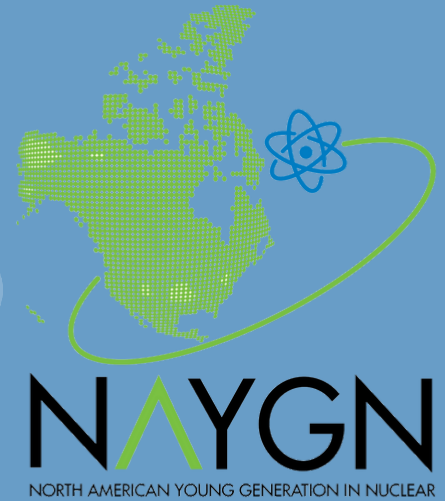


Information Booklet
Special Event:
Pittsburgh Builds the
Future of Nuclear Power
September 22, 2022



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Pittsburghers Dream and Build Big!

Pittsburgh is truly a special city – not only is it the city where my baseball idol played – Roberto Clemente - but it is a city that embraced my family like one of their own when we moved from Puerto Rico more than a decade ago. From a professional point of view, Pittsburgh gave me the resources that any dreamer like myself would love – great mentors and engineering project experiences. This applies to the nuclear supply chain in Pittsburgh. Since my early days as an engineer with RIZZO International, working with a Pittsburgh-based team of companies in the design of the first AP1000® plant, the spirit has always been to keep moving and dream big.

Throughout my career, I've come to discover the secret sauce of Pittsburgh's nuclear supply chain. More than just the high caliber of the companies, it is their history of working together, hand-in-hand, towards realizing big dreams without fear of building the impossible. This powerful combination of a history of trust among local companies, commitment to engineering excellence, and drive for big infrastructure, is what makes Pittsburgh's nuclear supply chain truly special.

For that reason, when the leadership from NAYGN invited me to support GCEAF events, I couldn't hold myself back from showcasing the amazing story of Pittsburgh's nuclear supply chain, with special emphasis on the innovations from young Pittsburghers.

Looking into the future, I envision industrialized and dynamic cities. Cities that promote equitable economic progress and opportunity for all, environmental stewardship and infrastructure that provides an abundant supply of basic needs like water and electricity - all powered by clean energy. However, given the trends in rising demand in energy consumption and the effects from climate change, the only way to power such vision for the future is to ensure nuclear energy's key role in a clean energy transition.

But I have exciting news for you - here in Pittsburgh we are not waiting for the future of nuclear, we are working hard to make it happen!



I welcome you to this event to experience how the next generation of young engineers like myself are reshaping and building the future of nuclear energy. Further, we will share our vision of how nuclear energy will power the future cities we all aspire to create.

I want to give special thanks to the leadership of NAYGN – when I approached them with the idea for this event, they immediately jumped on board and mobilized its vast network to make this happen. Special thanks also to the local Pittsburgh companies that sponsored this event - Westinghouse, RIZZO International, Curtiss Wright, Ansys and SSM Industries. Their contribution made this event a reality.

Your friend,

A handwritten signature in blue ink, reading "Eddie M. Guerra, PE". The signature is stylized and fluid.

Eddie M. Guerra, PE
Vice President Civil Infrastructure Development
RIZZO International
NAYGN Member

Event Program

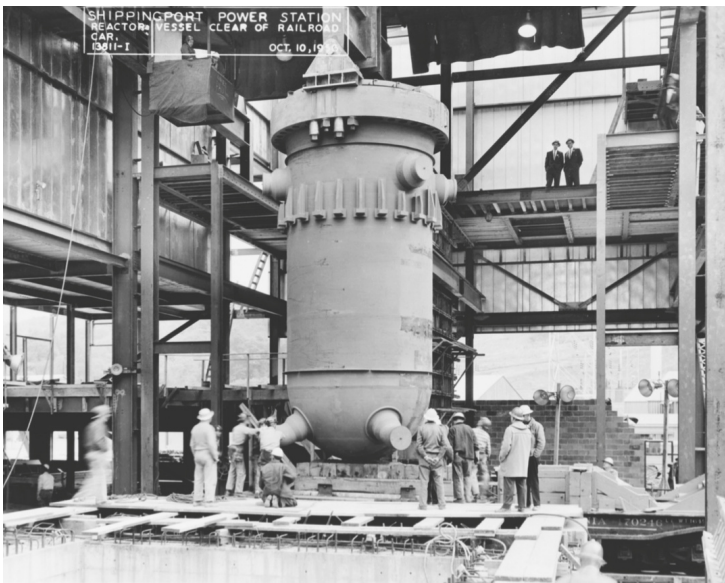
7:00 - 7:30pm	Check-in
7:30 - 7:40pm	NAYGN/Pittsburgh Intro video
7:40 - 7:45pm	Welcome message: Amanda Lang, President NAYGN
7:45 - 7:50pm	Message: Dr. Kathryn Huff, DOE NE Assistant Secretary
7:50 - 7:55pm	Message: Rich Fitzgerald, Allegheny County Executive
7:55 - 8:00pm	Message: William Magwood, OECD-NEA, Director General
8:00pm	Networking (vendor booths and center exhibitions) and Activities (photo booth, games & raffles)
10:00pm	Event ends

