

# VIRGINIA NUCLEAR ENERGY CONSORTIUM AUTHORITY

## 2018 Annual Report

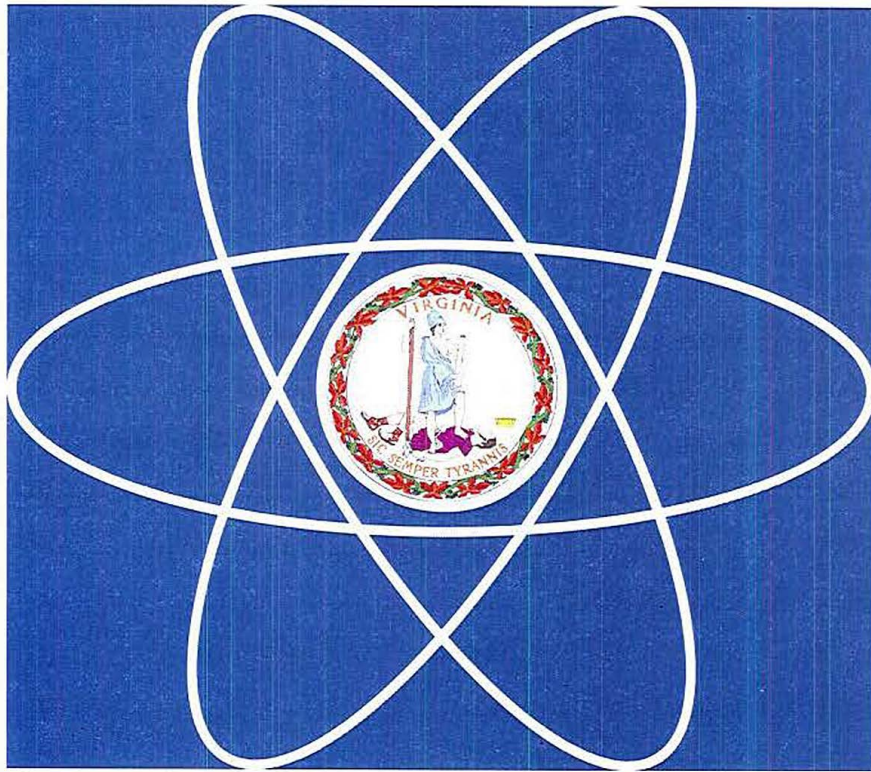
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## **EXECUTIVE SUMMARY**

### **Charge and Responsibilities**

In 2013, the General Assembly created the Virginia Nuclear Energy Consortium Authority (the Authority) as a political subdivision of the Commonwealth for the following purposes:

- Making Virginia a national and global leader in nuclear energy, science and technology;
- Serving as an interdisciplinary study, research and information resource for nuclear energy in Virginia; and
- Establishing the Virginia Nuclear Energy Consortium (the Consortium), a non-stock corporation responsible for conducting activities to achieve these goals.

This, the Authority's 2018 Annual Report, details its activities over the last year and offers strategic recommendations to advance nuclear energy in Virginia in 2019 and beyond.

### **Authority Activities in 2018**

Since its establishment and organization in 2013, the Authority has worked diligently to:

- Set goals and define the responsibilities for the Authority and the Consortium;
- Recruit members to the Consortium, securing commitments from companies and higher education institutions;
- Maintain an annual inventory of nuclear education and industry assets in Virginia, illustrating that the nuclear sector is helping drive Virginia's economy in every region, with high skilled jobs, research and technology development and generation of revenue at both the state and local level; and
- Provide technical support and policy recommendations to the development of the Virginia Energy Plan and its biennial status updates;
- Provide information and expertise to stakeholders, elected and non-elected officials, and policymakers at all levels of government;
- Establish the Authority as a convening body for information on the current state of the nuclear industry in the Commonwealth, nationwide and globally.

### **Strategic Recommendations for 2019 and Beyond**

The Authority and the Consortium have developed these recommendations to support nuclear energy generation, research, development, and deployment of advanced technologies, education and workforce development and recognize nuclear energy's vital role in the Commonwealth's diverse electricity generation portfolio. This input was provided as part of the Virginia Energy Plan process and will serve as a roadmap for future priorities.

