AIChE® ANNUAL REPORT 2018





June C. Wispelwey
AIChE Executive Director
and Chief Executive Officer



Christine Seymour 2018 AIChE President

In 2018, AIChE marked its 110th anniversary. This milestone provided us with an opportunity to reflect on how the Institute has grown and evolved. Over the past decade, AIChE followed a plan that enabled us to nearly triple revenue and double net assets. As described in this report, the Institute has created value for our members, the profession, and society, in line with our vision. We added the RAPID Manufacturing Institute, the AIChE Academy for education, journals dedicated to emerging fields, topical conferences, and technical communities that address social challenges.

To build upon our expansion, AIChE developed a new strategic plan with six key objectives:

- ▶ Enable the success of all members and stakeholders as the leader in advancing the chemical and related engineering professions AIChE will continue to advance the profession globally, while remaining broad, diverse, and inclusive of all constituents and stakeholders. We will explore models for engagement with our members and stakeholders, developing our talent and teams. We will strive to be the best, as exemplified by our leadership in process safety. We will continue to strengthen our financial position and act nimbly.
- ▶ Strengthen existing and create new, relevant communities AIChE will strengthen our representative constituencies (e.g., industry, academic, or government); our technical and topical-interest groups (e.g., divisions, forums, and technical entities); and our many distinct geographic and demographic communities including local sections and underrepresented groups. We will continue to support and sustain advanced manufacturing, including the RAPID Institute, and work with the Center for Chemical Process (CCPS®) to achieve its Vision 2020 objectives.
- ▶ Enhance the academic curriculum and promote lifelong learning across the profession by developing trusted content AIChE will develop and curate timely content across multiple delivery methods and venues. We will focus on workforce and professional development gaps in areas such as safety, digitalization, and advanced manufacturing serving the needs of members and industry.
- ▶ Expand the diversity and inclusivity of the profession AIChE will develop initiatives to engage and retain engineers from all backgrounds, across the profession and career continuum. We will engage those in middle and high schools, explore alternative entryways to chemical engineering (e.g., community colleges), develop and promote inclusion programs, and leverage partnerships with other organizations, universities, and companies.
- Address important societal issues by utilizing the expertise of the profession AIChE will address critical issues impacting society by leveraging the expertise of our members. We will engage with key constituencies in government, industry, and academia to respond to pertinent issues such as safety, sustainability, public health, education, manufacturing, and the environment. AIChE will also perform societal outreach, demonstrating how chemical engineers can, and do, make the world a better place for all.
- ▶ Proactively innovate and deliver products and services through transformational technologies AIChE will deliver content using interactive and collaborative platforms, with an eye toward global impact and accessibility. We will also develop and deploy new tools for educational training.

The exciting news is that AIChE made progress toward all of these objectives in 2018. Some of them are highlighted in this report. As we move beyond our 110th year, AIChE would like to thank our many dedicated volunteers, members, donors, and staff for their diligent work in helping to position the Institute to grow and address future challenges.

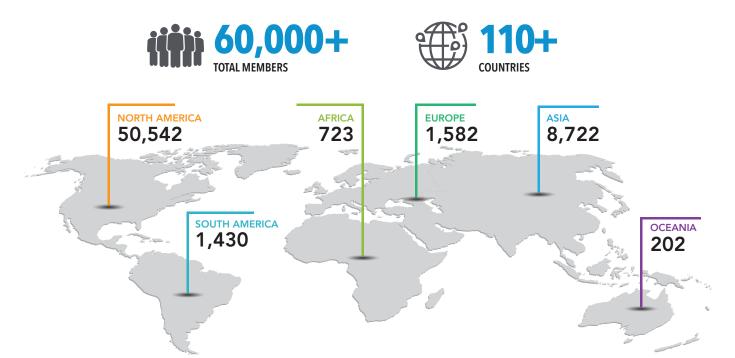
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Christin B Segmen

Membership



Professional Membership

In 2018, AIChE extended its dues waiver program (dubbed "YP1") for newly graduated first-year young professionals. The program supports early career members as they transition from student to young professional membership.





Division & Forum Membership

Out of 38,000+ professional members, nearly 10,000 are also members of a technical division or forum. See the full list at **AIChE.org/divisions-forums**.

In 2018, AIChE conducted a pilot program to develop member benefits and engagement for the Fuels and Petrochemicals Division and the Food, Pharmaceutical, and Bioengineering Division — bringing in more than 200 new AIChE members. The program will continue in 2019 with four additional technical divisions.



10,000

MEMBERS OF AT LEAST ONE
TECHNICAL DIVISION OR FORUM –
WITH MANY MEMBERS BELONGING
TO MORE THAN ONE

Local Section Membership

7,500+ professional members are involved in local sections in 40 countries.



7,500+
PROFESSIONAL MEMBERS



Technical Entities

AlChE's Technical Entities are distinct communities of chemical engineers and other professionals that address such societal grand challenges as health and nutrition, energy, environment and sustainability, water, and safety. These entities keep AlChE at the forefront of new technologies available to chemical engineers, and expand AlChE's reach to engineers and scientists who are working in fields beyond core chemical engineering competencies and who are concentrating on similar challenges.

Over the past 15 years, AlChE's Institute for Sustainability (IfS) and Society for Biological Engineering (SBE) have expanded their reach and technical content through workshops, conferences, credentialing, and educational offerings. Additional technical entities include the Center for Energy Initiatives (CEI), the International Metabolic Engineering Society (IMES), the International Society for Water Solutions (ISWS), the Center for Innovation and Entrepreneuring Excellence (CIEE), the Regenerative Engineering Society (RE Society), and the Design Institute for Emergency Relief Systems (DIERS).

AIChE.org/TEs







New in 2018

- AIChE launched the Center for Hydrogen Safety (CHS) in response to growing safety demands related to hydrogen as a fuel and for other applications. aiche.org/CHS
- ▶ In addition to events devoted to industrial water use and reuse, hurricane disaster infrastructure resilience and planning, and the UN's sustainable development goals, AIChE's technical entities established these new conferences:
 - ► Cell Therapies and Bioengineering Conference (Sept. 20–22, San Francisco, CA)
 - Regenerative Engineering Symposium (Oct. 27–28, Pittsburgh, PA)
 - ► International Conference on Microbiome Engineering (Nov. 6–8, Boston, MA)
 - Space Travel: Adaptive Research and Technologies from Biological and Chemical Engineering (STAR Tech) (Nov. 12–14, Houston, TX)
 - ► Food Innovation and Engineering (FOODIE) Conference (Dec. 2–4, Napa, CA)

AIChE.org/SBENewConf



















Student Membership







MORE THAN STUDENT CHAPTERS



ACROSS

AIChE.org/Students

New in 2018

AIChE saw continued expansion of its student programs in 2018.



- Including three in India, two in Pakistan, two in the United States, plus new chapters in Canada, China, Colombia, Greece, Egypt, Iraq, Lebanon, Oman, Peru, Spain, Sudan, and the United Arab Emirates.
- ▶ 200 students from 17 universities attended the first AIChE India Student Regional Conference hosted by Vellore Institute of Technology, complete with Chem-E-Car®, paper, and poster competitions.



Thank you to our ScaleUp program sponsors for their generous support in helping to enrich the next generation of chemical engineers.

AIChE.org/ScaleUp

PLATINUM

GOLD











New in 2018

Process Engineering Community

Process engineers play a vital role across the chemical process industries. To better serve that group, AIChE created a new online community where process engineers are able to collaborate, exchange technical information, and share professional and career development advice. The community was established with leadership and financial backing provided by Scott D. Love, a process engineer, Fellow, and former director and secretary of AIChE.

AIChE.org/processengineering



Diverse and Inclusive Communities

In 2018, AIChE continued its work to build a ChE profession where everyone is welcome and empowered to contribute to their full potential.

 The AIChE Foundation launched a five-year,
 \$5MM fundraising initiative: All for Good: Engineering for Inclusion.



- ➤ The AIChE Foundation launched an LGBTQ+ (lesbian, gay, bisexual, transgender, questioning) & Allies Endowment campaign, which is funding an online community and programming at conferences.
- Volunteers established a K-12
 Committee which will promote the best of AIChE's grassroots STEM (science, technology, engineering, and math) outreach activities.
- The Minority Affairs Committee expanded its travel grants, encouraging students from historically Black and Hispanic universities to attend AIChE conferences.
- The ChEs with Disabilities Task Force extended its programming reach with a session at the Annual Student Conference.
- The Women's Initiatives Committee marked its 20th anniversary with high-profile programs at the 2018 Annual Meeting.



▲ Participants at an LGBTQ+ & Allies executive panel. From left: Jim Fitterling (Dow Chemical/DowDuPont), Gayle Gibson (Dupont, retired), John Vasko (AlChE), Eric Reiner (Univ. of California, Berkeley), Deborah Grubbe (Safety Solutions), Tony Butterfield (Univ. of Utah), and Stephanie Farrell (Rowan Univ.).

Awards and Honors

AIChE and its many entities present scores of annual awards, honoring contributions across the spectrum of chemical engineering expertise and endeavors. The most prestigious honors are the Board of Directors' and Institute awards — presented at the Honors Ceremony during AIChE's Annual Meeting. See all the professional-level award winners for 2018 at AIChE.org/2018/awards.

The **Board of Directors' 2018 Founders Award** was presented to Julio M. Ottino of Northwestern University.

Additional major honors include a slate of lectureships. Two highlights for 2018:

The 2018 Annual Meeting culminated with the **John M. Prausnitz AIChE Institute Lecture** on October 31. Klavs F. Jensen of MIT presented the 70th annual lecture on the topic "Accelerating Development and Intensification of Chemical Processes."

At the 2018 Spring Meeting and Global Congress on Process Safety, the AIChE Government and Industry Leaders (AGILE) Award lecture, entitled "Building a Winning Culture: Harnessing the Power of Values," was delivered by Mark P. Vergnano of the Chemours Company.



Julio M. Ottino



Klavs F. Jenser



Mark P. Vergnano

Education

In 2018, AIChE Academy delivered courses, webinars, conference presentations and more to chemical engineers and their organizations worldwide.



Members and non-members alike use these resources to develop and improve their professional skills, train teams, and brush up on trending topics. AIChE Academy courses can be sorted by topical area and skill level. Many Academy products offer continuing education units (CEUs) and professional development hours (PDHs).

AIChE Academy is committed to enhancing its learning delivery methods to meet the evolving needs of our growing professional and student base.

AIChE.org/Academy





*In some cases, attendees may repeat a course

Publications

Journal Highlights

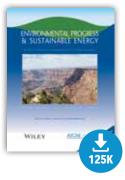
2018 was an excellent year for the five journals published by AIChE: AIChE Journal, Bioengineering & Translational Medicine, Biotechnology Progress, Environmental Progress & Sustainable Energy, and Process Safety Progress. The year also saw the announcement of a new journal: Journal of Advanced Manufacturing and Processing — set for a 2019 launch.

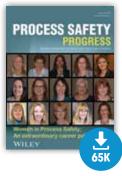
AIChE.org/journals













TOTAL PAGES PUBLISHED **MORE THAN DOWNLOADS CENTRAL & SOUTH AMERICA** 3% AUSTRALASIA **AFRICA &** 3% MIDDLE EAST 3% **NORTH** ASIA **AMERICA** 38% ALL 25% **JOURNALS** 2018 **EUROPE** 28%

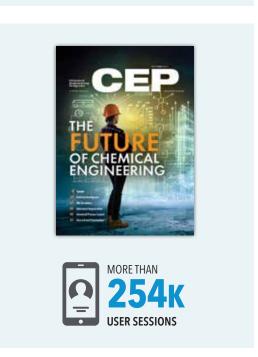
CEP Highlights

Chemical Engineering Progress (CEP) — the Institute's flagship monthly magazine — continued to publish distinctive technical articles, feature stories, product updates, and columns in 2018. User sessions for the electronic versions of *CEP* (online and via the *CEP* app) rose by 19%, to more than 254K sessions.

Among the highlights for *CEP* in 2018 were four special sections:

- Process Intensification (March, 27 pages)
- ▶ Society for Biological Engineering / Translational Medicine (May, 44 pages the largest CEP special section to date)
- Society for Biological Engineering / Epigenetics (September, 30 pages)
- ▶ Energy-Efficient Manufacturing (November, 13 pages)

AIChE.org/CEP



Events

AIChE's major conferences continue to attract chemical engineers and allied professionals working in industry and academia around the world.

2018 AIChE Spring Meeting & 14th Global Congress on Process Safety

The Spring Meeting is AIChE's key technical conference for practicing chemical engineers. Emphasizing technology in core and emerging areas, the 2018 meeting in Orlando, FL (Apr. 22–26), showcased sessions devoted to big data, clean energy, digitalization, gas utilization, refinery processing, upstream engineering, and other topics.

The Global Congress on Process Safety addresses the critical needs of process safety practitioners, with comprehensive programming devoted to loss prevention, plant safety, process safety management, and global perspectives.

AIChE.org/Spring18

New in 2018

- ▶ **Topical conference on Industry 4.0** featuring sessions devoted to smart manufacturing, process intensification, cybersecurity, and artificial intelligence.
- Leadership Development Professional Skills to Catalyze Your Career Topical Conference
- Co-located with the 2018 AIChE Spring Meeting and 14th Global Congress on Process Safety, the 8th World Congress on Particle Technology attracted more than 600 participants from 34 countries. The quadrennial conference featured more than 140 technical sessions.



2,300



800+



200+



54
COUNTRIES
REPRESENTED



81 EXHIBITING COMPANIES

2018 Annual Student Conference

More than 1,500 undergraduates from around the world traveled to Pittsburgh, PA (Oct. 26–29), for four days of education, career information, and scholarly and intercollegiate competitions. One of the program highlights was a Town Hall discussion with members of AlChE's Board of Directors, attended by more than 150 students.

AIChE.org/ASC18

Student members gather for a photo op at the Student Conference.





MORE THAN

1,500 STUDENTS



RESEARCH POSTERS
PRESENTED AT THE
UNDERGRADUATE
STUDENT POSTER
SESSION

2018 AIChE Annual Meeting

AIChE's premier educational forum for chemical engineers interested in innovation, collaboration, and professional growth, the 2018 AIChE Annual Meeting attracted more than 5,600 attendees to Pittsburgh, PA (Oct. 28 to Nov. 2). The meeting covered core and emerging areas of chemical engineering including energy, next-generation manufacturing, catalysis and reaction engineering, pharmaceutical and bioengineering, materials science, and others.

AIChE.org/Annual18

New in 2018

- Featured session: "The Future of Energy in the Region, Nation and World"
- ▶ Featured panel discussion: "What the Heck Happened? Past, Present and Future Disruptions to the Chemical/Fuels Business"
- Women's Initiatives Committee (WIC) 20th Anniversary celebration, including a day-long symposium featuring distinguished women in engineering
- ▶ **New diversity and inclusion programs** included an LGBTQ+ Inclusion workshop, panel discussion, and reception
- Programming on immunotherapy and microbes at biomedical interfaces









REPRESENTED



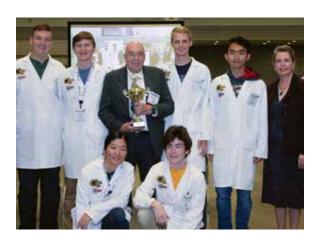
2018 Annual Student Conference Chem-E-Car Competition®

Thirty-nine teams participated in AIChE's 20th Annual Chem-E-Car Competition, which included nine teams from outside the United States. Georgia Tech's "Ramblin' Wreck" clinched the performance competition, delivering its cargo of 390 ml of water to within 1 cm of the 25.3 m target distance. The competition is sponsored by Chevron. The \$2,000 first prize is funded by the newly launched H. Scott Fogler Endowment, named for the competition's founder.

See all the winners

AIChE.org/2018ChemECarWinners

▶ Three international competitions were held at locations in China, Colombia, and India.



▲ Georgia Tech won the Chem-E-Car performance competition. The team is shown with competition founder H. Scott Fogler (standing third from left) and Cynthia Murphy-Ortega (standing right) from Chevron.

Industry Technology Groups

RAPID Manufacturing Institute

In December 2016, the U.S. Department of Energy established AIChE's RAPID Advancement in Process Intensification Deployment (RAPID) Institute. One of the Manufacturing USA institutes, RAPID's public-private collaborations focus on breakthrough process-related technologies aimed at boosting energy productivity and energy efficiency by 20% over five years. Process intensification (PI) is any technology development that leads to substantially smaller, cleaner, or more energy efficient processes.



RAPID's Education and Workforce Development initiative aims to leverage existing training resources to enable the workforce to research, develop, and operate processes that incorporate new PI and modular chemical process intensification (MCPI) technologies.



