

Energy Transition

**An Interview with Robert B. Catell, Chairman,
Advanced Energy Research and Technology Center at Stony Brook University and
Chairman, National Offshore Wind Research and Development Consortium**

EDITORS' NOTE Robert Catell was formerly the Chairman and Chief Executive Officer of KeySpan Corporation and KeySpan Energy Delivery, the former Brooklyn Union Gas. His career with Brooklyn Union Gas started in 1958. Following National Grid's acquisition of KeySpan Corporation, Catell became Chairman of National Grid U.S. and Deputy Chairman of National Grid plc. He currently serves as Chairman of the Advanced Energy Research and Technology Center, National Offshore Wind Research and Development Consortium, and is Chairman Emeritus at Cristo Rey Brooklyn High School. Catell received both his bachelor's and master's degrees in mechanical engineering from the City College of New York and is a registered Professional Engineer.



Robert B. Catell

ORGANIZATION BRIEFS Advanced Energy Research and Technology Center (aertc.org) is located in the Research and Development Park at Stony Brook University and is a true partnership of academic institutions, research institutions, energy providers and industrial corporations. The Center's mission is innovative energy research, education and technology deployment with a focus on efficiency, conservation, renewable energy and nanotechnology applications for new and novel sources of energy.

National Offshore Wind Research and Development Consortium (nationaloffshorewind.org) is a nationally focused, not-for-profit organization that seeks to produce innovations that directly respond to the technical and supply chain barriers faced by offshore wind project developers in the U.S., build strong networks connecting technology innovators, investors, and industry, and increase U.S. content and job opportunities.

Will you discuss your career journey in the energy and utilities industry?

I started my career in the energy and utilities industry with an excellent mechanical engineering degree from the City College of New York. I later took and passed the test for a Professional Engineering License and achieved a master's degree in engineering from CCNY.

My first job in the utility space was with AT&T, a large conglomerate at that time with 450,000 employees. My job was testing long

distance circuits in the basement of their headquarters in Manhattan. Not seeing a great future there, I applied to a newspaper ad from the Brooklyn Union Gas Company. After an interview with the Chief Engineer, I was hired as a junior engineer and began my energy career in the meter repair shop. From there I was promoted to a field engineer putting pipes in the ground. I spent the next 50 years at Brooklyn Union Gas, which became KeySpan Energy, moving through many other areas of the company including sales, regulatory, gas supply and engineering.

In 1991, I was elected President and CEO of Brooklyn Union and spent the next 18 years transforming the company to an energy holding company with subsidiaries in gas exploration, pipelines, midstream, and energy services. In 1998, KeySpan acquired the gas properties of the Long Island Lighting Company and the management of the operations of the electric system for the Long Island Power Authority. In 1999, KeySpan acquired the Ravenswood generating plant from Con Edison. "Big Allis" had generating capacity of 2000MW, which we increased by 250MW, with a new combined cycle plant. In 2000, KeySpan acquired Eastern Energy in Massachusetts with its main subsidiary, Boston Gas, and became the largest gas distribution company in the Northeast.

In 2007, National Grid acquired KeySpan and I was appointed U.S. Chairman, a position I retired from in 2009.

What was the vision for creating the Advanced Energy Research and Technology Center (AERTC) at Stony Brook University and how do you define its mission?

When I retired in 2009, I collaborated with the Dean of the Engineering School of Stony Brook University, Dr. Yacov Shamash, and we created the Advanced Energy Research & Technology Center at Stony Brook University (AERTC.) We were able to raise \$50 million from the State of New York and built a 50,000 square foot Platinum LEED certified building at the Stony Brook Research Park. Its vision was to do research to develop clean energy technologies which can be commercialized. I continue in that role today.

The AERTC has a Board of individuals from the utilities, the energy industry, and academia which guide its mission and is the designated Center of Excellence for Energy in New York State. There is a very close working relationship with Brookhaven National Laboratory, a Department of Energy lab which is managed by Stony Brook through a joint venture with Battelle. A number of individuals are joint appointments both at Stony Brook and Brookhaven National Laboratory.

The Advanced Energy Center collaborates with both industry and academia in submitting proposals for research funds from both DOE



An offshore wind farm



Advanced Energy Research and Technology Center at Stony Brook University

and NYSERDA and has been successful in being awarded over \$150 million in grants since its inception.

The Center also houses a NYSERDA-funded incubator which provides financial support and business expertise to early-stage energy companies.