The industry recommendations fall in three major categories:

### **Workforce**

- Virginia's nuclear industry requires a highly skilled workforce with specialized training to support existing and next-generation nuclear reactor operations. To support the requirements of this workforce, Virginia shall establish an energy workforce and education pathway, and adopt an Energy Workforce Cluster.
- The nuclear workforce is diverse in its levels of skill and training required. The Commonwealth shall expand and develop its support for university degree and community college programs.
- The Commonwealth shall also work closely with industry to ensure the availability of skilled craft labor; providing a pipeline of well-educated, skilled workers necessary to continue creating high-paying jobs for Virginians to enhance and develop the nuclear industry in the long term.
- STEM education is critical for the future workforce. Virginia shall expand and enhance STEM education, which the industry will support and assist with nuclear industry-specific content and opportunities.

### **New Technology & Innovation**

- Virginia is a global leader in nuclear energy, thanks to companies like Bechtel, BWX Technologies, Inc., Dominion, Framatome, Inc., Lightbridge Corporation, Newport News Shipbuilding, and many others, and the Commonwealth's university education and research programs. The Commonwealth shall promote these assets and capabilities through support for additional research opportunities, funding, and establishment of new technology innovation centers. State support for federal research funding requests by providing matching funds will ensure continued development by our universities.
- Virginia shall continue to advance its role as a nuclear leader by working with the industry and educators to identify and support the next generation of technologies in the Commonwealth; helping attract opportunities for investment and public-private partnerships for new, advanced technology projects.

## Promoting the Nuclear Industry and Education

- Reinforce the efforts of the Authority and the Consortium to make the Commonwealth a national and global leader in nuclear energy and serve as an interdisciplinary study, research, and information resource for the Commonwealth on nuclear energy issues.
- Regulatory certainty is essential given the long-lead decisions required for the continued safe and efficient operation of existing nuclear assets and the substantial capital commitments associated with constructing new nuclear units. Virginia's energy policy shall view nuclear assets as a 'clean' baseload source of electricity, which is responsible for significant reduction in greenhouse gas emissions.
- Virginia plays a critical role in the national security as the home to one of the two nuclear-powered shipbuilding companies in the United States. The Commonwealth shall recognize and continue to support the naval nuclear fleet and lead efforts to ensure continued funding for the current and future class of aircraft carriers and submarines at the federal level.



## INTRODUCTION

Virginia is home to tremendous nuclear energy assets. The Commonwealth's commitment to reliable, clean, low-cost nuclear energy is a significant economic and workforce driver, promoting cutting-edge research and development; employing thousands of highly skilled, well-paid workers; and expanding higher education programs for a stronger future in every corner of Virginia.

To capitalize on these existing strengths, the General Assembly in 2013 created the Virginia Nuclear Energy Consortium Authority (Authority) as a political subdivision of the Commonwealth for the purpose of establishing Virginia as a national and global leader in nuclear energy and providing an interdisciplinary study, research and information resource for nuclear energy in Virginia. The Authority was also charged with establishing the Virginia Nuclear Energy Consortium (Consortium), a non-stock corporation responsible for collaborative activities in pursuit of these goals.

As required by Code of Virginia § 67-1403, the Authority submits this 2018 annual report including a summary of its activities and strategic recommendations for the support and expansion of the nuclear energy industry in Virginia, to the Governor and the Chairmen of the House Appropriations Committee, the Senate Finance Committee and the House and Senate Commerce and Labor Committees.

Since its creation in 2013, the Authority has worked diligently to 1) Set goals and define the responsibilities for the Authority and the Consortium; 2) Recruit members to the Consortium, securing commitments from several companies and higher education institutions; 3) Produce an annual inventory of nuclear education and industry assets in Virginia; 4) Provide technical support and policy recommendations to the development of the Virginia Energy Plan and its biennial status update; 5) Provide information and expertise to stakeholders, elected and non-elected officials, and policymakers at all levels of government.