Pittsburgh: A history of nuclear leadership and innovation



Pittsburgh and the Western Pennsylvania (PA) region hold a special place in the history of commercial nuclear power. In 1957, Beaver County became home to the first commercial nuclear power plant in the United States. Located on the Ohio River, about 25 miles northwest of Pittsburgh, the Shippingport Atomic Power Station was a Westinghouse-designed pressurized water reactor - the world's first atomic electric power plant devoted exclusively to peacetime uses.

The Shippingport Atomic Power Station was distinctly different than modern nuclear power plants. Originally developed with the intention of advancing nuclear power technology, the plant played a major role in advancing the basic nuclear technology we use today. As such, the plant was used as both a power producer and test facility, anchoring innovation in this crucial segment of the energy mix.



Today, the Beaver Valley Nuclear Power Station provides zero-carbon electricity to more than 1.5 million homes in Western PA. The station employs approximately 850 direct highly skilled employees and contributes \$4+ million USD in annual tax revenue (Source: Energy Harbor).



This history of innovation in the Western Pennsylvania region created new jobs, companies and technologies. Today, the region benefits from the thousands of homegrown companies that have developed along with the industry. The Western Pennsylvania region has a world-unique diverse and highly specialized ecosystem of organizations that are critical to the U.S. nuclear supply chain.

Universities: The University of Pittsburgh, Carnegie Mellon University, and The Pennsylvania State University (University Park and Western PA branch campuses) offer courses in nuclear sciences and engineering as well as energy policy which provide the professionals in such high demand in the field.



Research facilities: The Bettis Atomic Power Laboratory facility, located east of Pittsburgh, is one of the largest nuclear naval facilities in the nation. Therein, the navy develops nuclear technology for defense applications, mainly for nuclear-powered submarines and aircraft carriers.

Manufacturing: Western PA houses manufacturing facilities from companies like Curtiss-Wright and SSM industries which manufacture HVAC systems, valves and pumps systems that are used in the construction of nuclear plant facilities as well as defense-related nuclear projects. The region also houses manufacturing facilities for companies like Emerson and Eaton, both companies provide highly sensitive electronics used for nuclear reactors.



Nuclear reactor design: Pittsburgh's nuclear brand is mostly attributed to the history and presence of Westinghouse, headquartered in Cranberry Township, PA. Westinghouse employs engineers and scientists that design nuclear reactors as well as fuel assemblies used across the world. Overall, Westinghouse employees approximately 19,000 employees worldwide with 80% in the U.S. Westinghouse's technology generates half of the world's nuclear power and it services about two thirds of the world's nuclear power plants (Source: Westinghouse/Nuclear Energy Institute).

Young Pittsburghers: We are not waiting for the future, we are creating it!

The young generation of Pittsburghers envision a future of modern and vibrant cities. Cities with strong industries and with the highest quality of water and electricity for its citizens - all powered by clean energy.

The challenge: to move towards this vision we need to transition from fossil fuels to clean energy while maintaining climate change-resilience and sustaining a growing energy demand. Our approach: create advanced nuclear technology and proactively advocate its benefits. We are not waiting for the future of nuclear, we are creating it.

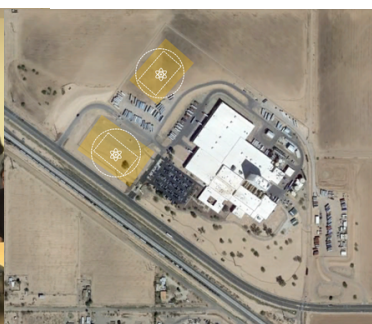


Nuclear energy will have a crucial role in powering the future we want to live in. Specifically, providing zero-carbon emission electricity for critical industries and applications such as hydrogen production, desalination, decarbonization of heavy industries, medical isotope production, among many others.