Will you highlight the work of the National Offshore Wind Research and Development Consortium?

The National Offshore Wind Research and Development Consortium was formed through a competitive DOE process with an initial \$20.5 million grant to do research to develop the technologies required to lower the long-term cost of offshore wind. The DOE fund was matched by a \$20.5 million grant from NYSERDA and a board was formed including all the major wind developers, the utilities, academia, and a number of Northeast states.

It has been in existence for over five years and has awarded over \$50 million to research projects through a competitive solicitation process. These projects consist of research in the construction and generation of offshore wind and cover supply chain issues and workforce development all driving toward a sustainable offshore wind industry in the U.S. providing an ongoing source of renewable energy.

The process is managed through a Research and Development Committee, chaired by the CEO of the Carbon Trust which is an entity that has a great deal of experience managing a similar activity in the United Kingdom. The state members of the Consortium have provided additional funding to account for the over \$50 million that has been awarded to date.

The NOWRDC has collaborated with both private and government entities in the offshore wind space and has coordinated a conference showcasing the research that has been accomplished.

What are your views on the current state of the energy industry?

The energy industry is going through a major transition, from a highly regulated industry to a very competitive industry focusing on new technologies, while maintaining reliability and affordability and reducing carbon emissions.

The electric industry is going through a transition from a fossil fuel-based industry to a zero carbon-based industry with a major supply being provided by renewables like offshore wind and solar. The natural gas industry is going through a transition from a methane-based industry to renewable gas and hydrogen fuel to reduce the carbon footprint. In both cases, the existing transmission/distribution systems will need to be transitioned to handle the new energy sources while maintaining reliability and affordability. This will be accomplished through the development and implementation of new technologies, through review by both the public and private sectors.

How are new technologies impacting the energy industry?

New technologies will be central and essential to the transition being faced by the energy industry. In the case of electricity, the intermittent nature of renewables will require the development of utility scale storage to fill the gaps in order to ensure reliability. This will require the development of new technologies in the storage space using non-flammable materials. In addition, the distributed nature of new electric generation will require major technology and information system advances to incorporate and manage the very disparate sources of power. Furthermore, the proliferation of remote metering will require new technologies to monitor and manage the system from a customer usage and affordability standpoint.

In the natural gas sector, the transition to renewable gas and hydrogen will require

modifications to the existing delivery system, and in some cases, a new delivery system. There will be a need to modify certain appliances, and this will require the incorporation of new technologies at the end-user.

To the extent the customers on the natural gas system are replaced by “electrification” there will be a requirement for an enhanced distribution system through the use of new technologies to avoid wholesale replacement of the existing system at significant costs.

What do you feel are the biggest challenges facing the energy industry?

The major challenges facing the energy industry will be the development and commercialization of the new technologies required, and their incorporation into the energy stream, while maintaining reliability and affordability. The new technologies will require financing by government and industry to bring them to fruition.

In addition, there will be a need for a trained and educated workforce to manage the new technologies being utilized, and there will be a need to rebuild much of the energy infrastructure in an environmentally sensitive manner.

What are you most excited about when you look to the future of energy?

The future of the energy industry, while facing many challenges, is very exciting for the opportunities it provides to improve the quality of life of individuals, while providing tremendous job opportunities for young people. There will be a universal need for individuals with computer skills, knowledge of artificial intelligence, and skilled technical workers to install and maintain the new technological advances.

The interest of young people in STEM education will be a necessary forerunner to develop the workforce of the future with a diverse background as its foundation for future growth.

What has made the energy and utilities industry so special for you and what do you tell young people about the types of careers the industry offers?

The energy industry has provided me with a very rewarding life experience, filled with a great deal of satisfaction. It furnishes the ability to provide so many residences and businesses with a reliable, affordable source of energy which ensures a great quality of life while being sensitive to the environmental impact. In addition, it has provided me with the ability to support the community through both an organization and personal involvement, and in particular to improve life in underserved communities.

The opportunity for young people to have a career in the energy industry can be even more rewarding today with an emphasis on maintaining quality of life while improving the environment. Starting with an engineering career, as I did, or as a technician, or in computer sciences, or a career in community involvement, there is a real opportunity to positively impact the environment by reducing our carbon footprint and serving underserved communities at the same time.

I would highly recommend that a young person consider a career in the energy or utility industry with the opportunity to have a very successful and rewarding experience. ●