## MISSION AND PRIORITIES

The Authority's mission is to establish the Commonwealth as a national and global leader in nuclear energy; to serve as an interdisciplinary study, research, and information resource for the Commonwealth on nuclear energy, science and technology issues; and to establish the Virginia Nuclear Energy Consortium (Consortium) to facilitate private sector activities and partnerships with our higher education institution to advance these goals. The Authority evaluated and allocated responsibilities and priorities to either the Authority or the Consortium, as appropriate.

### Responsibilities

The Authority is the public body responsible for communicating with the state government, the Governor's Office, and the General Assembly; providing direction for the Consortium; and receiving reports and progress updates from the Consortium. The Consortium is a non-profit entity for responding to commercial, research and education needs and interests of the industry. It is overseen and directed by the Authority and is the entity that conducts day-to-day activities to promote and advance Virginia's nuclear industry.

The statute passed by the General Assembly enumerated various charges for the Authority and the Consortium.

The Authority has the following responsibilities:

- 1) Develop strategic recommendations to guide activity year over year.
- 2) Provide direction to the Consortium established by the Authority.
- 3) Facilitate, where possible, public information and communication about nuclear energy and related educational and job opportunities.
- 4) Develop and maintain an inventory of Nuclear Assets Justifying Position of Leadership.
  - a) Workforce
  - b) Private Entities
  - c) Research and Federal Labs
  - d) Public Universities and Educational Programs
- 5) Serve as an expert voice for Government.
  - a) Notification of Congressional Delegation of Board and Resources
  - b) An information resource for policy makers at all levels



The Authority assigned the following responsibilities to the Consortium:

- 1) Promote and facilitate agreements among public and private institutions of higher education in the Commonwealth and other research entities to carry out research projects relating to nuclear energy, science and technology;
- 2) Identify and support, in cooperation with Virginia's nuclear entities and the public and private sectors, the development of education programs related to Virginia's nuclear industry;
- 3) Develop a policy regarding any interest in intellectual property that may be acquired or developed by the Consortium;
- 4) Facilitate the collaboration of members toward the attainment of grants and the expenditure of funds;
- 5) Encourage, facilitate, and support the application, commercialization, and transfer of new nuclear technologies;
- 6) Provide advice, assistance, and services to institutions of higher education and to other persons providing services or facilities for nuclear research or graduate education; and
- 7) Foster innovative partnerships and relationships among the Commonwealth, the Commonwealth's public institutions of higher education, private companies, federal laboratories, and not-for-profit organizations to accomplish the purposes set out by this chapter.

The statute also provides for communication of nuclear-related information and research results. The Authority believes that the two organizations should share this responsibility.

## 2018 GOALS AND ACTIVITIES

The Authority identified as priorities several specific goals for their 2018 activities:

- 1) Develop a set of strategic priorities for input into the Virginia Energy Plan and to serve as a roadmap for future activity.
- 2) Expand existing coordination and identify new opportunities for collaboration and support between VNECA and VNEC.
- 3) Support efforts to retain existing nuclear assets and investments in Virginia.
  - a) Support positive regulatory climate to preserve existing assets
  - b) Support public policy initiatives to enable investments needed to preserve existing and new nuclear assets
- 4) Provide technical expertise and promote greater awareness amongst policymakers of the role nuclear energy can play in the Commonwealth's environmental and energy initiatives.
  - a) Utilize the Authority platform to bring increased information sharing opportunities about the state of the nuclear industry.

### Key Activities Conducted in 2018

#### **Virginia Energy Plan Recommendations**

Develop strategic recommendations for the nuclear industry in Virginia into 2019 and beyond. The recommendations were communicated as part of the input process for the Virginia Energy Plan. Full detail of the recommendations submitted to the Energy Plan can be seen in Appendix B.

#### **Asset Inventory**

To better understand and communicate the significant impact of the nuclear industry on Virginia's economy and workforce, the Authority maintains an inventory of nuclear assets in Virginia including private industry, utilities, educational institutions, and federal research laboratories.

The key findings from the asset survey are highlighted by the following summary. The full database of nuclear energy assets, including company employment and annual revenue figures, can be found in Appendix A.

#### **The Critical Role of Nuclear Energy in Virginia's Economy**

Virginia is a leader in clean energy production with nearly 32% of the Commonwealth's power coming from zero emission nuclear power. