IEP AWARD WINNER

UNIVERSITY of HOUSTON

CICEP | INNOVATION AND ECONOMIC PROSPERITY UNIVERSITIES AWARDS PROGRAM

CASE STUDY 2014

Innovation through Infrastructure

Improving Learning Opportunities by Expanding Campus Resources

The Greater Houston area is recognized not only as the "energy" capital of the world but also as home to the Texas Medical Center (TMC), NASA-Johnson Space Center, a vibrant art and entertainment scene and a rapidly expanding entrepreneurial-innovation ecosystems. In response to the challenges and needs articulated by external stakeholders, UH economic engagement has expanded beyond more traditional workforce education/training to include translational research, manufacturing initiatives, delivery of clinical service and innovation/ entrepreneurship programs serving the energy, health and arts sectors of the local economy.

In creating additional infrastructure to support economic engagement while also serving the needs of faculty, staff and students on a relatively "land-locked" campus UH faced significant challenges. Beginning in 2009, UH began an ambitious expansion of **on-campus** infrastructure including four new buildings totaling nearly 700,000 square feet to house translational research facilities in energy and life sciences while providing space for new academic/clinical training programs in the UH Health Science Center.

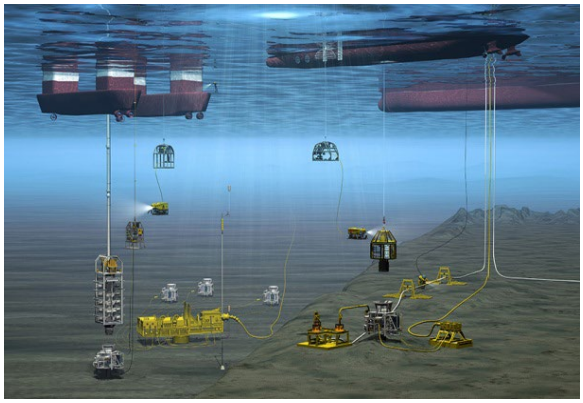
Chancellor Renu Khator welcomes the Alley Theater to Campus

UH's expanded role in the local arts sector includes upgrades to the Blaffer Art Gallery and Moores School of Music, renovation of the Wortham Theatre complex to host the 2014-2015 Alley Theatre season and a visual arts training complex at the Valenti School of Communications. However, even with this significant on-campus expansion a critical space deficit still exists.

Technology Meets Art: Mixed Media Sculpture At UH

Drawing on the experience of other urban institutions in 2008 UH made the strategic decision to expand beyond its traditional campus foot-print to accommodate additional programs and initiatives to support economic engagement. With partial funding support from energy industry partners, UH purchased 75 acres adjacent to the main campus, which was named the UH Energy Research Park (UH-ERP). The UH-ERP campus was formerly the headquarters for oil services leader Schlumberger that had remained idle for nearly fifteen years. After five years, refurbishment of existing and construction of new buildings, UH-ERP now houses academic and workforce development programs, translation research centers, UH-industry pilot manufacturing plant, several innovation and technology incubation facilities, and external companies with links to on-campus academic/research activities.

UH-ERP is an essential part of overall economic engagement efforts at UH fulfilling multiple space needs including those allowing expansion of academic program and workforce development goals. For example, UH-ERP is the home of the UH College of Engineering's Petroleum Engineering academic program housing classrooms, teaching laboratories, faculty offices and research laboratories as well as a "*state-of-the-art*" reservoir mapping training facility serving over 500 students. UH's Sub-sea Engineering program, notably the first of its type in the US and one of only five such programs in the world, is also co-located at UH-ERP. This program offers both an MS degree in Sub-sea Engineering and graduate level certificates offered as both "face-to-face" classes at UH and on-line through a UH-led international consortium of five universities located in major oil-producing regions of the world.



Sub-Sea Engineering at UH. To learn more please click here.

UH-ERP is also a critical part of the overall innovation and entrepreneurial strategy at UH providing a distinct geographical location where the "product" of campus research, innovation and entrepreneurship can be developed. UH-ERP houses four major UH research centers focused on translational and manufacturing research on UH-invented technologies, including second generation-high temperature superconductors (2G-HTS) (Applied Research Hub), clean fuel technologies (Texas Center for Clean Engines, Emissions and Fuels), composite technologies for wind turbines (National Wind Energy Center) and air-borne laser mapping (National Center for Airborne Laser Mapping).

Energy Secretary Ernest Moniz and Congressman Gene Green visit UH Energy Research Park to discuss advanced manufacturing techniques for 2G-HTS and advanced composite materials with Chancellor Renu Khator. To learn more please click here.

2G-HTS materials, originally discovered at UH, offer the potential to revolutionize electric machine technology, cost effectively modernize the national grid, and create new paradigms in a wide range of devices in medicine, transport, defense, and other sectors with enormous potential impact on the U.S. economy. The critical role of UH-ERP in enabling economic engagement on multiple levels is highlighted by the formation by UH in 2009 of a public-private industry partnership with Superpower, Inc. (a New Jersey based company). This allowed the construction of a jointly operated manufacturing facility which accounts for over 1/3 of the world's commercial

production of 2G-HTS wires and tapes while providing a "*real world*" test-bed for novel manufacturing techniques for superconducting products. In conjunction with the trade organization Coalition for the Commercial Application of Superconductors (C-CAS), UH recently sponsored an industry summit and feasibility study to explore how industrial scale production of superconducting technologies could be achieved. Based on that study, UH recently formed a non-profit entity, the Advanced Superconductor Manufacturing Institute (ASMI) located at UH-ERP, to serve as the host organization for a 25-member industrial, federal and academic consortium seeking to establish an Institute for Manufacturing Innovation focused on superconducting technologies.

Advanced "Roll-to-Roll" Manufacturing Technologies developed at the joint UH-Superpower, Inc. facility located UH-ERP enabling industrial scale production of 2G high temperature superconducting materials