AIChE.org/RAPID

2018 **IMPACT**







POTENTIAL IMPACT







*Potential future impact of PI on U.S. process industries

New in 2018

- RAPID's 11-part webinar series on the Fundamentals of PI reaching over 600 participants
- Launched a 10-week virtual summer intern program to develop future leaders in PI and MCPI
- Created a RAPID Faculty Workshop on how to introduce PI concepts into the educational curricula
- ▶ RAPID launched its first eLearning course on the Fundamentals of PI
- Two Engineering Workforce Development project call submissions selected for 2019 course roll-out

DIPPR

The Design Institute for Physical Properties (DIPPR®) is an international membership consortium covering a broad spectrum of public and private entities working to develop and design basic and specialty chemicals to advance and sustain society. DIPPR plays a crucial role in providing the most accurate physical property data available — to reduce uncertainties, increase confidence, and support manufacturers' efforts to make products in a safe, environmentally friendly, and profitable way.



An AIChE Technology Alliance

AIChE.org/DIPPR





GLOBAL LICENSEES

CCPS

The Center for Chemical Process Safety (CCPS®) is a not-for-profit, corporate membership organization within AIChE that identifies and addresses process safety needs for facilities that handle, store, use, process or transport hazardous materials. CCPS member companies, working in project subcommittees, define and develop useful, time-tested guidelines that have practical applications within industry. CCPS educates employees of member companies through its events, courses, books, tools, online resources, and publications.





AIChE.org/CCPS

2018 Milestones:

2,800



MORE THAN

GLOBAL CONFERENCES & REGIONAL MEETINGS



- ► ORLANDO, FL (GLOBAL CONGRESS ON PROCESS SAFETY)
- HOUSTON, TX

- ARGENTINA
- BRAZIL
- CANADA
- CHINA
- FRANCE GERMANY
- JAPAN PAKISTAN INDIA |
- SAUDI ARABIA
- SINGAPORE

Conference highlights in 2018:

- ▶ The 14th Global Congress on Process Safety (Apr. 22–25, Orlando, FL) drew 900 registrants from 300 companies and 30 countries
- ▶ The 8th Latin American Conference on Process Safety (Buenos Aires, Argentina, Sept. 10-13) attracted more than 350 attendees
- The 6th CCPS China Conference on Process Safety (Sept. 27–28, Qingdao, China)
- ▶ The **3rd European Conference on** Process Safety and Big Data (Nov. 14–15, Frankfurt am Main, Germany



The CCPS Process Safety Beacon, containing valuable process safety information for plant operators, celebrated 17 years of continuous publication. Beacon is available in nearly 40 languages, with an estimated distribution of 1,000,000 readers. AIChE.org/Beacon

New in 2018



- ▶ Developed eight new interactive SAChE® (Safety & Chemical Engineering Education) modules AIChE.org/SAChE
- Advanced process safety education for students and professors in collaboration with companies and the AIChE Foundation via the Undergraduate Process Safety Learning Initiative. These efforts included CCPS Faculty Process Safety Training Workshops held at the facilities of BASF, Chemours, Chevron, Covestro, Dow, and LyondellBasell; and six student boot camps.

AIChE.org/UPSLI

Expanded focus on Process Safety Metrics

Foundation

In its fourth year, the Foundation's Doing a World of Good campaign continued to engage the chemical engineering community in advancing the profession and addressing society's needs.

Thanks to the generosity of its individual and corporate partners, the campaign has raised \$13.3MM since its launch.

DoingaWorldofGood.org





PARTICIPATION

TOTAL COMPANIES PARTICIPATING IN CAMPAIGN

SUPPORTERS SINCE

CAMPAIGN LAUNCH

GIVING

TOTAL FUNDS RAISED



BY AICHE FELLOWS



*Refers to overall Foundation donations, including the campaign

IMPACT

SAFETY & ETHICAL PRACTICE

UNIVERSITIES PARTICIPATING IN UNDERGRADUATE PROCESS SAFETY LEARNING INITIATIVE CURRICULUM

30,624

STUDENTS COMPLETED SACHE MODULES SINCE 2015

96,300+

SAFETY CERTIFICATES AWARDED TO STUDENTS SINCE 2015

FACULTY MEMBERS EDUCATED ON PROCESS SAFETY SINCE LAUNCH

ATTRACTING & RETAINING THE BEST & THE BRIGHTEST

SCHOLARSHIPS AWARDED TO UNDERREPRESENTED STUDENTS

ANNIVERSARY WOMEN'S INITIATIVES COMMITTEE

RESEARCH & INNOVATION

PEOPLE TRAINED IN PROCESS INTENSIFICATION

STUDENTS PARTICIPATED IN RAPID'S FIRST SUMMER INTERN PROGRAM

EDUCATION & CAREER DEVELOPMENT

INCREASE IN ENDOWED AWARDS AND LECTURES SINCE 2014

MEMBERS JOINED THE AICHE PROCESS ENGINEERING **ONLINE COMMUNITY**

CHANGING PERCEPTIONS

4,000+

LISTENERS TUNED IN TO THE DOING A WORLD OF GOOD RAJ AND KAMLA GUPTA PODCAST

LGBTQ+ & ALLIES ONLINE COMMUNITY MEMBERS

FOUNDERS' CIRCLE

BENEFACTORS





Ivondellbasell



UNDERWRITER



PATRONS

ADVANSIX



◆OUPONT▶

EASTMAN





2018 AICHE Annual Gala

Held Dec. 11 in New York City, the 2018 AIChE gala raised more than \$570,000 to support women's leadership programs, strengthen pre-college science, technology, engineering, and math (STEM) education for girls, and improve the



retention of women engineers at all stages in their careers. The gala honored Pfizer Inc for advancing women in the biopharmaceuticals sector, and Covestro LLC for championing women in manufacturing, corporate leadership, and STEM fields. Nance Dicciani, founder, president, and CEO of RTM Vital Signs LLC, received AIChE's Doing a World of Good Medal for her dedication to mentoring future generations of scientists and engineers.

AIChE.org/Gala2018



■ Doing a World of Good Medalist Nance Dicciani (left) was congratulated by S. Shariq Yosufzai (right), Chair of the AIChE Foundation.

Photo: Hassan Mokaddam. **HMPhotoshoots**

New in 2018

In connection with the 2018 gala, more than fifty women engineers and executives participated in an AIChE-sponsored Leadership Workshop for Rising Star **Women in Engineering**. The workshop explored workplace communication styles and examined how gender stereotypes and implicit biases can impede career progress — with attendees learning how to circumvent those roadblocks.

AIChE.org/RisingStars



AIChE's Reach

AIChE made an impact on media throughout the world via its own communication channels as well as others. AIChE had a total of 3,999 editorial mentions and 8,718 mentions on social media in 2018 (2,096 on Facebook and 6,353 on Twitter).



MENTIONS IN 2018



MENTIONS IN 2018



WEB STATS

1,906,115 USERS

1,787,749 USERS

- **6%** growth in website visitors from previous year
- ▶ **AIChE.org** attracts site visitors from Australia, Canada, China, France, Germany, India, Malaysia, Philippines, the UK, and other nations.

AIChE Engage

Engage connects AIChE members with each other and their chemical engineering communities. It serves as the Institute's directory, discussion/communication platform, and volunteer hub.

Discussion Central is the pulse of AIChE's online activity, with technical and professional development discussions happening daily. Student Central provides a discussion space for undergraduate students, and Engage is also the home for many private or subject-specific communities.

AIChE.org/Engage



2018 DISCUSSION CENTRAL STATS









2,847 TOTAL PUBLIC **MESSAGES**

Find AIChE daily on Twitter, Facebook, LinkedIn, and YouTube.



TWITTER @CHENECTED

FOLLOWERS



LINKEDIN

FOLLOWERS



FACEBOOK

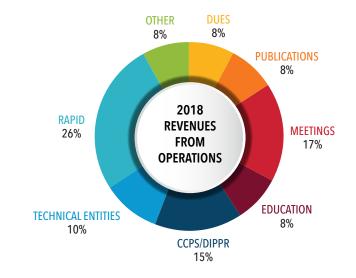
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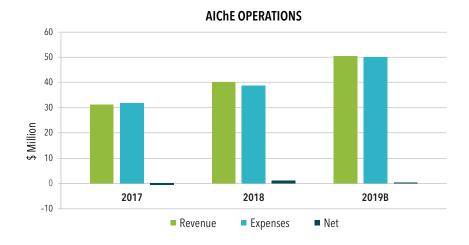


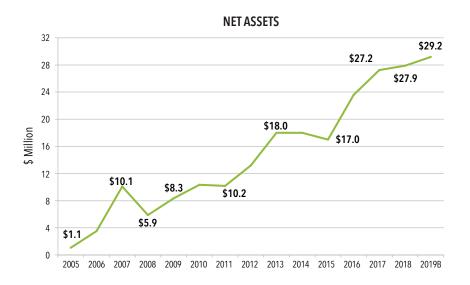
YOUTUBE

SUBSCRIBERS

Financial







Financials reflect pre-audit numbers



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