limited partnership who invests in private equity funds engaged in venture capital, buyouts and growth capital, international private equity and other private equity investments. The Fund may receive distributions-in-kind from the Partnership Investments representing securities of the Partnership Investments’ underlying portfolio companies. These investments can never be redeemed with the funds. Instead, the nature of the investments in these categories is that distributions are received through the liquidation of the underlying assets of the fund. As of December 31, 2016, it is probable that the investments in these categories will be liquidated at an amount different from the NAV of the Fund’s ownership interest in partners’ capital. Investments in the underlying funds are reported at their estimated fair value, as determined in good faith by the fund manager. Fair value is based on the information provided by the respective general partner of each of the underlying funds, including audited financial statements, which reflects the fund’s share of the fair value of the net assets of the respective underlying fund and any other relevant factors determined by the fund manager. The fund has applied the fair value guidance for measuring its investments in the underlying funds, using the practical expedient. As such, the fund fair values its investments using the underlying funds’ NAV without any further adjustments. The value reported by the Fund is the value of its ownership share.
Note 3. Investments (Continued)

(g) The fund invests in private equity companies that provide infrastructure. The fund seeks investments that have a desirable risk return profile, which will deliver, in aggregate, a gross target internal rate of return of 12% to 15% with prudent leverage. The leverage strategy primarily revolves around the following principles: structure debt capital to investment grade standards whenever possible; develop matching debt duration profiles to respective assets’ cash flow profiles; and avoid floating interest rate exposure, either through the use of fixed rate debt or interest hedging activities. These investments can never be redeemed with the funds. Instead, the nature of the investments in these categories is that distributions are received through the liquidation of the underlying assets of the fund. As of December 31, 2016, it is probable that the investments in these categories will be liquidated at an amount different from the NAV of the Fund’s ownership interest in partners’ capital. Investments in the underlying funds are reported at their estimated fair value, as determined in good faith by the fund manager. Fair value is based on the information provided by the respective general partner of each of the underlying funds, including audited financial statements, which reflects the fund’s share of the fair value of the net assets of the respective underlying fund and any other relevant factors determined by the fund manager. The fund has applied the fair value guidance for measuring its investments in the underlying funds, using the NAV practical expedient. As such, the fund fair values its investments using the underlying funds’ NAV without any further adjustments. The value reported by the Fund is the value of its ownership share.
### Note 4. Permanently and Temporarily Restricted Net Assets

Permanently and temporarily restricted net assets consist of the following at December 31, 2016:

<table>
<thead>
<tr>
<th>Fund/Program</th>
<th>Permanently Restricted</th>
<th>Temporarily Restricted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gordon Prize</td>
<td>$13,438,250</td>
<td>$</td>
</tr>
<tr>
<td>Draper Prize</td>
<td>8,000,000</td>
<td>889,893</td>
</tr>
<tr>
<td>Wm. A. Wulf Initiative for Engineering Excellence</td>
<td>3,015,322</td>
<td>1,229,006</td>
</tr>
<tr>
<td>Capital Preservation</td>
<td>2,460,901</td>
<td>505,257</td>
</tr>
<tr>
<td>Senior Scholar</td>
<td>1,000,000</td>
<td>228,040</td>
</tr>
<tr>
<td>Young Engineers</td>
<td>784,522</td>
<td>192,608</td>
</tr>
<tr>
<td>Simon Ramo Founders Award</td>
<td>500,000</td>
<td>81,858</td>
</tr>
<tr>
<td>Industry Scholar</td>
<td>353,038</td>
<td>229,236</td>
</tr>
<tr>
<td>Hollomon</td>
<td>201,200</td>
<td>457,395</td>
</tr>
<tr>
<td>Hans Reissner</td>
<td>25,622</td>
<td>14,759</td>
</tr>
<tr>
<td>Vest Opportunity Fund</td>
<td></td>
<td>5,231,588</td>
</tr>
<tr>
<td>Global Grand Challenges Summit</td>
<td></td>
<td>2,078,619</td>
</tr>
<tr>
<td>Frontiers of Engineering – Grainger Foundation</td>
<td></td>
<td>2,078,420</td>
</tr>
<tr>
<td>Unrestricted contributions to be received in future years</td>
<td></td>
<td>1,139,397</td>
</tr>
<tr>
<td>Grand Challenges – General</td>
<td></td>
<td>1,028,380</td>
</tr>
<tr>
<td>President’s Opportunity fund</td>
<td></td>
<td>966,001</td>
</tr>
<tr>
<td>Public Understanding</td>
<td></td>
<td>412,522</td>
</tr>
<tr>
<td>Urban Infrastructure</td>
<td></td>
<td>361,466</td>
</tr>
<tr>
<td>Sustaining Link Engineering</td>
<td></td>
<td>358,590</td>
</tr>
<tr>
<td>Engineer Girl</td>
<td></td>
<td>321,193</td>
</tr>
<tr>
<td>Make Value for America</td>
<td></td>
<td>162,612</td>
</tr>
<tr>
<td>President’s Discretionary</td>
<td></td>
<td>84,809</td>
</tr>
<tr>
<td>Frontiers of Engineering</td>
<td></td>
<td>65,943</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td>59,528</td>
</tr>
<tr>
<td>Noise Policy Development</td>
<td></td>
<td>49,884</td>
</tr>
<tr>
<td>Futures/ Chevron Guiding Implementation</td>
<td></td>
<td>28,066</td>
</tr>
<tr>
<td>Engineering Ethics Center</td>
<td></td>
<td>15,534</td>
</tr>
<tr>
<td>Engineering Education &amp; Research</td>
<td></td>
<td>7,469</td>
</tr>
<tr>
<td>Diversity in the Engineering Work Force</td>
<td></td>
<td>6,756</td>
</tr>
<tr>
<td>Communication with Public in Crisis</td>
<td></td>
<td>1,917</td>
</tr>
<tr>
<td>USIP Roundtable</td>
<td></td>
<td>1,742</td>
</tr>
<tr>
<td>Russ Prize</td>
<td></td>
<td>1,606</td>
</tr>
<tr>
<td>Technology and Environment</td>
<td></td>
<td>1,056</td>
</tr>
<tr>
<td>Engineering Education</td>
<td></td>
<td>585</td>
</tr>
<tr>
<td>Engineering &amp; Services</td>
<td></td>
<td>513</td>
</tr>
<tr>
<td>Native Americans in Engineering</td>
<td></td>
<td>56</td>
</tr>
<tr>
<td>Information Technology</td>
<td></td>
<td>11</td>
</tr>
</tbody>
</table>

| Total                                             | $29,778,855            | $18,292,315             |
Note 4. Permanently and Temporarily Restricted Net Assets (Continued)

Permanently and temporarily restricted net assets consist of the following at December 31, 2015:

<table>
<thead>
<tr>
<th>Fund/Program</th>
<th>Permanently Restricted</th>
<th>Temporarily Restricted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gordon Prize</td>
<td>$13,438,250</td>
<td>$-</td>
</tr>
<tr>
<td>Draper Prize</td>
<td>8,000,000</td>
<td>853,377</td>
</tr>
<tr>
<td>Wm. A. Wulf Initiative for Engineering Excellence</td>
<td>3,015,322</td>
<td>1,019,580</td>
</tr>
<tr>
<td>Capital Preservation</td>
<td>2,460,701</td>
<td>524,014</td>
</tr>
<tr>
<td>Senior Scholar</td>
<td>1,000,000</td>
<td>193,245</td>
</tr>
<tr>
<td>Young Engineers</td>
<td>786,724</td>
<td>173,079</td>
</tr>
<tr>
<td>Simon Ramo Founders Award</td>
<td>500,000</td>
<td>69,799</td>
</tr>
<tr>
<td>Industry Scholar</td>
<td>353,038</td>
<td>200,537</td>
</tr>
<tr>
<td>Hollomon</td>
<td>201,200</td>
<td>444,630</td>
</tr>
<tr>
<td>Hans Reissner</td>
<td>25,622</td>
<td>15,030</td>
</tr>
<tr>
<td>Vest Opportunity Fund</td>
<td>-</td>
<td>5,213,496</td>
</tr>
<tr>
<td>Frontiers of Engineering – Grainger Foundation</td>
<td>-</td>
<td>2,690,945</td>
</tr>
<tr>
<td>Unrestricted contributions to be received in future years</td>
<td>-</td>
<td>604,692</td>
</tr>
<tr>
<td>Public Understanding</td>
<td>-</td>
<td>582,415</td>
</tr>
<tr>
<td>Global Grand Challenges</td>
<td>-</td>
<td>555,756</td>
</tr>
<tr>
<td>Engineer Girl</td>
<td>-</td>
<td>387,932</td>
</tr>
<tr>
<td>President’s Opportunity fund</td>
<td>-</td>
<td>377,165</td>
</tr>
<tr>
<td>Urban Infrastructure</td>
<td>-</td>
<td>358,386</td>
</tr>
<tr>
<td>Futures/Chevron Guiding Implementation</td>
<td>-</td>
<td>277,374</td>
</tr>
<tr>
<td>Make Value for America</td>
<td>-</td>
<td>214,903</td>
</tr>
<tr>
<td>Others</td>
<td>-</td>
<td>107,592</td>
</tr>
<tr>
<td>Engineering for U</td>
<td>-</td>
<td>82,626</td>
</tr>
<tr>
<td>President’s Discretionary</td>
<td>-</td>
<td>71,239</td>
</tr>
<tr>
<td>Noise Policy Development</td>
<td>-</td>
<td>54,123</td>
</tr>
<tr>
<td>Engineering Education</td>
<td>-</td>
<td>50,002</td>
</tr>
<tr>
<td>Russ Prize</td>
<td>-</td>
<td>9,312</td>
</tr>
<tr>
<td>Diversity in the Engineering Work Force</td>
<td>-</td>
<td>8,519</td>
</tr>
<tr>
<td>Engineering Education &amp; Research</td>
<td>-</td>
<td>7,050</td>
</tr>
<tr>
<td>Engineering Ethics Center</td>
<td>-</td>
<td>5,963</td>
</tr>
<tr>
<td>CASEE</td>
<td>-</td>
<td>4,781</td>
</tr>
<tr>
<td>Frontiers of Engineering</td>
<td>-</td>
<td>2,331</td>
</tr>
<tr>
<td>Communication with Public in Crisis</td>
<td>-</td>
<td>1,917</td>
</tr>
<tr>
<td>USIP Roundtable</td>
<td>-</td>
<td>1,729</td>
</tr>
<tr>
<td>Technology and Environment</td>
<td>-</td>
<td>1,046</td>
</tr>
<tr>
<td>Native Americans in Engineering</td>
<td>-</td>
<td>1,016</td>
</tr>
<tr>
<td>Engineering &amp; Services</td>
<td>-</td>
<td>509</td>
</tr>
<tr>
<td>PUE Messaging</td>
<td>-</td>
<td>19</td>
</tr>
<tr>
<td>Information Technology</td>
<td>-</td>
<td>11</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$29,780,857</strong></td>
<td><strong>$15,166,140</strong></td>
</tr>
</tbody>
</table>
Note 5. Endowments

Interpretation of relevant law: The Fund has interpreted the District of Columbia-enacted version of the Uniform Prudent Management of Institutional Funds Act (UPMIFA) as requiring the Fund, absent explicit donor stipulations to the contrary, to act in good faith and with the care that an ordinarily prudent person in a like position would exercise under similar circumstances in making determinations to appropriate or accumulate endowment funds, taking into account both its obligation to preserve the value of the endowment and its obligation to use the endowment to achieve the purposes for which it was donated. The Fund classifies as permanently restricted net assets: (a) the original value of gifts donated to the permanent endowment, (b) the original value of subsequent gifts to the permanent endowment and (c) accumulations to the permanent endowment made in accordance with the direction of the applicable donor gift instrument at the time the accumulation is added to the fund. The remaining portion of the donor-restricted endowment fund that is not classified in permanently restricted net assets is classified as temporarily restricted net assets until those amounts are appropriated for expenditure. In accordance with UPMIFA, the Fund considers the following factors in making a determination to appropriate or accumulate donor-restricted endowment funds:

1. The duration and preservation of the endowment fund
2. The purposes of the institution and the endowment fund
3. General economic conditions
4. The possible effect of inflation or deflation
5. The expected total return from income and the appreciation of investments
6. Other resources of the institution
7. The investment policy of the institution

Return objective and risk parameters: The Fund has adopted an investment policy for the endowment fund. This investment program is based on growing the endowment fund to provide financial stability for the Fund in perpetuity. The Fund’s ability to tolerate risk and volatility should be consistent with that of a conservative growth portfolio, with investments made in companies that demonstrate consistent growth over time. Asset allocations are developed in accordance with this long-term, conservative growth strategy.

Spending policy: The Fund will appropriate for expenditure in its annual budget a percentage of the earnings. There may be times when the Fund may opt not to take the spending rate, but rather to reinvest some or all of the annual income.

Fair value: The fair value of assets associated with donor-restricted endowment funds may fall below the level that UPMIFA requires to retain as a fund of perpetual duration. In accordance with U.S. GAAP, deficiencies of this nature that are reported in unrestricted net assets were $1,129,961 and $1,132,664 as of December 31, 2016 and 2015, respectively.
Note 5.  Endowments (Continued)

The following illustrates endowment net asset composition by type of fund at December 31, 2016:

<table>
<thead>
<tr>
<th></th>
<th>Temporarily Unrestricted</th>
<th>Temporarily Restricted</th>
<th>Permanently Unrestricted</th>
<th>Permanently Restricted</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donor-restricted endowment funds</td>
<td>(1,129,961)</td>
<td>3,828,052</td>
<td>29,778,855</td>
<td>29,778,855</td>
<td>32,476,946</td>
</tr>
<tr>
<td>Total funds</td>
<td>(1,129,961)</td>
<td>3,828,052</td>
<td>29,778,855</td>
<td>29,778,855</td>
<td>32,476,946</td>
</tr>
</tbody>
</table>

Changes in endowment net assets for the year ended December 31, 2016, are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Temporarily Unrestricted</th>
<th>Temporarily Restricted</th>
<th>Permanently Unrestricted</th>
<th>Permanently Restricted</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endowment net assets,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>beginning of year</td>
<td>(1,132,664)</td>
<td>3,493,291</td>
<td>29,780,857</td>
<td>29,780,857</td>
<td>32,141,484</td>
</tr>
<tr>
<td>Investment return</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest and dividends,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>net of fees</td>
<td></td>
<td>-</td>
<td>(352,280)</td>
<td>-</td>
<td>(352,280)</td>
</tr>
<tr>
<td>Realized gain on</td>
<td></td>
<td>-</td>
<td>263,085</td>
<td>-</td>
<td>263,085</td>
</tr>
<tr>
<td>investments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Net appreciation</td>
<td></td>
<td>2,703</td>
<td>1,695,416</td>
<td>(2,002)</td>
<td>1,696,117</td>
</tr>
<tr>
<td>Total investment return</td>
<td></td>
<td>2,703</td>
<td>1,606,221</td>
<td>(2,002)</td>
<td>1,606,922</td>
</tr>
<tr>
<td>Amounts appropriated</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>for expenditure</td>
<td></td>
<td>-</td>
<td>(1,271,460)</td>
<td>-</td>
<td>(1,271,460)</td>
</tr>
<tr>
<td>Endowment net assets,</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>end of year</td>
<td>(1,129,961)</td>
<td>3,828,052</td>
<td>29,778,855</td>
<td>29,778,855</td>
<td>32,476,946</td>
</tr>
</tbody>
</table>

The following illustrates endowment net asset composition by type of fund at December 31 2015:

<table>
<thead>
<tr>
<th></th>
<th>Temporarily Unrestricted</th>
<th>Temporarily Restricted</th>
<th>Permanently Unrestricted</th>
<th>Permanently Restricted</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Donor-restricted endowment funds</td>
<td>(1,132,664)</td>
<td>3,493,291</td>
<td>29,780,857</td>
<td>29,780,857</td>
<td>32,141,484</td>
</tr>
<tr>
<td>Total funds</td>
<td>(1,132,664)</td>
<td>3,493,291</td>
<td>29,780,857</td>
<td>29,780,857</td>
<td>32,141,484</td>
</tr>
</tbody>
</table>
Note 5. Endowments (Continued)

Changes in endowment net assets for the year ended December 31, 2015, are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Unrestricted</th>
<th>Temporarily Restricted</th>
<th>Permanently Restricted</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endowment net assets, beginning of year</td>
<td>$ (624,763)</td>
<td>$ 3,984,990</td>
<td>$ 29,767,115</td>
<td>$ 33,127,342</td>
</tr>
<tr>
<td>Investment return:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest and dividends, net of fees</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>(122,915)</td>
</tr>
<tr>
<td>Realized gain on investments</td>
<td>-</td>
<td>467,863</td>
<td>-</td>
<td>467,863</td>
</tr>
<tr>
<td>Net (depreciation) appreciation</td>
<td>(507,901)</td>
<td>447,149</td>
<td>-</td>
<td>(60,752)</td>
</tr>
<tr>
<td>Total investment return</td>
<td>(507,901)</td>
<td>792,097</td>
<td>-</td>
<td>284,196</td>
</tr>
<tr>
<td>Amounts appropriated for expenditure</td>
<td>-</td>
<td>(1,283,796)</td>
<td>-</td>
<td>(1,283,796)</td>
</tr>
<tr>
<td>Contributions received</td>
<td>-</td>
<td>-</td>
<td>13,742</td>
<td>13,742</td>
</tr>
<tr>
<td>Endowment net assets, end of year</td>
<td>$ (1,132,664)</td>
<td>$ 3,493,291</td>
<td>$ 29,780,857</td>
<td>$ 32,141,484</td>
</tr>
</tbody>
</table>

Note 6. Related Party Transactions

The National Academies Corporation: The National Academies Corporation (TNAC) is a nonprofit corporation that was incorporated in January 1986 for the purpose of constructing and maintaining a study and conference facility, the Arnold and Mabel Beckman Center, in Irvine, California, to expand and support the general scope of program activities of NAS, NAE, the National Academy of Medicine (NAM) and NRC. TNAC is organized as a tax-exempt supporting organization for NAS and the Fund. The Board of Directors and officers of TNAC include certain officers of the Fund. The Fund had no transactions with TNAC for the years ended December 31, 2016 and 2015.

National Academy of Sciences: The Fund reimburses NAS by making periodic payments based on NAE’s estimated expenditures for the year. The Fund also receives contributions through NAS. This resulted in a payable to NAS at December 31, 2016 and 2015, of $1,471,509 and $1,015,422, respectively. Payments made to NAS by the Fund for the Fund’s allocated portion of the expenditures shared jointly by NAS, NAE and NAM were $1,556,073 and $1,031,697 for the years ended December 31, 2016 and 2015, respectively.

Note 7. Commitment

An agreement was entered into for services to be provided for the Global Grand Challenges Summit 2017 for approximately $1.7 million. Installment payments were made in 2016 with a remaining amount payable by the Fund of approximately $1.6 million.
**Officers**

**Chair**  
Chairman, PFP Cybersecurity;  
Former President, General Dynamics Fort Worth Aircraft Company (later Lockheed Corporation)

Charles O. Holliday, Jr. (2016)†  
Chairman, Royal Dutch Shell PLC; Retired Chairman of the Board and CEO, E.I. du Pont de Nemours and Co.

**President**  
C. D. (Dan) Mote, Jr. (2019)  
President, National Academy of Engineering

**Vice President**  
Corale L. Brierley (2018)  
Principal, Brierley Consulting, LLC

**Home Secretary**  
Julia M. Phillips (2020)  
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