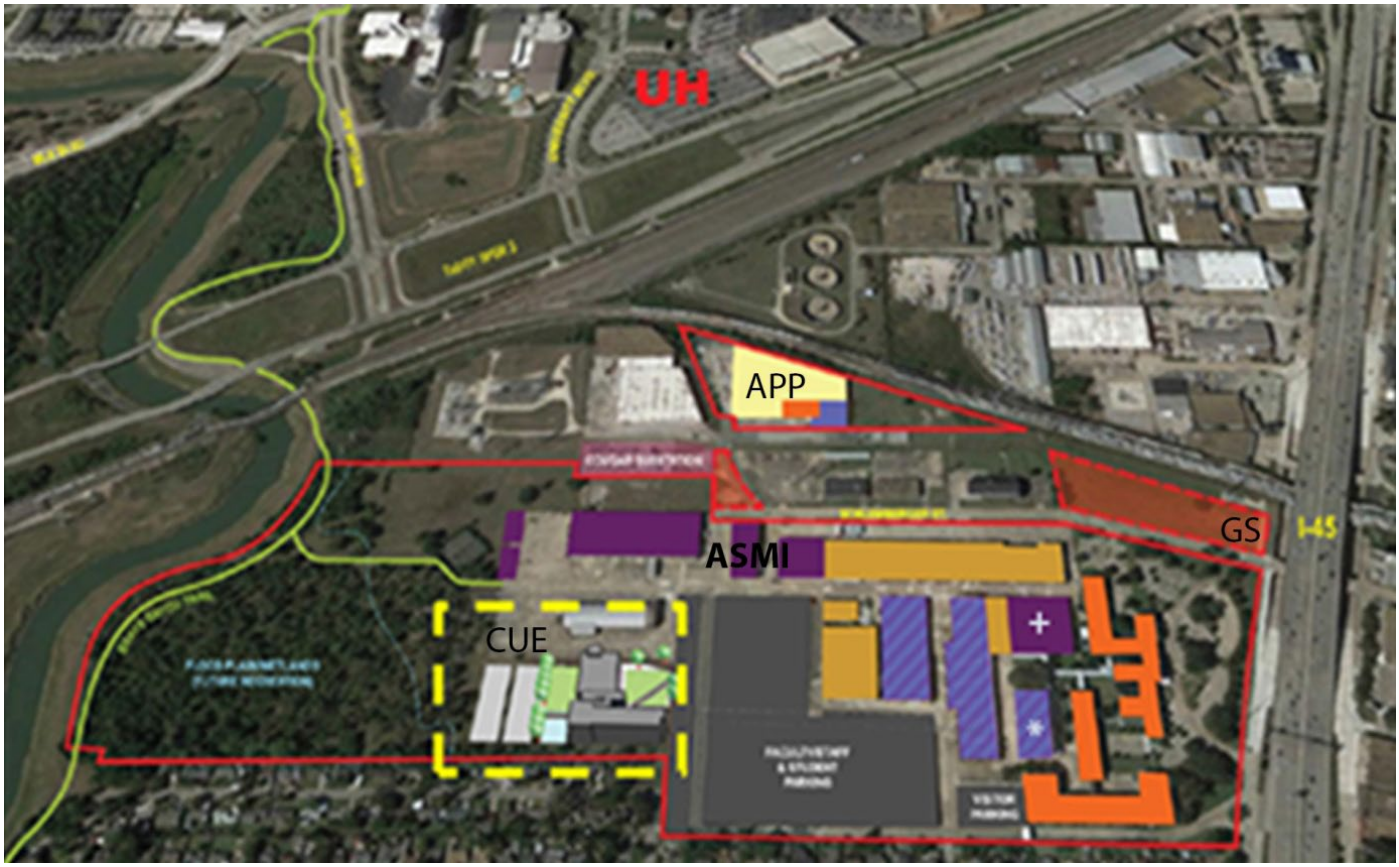
UH-ERP is also home to the UH Incubator Facility, consisting of several buildings in close proximity that provide shared facilities including office space, conference rooms, 80 seat class-room and catering facilities. The new UH Innovation Center located within the incubator facility serves as a "landing pad" for UH start-ups founded by entrepreneurial teams from on-campus activities such as the WCE program, STEM-*B* program and/or UH RED Labs. This "*state-of-the-art*" collaboration and office space has capacity to house 10 start-up companies and will host the NextHIT accelerator program organized by Houston Health Ventures (HHV). Several biomedical start-ups founded on UH technologies developed jointly with other TMC institutions will take up residence in laboratory incubator space being constructed in an adjacent building slated for completion in 2015.

*Incubator Facility at UH-ERP. A new "**state of the art**" innovation Center is located on the second floor of the building. To learn more* click here.

UH-ERP also houses Arte Público Press, the largest and most established publisher of contemporary and recovered literature by US Hispanic authors founded by UH. Supported by

NAE, the Mellon Foundation and the Kellogg Foundation, Arte Público Press is responsible for Piñata Books, which has published 25-30 books per year focused on Hispanic culture, and more recently the Latino Children's Wellness Program publishing health and nutrition information through bilingual children's books.

In summary, UH-ERP has provided a distinct geographical location for expansion of both physical infrastructure and intellectual assets allowing UH to strengthen and expand economic engagement efforts, while also serving to enrich and enhance the social and cultural fabric of the community in which UH resides.



UH Energy Research Park (UH-ERP) indicating the location of: 1) the UH Incubator (*) and adjacent laboratory facilities under renovation (+); 2) the planned TCRC/Center for University Entrepreneurship (CUE) expansion (yellow dashed box); 3) Arte Público Press (APP); 4) and the location of one of the first compressed natural gas filling stations (GS) serving the public within the confines of the City of Houston.