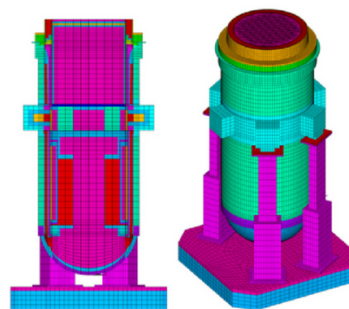
Here in Pittsburgh we are working across multiple fronts to make nuclear energy a reality and ultimately address the challenges ahead of a clean energy transition: Public engagement, Siting, Design and Manufacturing.



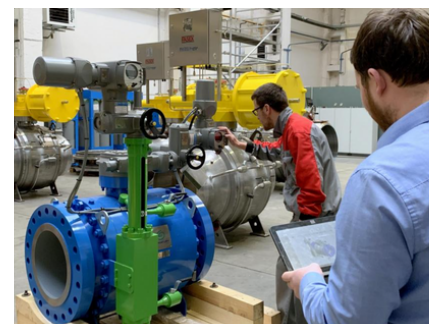
Public Engagement



Siting



Design



Manufacturing

Addressing the Challenges

Public Engagement

Early and effective engagement with communities is now more crucial than ever since future deployment scenarios point to areas that will be new to nuclear. Successful deployment in today's world will couple engineering and technological advances with effective community engagement. Today we enjoy a generation of young engineers craving for community engagement!

We are engaging with communities that are new to nuclear to inform and educate about the advances in the next generation of reactors. We believe that early engagement will create the political will to move the needle for new nuclear developments.



Siting

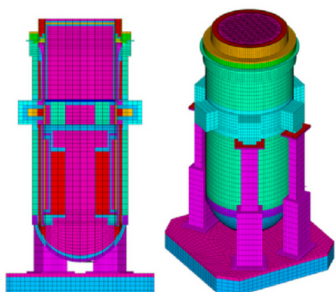
The decentralization of power generation would require for nuclear power to be sited closer to demand centers. As the future grid becomes more distributed, energy-intensive customers are demanding such proximity and flexibility. Size of reactors and their enhanced safety features will allow plant owners and electric utilities to re-think proximity criteria on siting, opening doors for deployment in new scenarios.

We are applying risk-informed applications to ensure safety of the reactor proximity.



Design

Nuclear power plants have been designed with the most strict safety and licensing criteria. The design practice is evolving to incorporate risk approaches to address the "what ifs" and those very rare events with very low likelihood of occurring. These rare events are now incorporated into the design basis for mitigations to be put in place. This will make future reactors even more resilient against a myriad of hazards – geological such as earthquakes and land slides, manmade such as missile impacts and cyberattacks, and climate-related such as heat waves, droughts and extreme floods.



Manufacturing

Pittsburgh is home to many manufacturing companies that provide equipment for the nuclear industry, including valves, pumps and electrical devices.

We are innovating in the next generation of fail-safe designs of valves and mechanical equipment which under accident conditions will shut without the need for alternate power. Similarly, electrical device companies develop the next generation solid-state electrical devices that are resistant to vibrations and external impacts.



Pittsburgh designs and manufactures

With so many companies composing the nuclear supply chain in Pittsburgh, the local ecosystem is one of the best in the world to make the future of nuclear energy a reality. The following section provides insights into a select group of local companies which are innovating in design and manufacturing within the Pittsburgh supply chain.





From the efficient AP1000® nuclear plant to the eVinci™ micro reactor for remote energy operations, Westinghouse leads the industry in developing nuclear technologies and sharing this reliable, clean, safe and economical source of energy to utilities around the world.

Our company has a 135-year history of innovation that began in Pittsburgh, when our founder, George Westinghouse, commercialized the alternating current and forever changed the way electricity was distributed. Our legacy continues in the nuclear era, which originated when we built the world's first commercial pressurized water reactor in Shippingport, Pa. More than 60 years later, approximately 50% of nuclear reactors operate around the world using Westinghouse technology. Today, George Westinghouse's namesake company continues to shape tomorrow's energy.

Using nuclear power, Westinghouse can meet the demands for renewable energy that wind and solar alone cannot, while creating the clean, sustainable, energy-abundant future the world aspires to. A typical nuclear reactor produces one gigawatt of electricity – close to the same amount generated by two coal-burning plants. By supplementing other intermittent renewable energy sources such as wind and solar with nuclear power, we can create a carbon-free power grid that's always on. And, nuclear energy prevents more than 528 million metric tons of carbon dioxide that would otherwise emit from fossil fuel combustion from entering our atmosphere. As the world strives to address the challenges of a changing climate, Westinghouse is constantly rethinking the way we deliver nuclear energy.



Shaping Tomorrow's
Energy

Corporate Headquarters

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www.westinghousenuclear.com



RIZZO International is a women-owned, award-winning engineering consulting firm. We're a fortified group of specialists dedicated to civil infrastructure design—all working to propel America and the rest of the world to a better tomorrow. Under the direction of President and CEO Rachelle Rizzo, RIZZO International continues to drive the development and design of critical infrastructure in the U.S. and around the world, ensuring a strong focus on global presence, technical excellence, and a drive for the successful execution of projects.

While offices exist in other parts of the U.S., RIZZO International's headquarters has remained in Western Pennsylvania. Most of our staff live in the Greater Pittsburgh Area and work collaboratively in our main office just thirty minutes from downtown Pittsburgh.

Our staff of geotechnical engineers, seismologists, geologists, and structural engineers provide complete project solutions for wind, solar, hydro, and nuclear energy projects. Site selection, subsurface testing, geotechnical investigation, and a broad range of hazard analyses are all areas of our expertise.

Our team of specialists has and continues to overcome obstacles unique to the most challenging and demanding infrastructure projects. We enable nuclear power projects through high-level civil engineering and earth science services, ensuring future nuclear power facilities satisfy government safety requirements and meet the highest standards of technical excellence.

As nuclear technology advances and changes, RIZZO International will deliver innovative methodologies for siting advanced nuclear reactors and SMRs—all of which will accelerate the clean energy transition.



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CURTISS - WRIGHT

Curtiss-Wright is a global integrated business that provides highly engineered products, solutions and services to Aerospace, Defense, Commercial Power, Process, and Industrial markets. Curtiss-Wright offers a comprehensive range of products and services that support the global nuclear power industry. Our advanced technologies and innovative solutions have been crucial to the industry since the first commercial atomic power station at Shippingport, PA, sustaining the safe and reliable operation of nuclear plants throughout the world. Curtiss-Wright's EMD location in Cheswick, PA, has a rich history in the nuclear industry. Founded in 1952 to support the design, manufacture, and qualification of pumps for the USS Nautilus (SSN 571), the world's first nuclear-powered submarine, EMD continues to manufacture vital function pumps, control rod drive mechanisms, and other highly engineered products for the Commercial Nuclear and Defense markets today.

Curtiss-Wright designs, manufactures, and qualifies a wide portfolio of many different solutions that are critical to the development of next generation advanced reactors as well as the successful, sustained, and safe operation of existing commercial nuclear power plants, making it an invaluable asset to the world's clean energy transition. Our advanced technologies and proactive solutions are vital to both new nuclear power plant construction and the installed operating base to support the production of clean, reliable electricity generation. In particular, Curtiss-Wright EMD's advanced primary coolant pump technology and wide array of innovative reactivity control equipment provide the technological solutions to enable the next generation of nuclear reactors driving the clean energy transition.



Company contact info:

Curtiss-Wright

EMS Division

1000 Wright Way, Cheswick, PA 15024

www.cw-ems.com



When visionary companies need to know how their world-changing ideas will perform, they close the gap between design and reality with Ansys simulation. For more than 50 years, Ansys software has enabled innovators across industries to push boundaries by using the predictive power of simulation. From sustainable transportation to advanced semiconductors, from satellite systems to life-saving medical devices, the next great leaps in human advancement will be powered by Ansys.

Founded in the Pittsburgh region and now headquartered in Canonsburg, PA, Ansys is dedicated to advancing simulation. Our nearly 6,000 employees are singularly focused, our spirit of innovation is reflected in 580+ active patents, and we are proud members of S&P and NASDAQ-100.

Nuclear reactors house extreme environments that are among the most difficult in the world for operating sensors. Yet these are exactly the environments where you need exquisite sensing capabilities — for detailed system monitoring, control, and predictive maintenance — to prevent catastrophe. Simulation is an essential part of the solution to this problem.

Physics-based simulation tools from Ansys are used in the nuclear industry to build, calibrate, validate, and deploy hybrid digital twins that provide real-time insights about a reactor through the power of virtual sensors. This is just one example of how digital twin technology is becoming increasingly important to nuclear power safety, by filling gaps in data and insight related to de-risking nuclear reactor design, licensing, and construction.

Visit us at our booth in the Allegheny Grand Ballroom and learn how the future of nuclear power can be achieved by taking a leap of certainty with Ansys software.



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Phone: 844.Go.Ansys
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www.ansys.com



Founded and headquartered in Pittsburgh, SSM Industries entered the nuclear industry nearly 60 years ago as the metal fabrication division of The Schneider Group of Companies.

Since the late 1960's we have successfully fabricated and installed HVAC systems at 9 US nuclear power plants; including the newest plants Vogtle 3 & 4 in Waynesboro, GA. In addition to ductwork and supports, SSM has fabricated complete damper scopes for 7 nuclear power plants including plants in Asia and Europe.

Having grown to become one of Western Pennsylvania's largest union mechanical contractors, SSM can support all mechanical systems in commercial nuclear facilities as well as DOE National Laboratories and the EM complex.

Under our ASME NQA-1 and 10CFR50 Appendix B Quality Assurance program we provide design, qualification, fabrication, retrofit and installation services for the global nuclear market and DOE controlled facilities. We are NUPIC audited and qualified to fabricate Safety Related HVAC equipment and to perform commercial grade dedication on components fabricated by other

Our nuclear qualified project line includes ductwork, all damper types (bubbletight, tornado, manual, fire/smoke, etc.), fans (centrifugal, pressure blowers, vaneaxial, etc.), filtration units (HEPA, charcoal, etc.) and other HVAC accessories like louvers, grilles, registers, motors.

We have fabricated and supplied safety related equipment to over 60 nuclear power plants globally. All of our design, qualification and metal fabrication takes place in Pittsburgh.

SSM is proud to support zero-carbon emission electricity by delivering a world class product. As a best value supplier, we focus on simplifying design & identifying cost saving alternatives. SSM is known worldwide for bringing in jobs safely, on time and under budget.



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About Our Speakers



Dr. Kathryn Huff

Dr. Kathryn Huff leads the Office of Nuclear Energy as the Assistant Secretary. Prior to her current role, she served as a Senior Advisor in the Office of the Secretary. Dr. Huff also led the office as the Principal Deputy Assistant Secretary for Nuclear Energy.

Before joining the Department of Energy, she was an Assistant Professor in the Department of Nuclear, Plasma, and Radiological Engineering at the University of Illinois at Urbana-Champaign where she led the Advanced Reactors and Fuel Cycles Research Group. She was also a Blue Waters Assistant Professor with the National Center for Supercomputing Applications. She was previously a Postdoctoral Fellow in both the Nuclear Science and Security Consortium and the Berkeley Institute for Data Science at the University of California - Berkeley.

She received her PhD in Nuclear Engineering from the University of Wisconsin-Madison in 2013 and her undergraduate degree in Physics from the University of Chicago. Her research focused on modeling and simulation of advanced nuclear reactors and fuel cycles.

She is an active member of the American Nuclear Society, a past Chair of the Nuclear Nonproliferation and Policy Division as well as the Fuel Cycle and Waste Management Division, and recipient of both the Young Member Excellence and Mary Jane Oestmann Professional Women's Achievement awards. Through leadership within Software Carpentry, SciPy, the Hacker Within, and the Journal of Open Source Software she also advocates for best practices in open, reproducible scientific computing.



Mr. Rich Fitzgerald

The county's top elected official, Rich Fitzgerald is in his third and final term as County Executive. Widely recognized for his work ethic, Rich is one of the county's biggest champions and is well known for bringing together people and organizations on regional issues. Under his leadership, the county has concentrated on economic development and job creation and boasts high-quality jobs and a diverse and growing economy.

During his tenure as County Executive, conservative budgeting with modest increases in line with the cost of living have been the trend. The county has benefitted from a large volume of new construction, allowing the county to support its ongoing needs with no property tax millage increase, bringing stability that businesses and organizations rely on to grow here. Under his leadership, the county's bond rating has been upgraded five times and is at its highest level since 1983.

The region has a diverse economy which includes health care, finance, education, manufacturing, arts and culture, robotics, artificial intelligence, autonomous vehicles, and clean energy.

Through unique partnerships, the county continues to build a strong workforce while investing in our infrastructure, collaborating with our municipalities, and providing opportunities for all residents. Recognizing that our quality of life make this county attractive to many, Rich has continued to build upon those attributes by investing in facility improvements, programming and events in our parks that add to the quality of life.

The county's buildings, facilities, vehicles, and parks are being upgraded and becoming greener. Under Rich's leadership, the county is continuing its investment in our future by reducing reliance on fossil fuels, including renewable resources in our mix of energy, and participating in an energy consortium. Its facilities continue to utilize LED lighting, electric cars are being added to our fleet, and recycling efforts have increased. The county is also moving towards accomplishing a net zero energy park.

Rich has recognized that not everyone is sharing in that success and so has set priorities for his third term that include focusing on workforce development, connecting residents to jobs by improving public transportation and infrastructure, and investing in expanded outreach and services through a newly-renamed Department of Equity and Inclusion. Rich is also continuing his commitment to increasing diversity through his hires, promotions, board appointments and more.

In addition to statutory board appointments and memberships, Rich is the former Chair of the Southwestern PA Commission and remains a board member of it as well as the County Executives of America and the Remake Learning Council. He is also part of the National Association of County Officials (NACo) Large Urban Caucus.

Raised in Pittsburgh's Bloomfield-Garfield neighborhood, Rich graduated from Carnegie Mellon University with a B.S. in Mechanical Engineering with a business minor. He and his wife, Cathy, a pharmacist, live in Squirrel Hill. They have eight children.



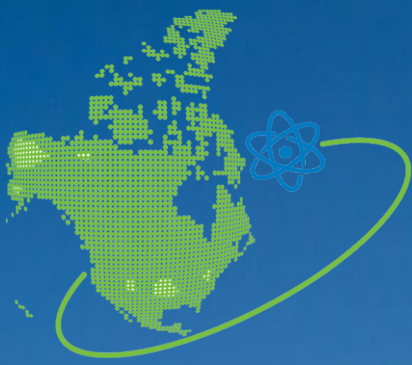
Mr. William D. Magwood IV

Mr Magwood took up his duties as Director-General of the Nuclear Energy Agency (NEA) on 1 September 2014. He has extensive experience in both the regulatory and developmental aspects of nuclear energy, including at the international level.

From 2010 to 2014, he served as one of the five Commissioners appointed by the US President and confirmed by the US Senate to the US Nuclear Regulatory Commission (NRC). While a commissioner, he advocated the importance of nuclear regulatory independence and the necessity of maintaining strong, credible and technically sound nuclear regulation in the United States and all countries that use nuclear power.

Prior to his appointment at the NRC, from 2005 to 2010 he provided independent strategic and policy advice to US and international clients on energy, environment, education, and technology policy issues. From 1998 to 2005, Mr. Magwood was Director of the US Government's civilian nuclear energy programme at the US Department of Energy (DOE). During his tenure, he established the Idaho National Laboratory; created activities that reversed the decline of US nuclear technology education; and launched important initiatives such as the Generation IV International Forum (GIF) and the US "Nuclear Power 2010," which helped restart nuclear plant construction in the United States. He was also actively involved in the work of the NEA, serving as a Steering Committee Bureau member from 1999 to 2005, including a term as Chair of the Steering Committee from 2004 to 2005.

Prior to his experience at the DOE, Mr. Magwood managed electric utility research and nuclear policy programmes at the Edison Electric Institute in Washington, DC, and was a scientist at Westinghouse Electric Corporation in Pittsburgh, Pennsylvania. Mr Magwood, a US national, holds Bachelor degrees in Physics and English from Carnegie Mellon University and a Master of Fine Arts from the University of Pittsburgh.



NAYGN

NORTH AMERICAN YOUNG GENERATION IN NUCLEAR

North American Young Generation in Nuclear (NAYGN) is a 501(c)(6) non-profit organization which provides opportunities for a young generation of nuclear enthusiasts to develop strong leadership and professional skills, create lifelong connections, engage and inform the public, and inspire today's nuclear technology professionals to meet the challenges of the 21st century.

NAYGN was established in 1999 and now consists of 100+ chapters across North America.

www.naygn.org

