

## ExxonMobil Partners with Singapore Universities to Focus on Energy Innovation and Lower-Emissions Technologies

- Singapore Energy Center partnership the first of its kind established outside U.S.
- Collaboration with universities will support wide range of early-stage research projects
- Builds on programs established with MIT, Princeton and the University of Texas at Austin

SINGAPORE--(BUSINESS WIRE)-- <u>ExxonMobil</u> announced today that it is partnering with two Singapore universities to open a Singapore Energy Center in 2019 to focus on new discoveries and significant improvements to technologies that could improve energy production, and enhance energy efficiency and other efforts to mitigate the risk of climate change.

ExxonMobil signed a memorandum of understanding with the Nanyang Technological University and the National University of Singapore to become a founding member of the proposed center – the company's first such research and development partnership outside the United States.

"Human ingenuity and the advancement of technology are critical to expanding supplies of the fuels and products that drive economies and improve standards of living around the world," said Bruce March, president of ExxonMobil Engineering and Research Company. "With the rapidly growing demand for sustainable, low-carbon energy options in Asia Pacific markets, the importance of increasing our research and development capacity in the region to explore emerging technologies that could eventually help meet this demand has never been greater."

As a founding member, ExxonMobil will support the center's wide range of early-stage research projects. Company researchers and scientists will also collaborate with students and faculty at the two universities, as well as other industry contributors, once the center opens in early 2019.

Nanyang Technological University, Singapore and the National University of Singapore, ranked by Quacquarelli Symonds as the <u>top two universities in Asia</u> and recognized as leading research institutions, will co-lead the Singapore Energy Center. Both universities plan to invite other industry leading companies to join the center, fostering interdisciplinary research collaborations between academia and industry.

"This tripartite partnership aims to break new grounds in sustainability and clean energy as it

synergizes industry expertise with academic excellence," said Lam Khin Yong, acting provost, chief of staff and vice president for Research at Nanyang Technological University, Singapore. "This creates an industry-academic nexus, which not only accelerates technological breakthroughs, but also places our researchers and students at the forefront of translational research. Leveraging NTU's established strengths in sustainability and innovation, this partnership will also raise the bar in developing sustainable industry solutions, paving the way towards a greener future."

"NUS is pleased to partner with ExxonMobil and NTU in this joint research initiative, which combines the rich scientific capabilities of both academia and industry to solve complex, real-world challenges," said Ho Teck Hua, deputy president, Research and Technology, and Tan Chin Tuan centennial professor for the National University of Singapore. "We will contribute our expertise in basic and applied engineering research to develop innovative sustainable energy solutions that will not only boost the competitiveness of Singapore and our industries in the region, but also improve overall environmental sustainability."

The proposed Singapore Energy Center would build on ExxonMobil's collaborative efforts with academic and research institutions that are focused on developing an array of new energy technologies, improving energy efficiency and reducing greenhouse gas emissions. ExxonMobil currently works with about 80 universities in the United States, Europe and Asia to explore next-generation energy technologies.

"Our research collaboration with NTU and NUS adds another dimension to ExxonMobil's commitment in Singapore," said Gan Seow Kee, chairman and managing director of ExxonMobil Asia Pacific Pte Ltd. "We are excited about this new endeavor to enhance energy research in Singapore and we look forward to our collaboration with the two universities."

In 2014, ExxonMobil became a founding member of the MIT Energy Initiative with a five-year, \$25 million commitment to support faculty and student research efforts. This joint research program is focused on exploring new energy sources and more efficient use of conventional energy resources. Since its launch, the program has made inroads into several areas, including bio-inspired catalysts for the petrochemical industry and computational modeling to better understand the properties of iron and iron-based alloys used in pipelines. The program has also enabled ExxonMobil to expand research efforts to emerging areas like photovoltaic and nuclear power, and enhance its understanding of energy options and the interactions between them.

ExxonMobil and Princeton University have selected five research projects associated with their partnership focused on energy technologies. These projects center on solar and battery technologies, plasma physics, Arctic sea-ice modeling, and the impact of carbon dioxide absorption on the world's oceans. The announcement followed ExxonMobil's 2015 commitment to contribute \$5 million over five years to Princeton E-ffiliates Partnership, a program administered by Princeton University's Andlinger Center for Energy and the Environment that fosters research in sustainable energy and environmental solutions.

In 2016, ExxonMobil announced a \$15 million investment as a leading member of the University of Texas at Austin Energy Institute to pursue technologies to help meet growing energy demand while reducing environmental impacts and the risk of climate change. The joint research initiative is exploring transformational energy innovations including integrating

renewable energy sources into the current supply mix and advancing traditional energy sources in ways that improve efficiency and reduce impacts on water, air and climate. Research projects are covering a range of emerging technologies, and will take advantage of the university's capabilities in renewable energy, battery technologies and power grid modeling.

ExxonMobil is also a founding member of the Global Climate and Energy Project (GCEP) at Stanford University, supported by a \$100 million commitment announced in 2002. GCEP is focused on developing fundamental, game-changing scientific breakthroughs that could lead to lower greenhouse gas emissions and a less carbon-intensive global energy system.

## About ExxonMobil

ExxonMobil, the largest publicly traded international oil and gas company, uses technology and innovation to help meet the world's growing energy needs. ExxonMobil holds an industry-leading inventory of resources, is one of the largest refiners and marketers of petroleum products and its chemical company is one of the largest in the world. For more information, visit <a href="https://www.exxonmobil.com">www.exxonmobil.com</a> or follow us on Twitter <a href="https://www.twitter.com/exxonmobil">www.twitter.com/exxonmobil</a>.

<u>Cautionary Statement</u>: Statements of future events or conditions in this release are forward-looking statements. Actual future results, including the development and impact of new technologies, could vary depending on the outcome of further research and testing; the development and competitiveness of alternative technologies; the ability to scale research discoveries and pilot projects to commercial levels on a cost-effective basis; political and regulatory developments; and other factors discussed in this release and under the heading "Factors Affecting Future Results" on the Investors page of ExxonMobil's website at <a href="https://www.exxonmobil.com">www.exxonmobil.com</a>.

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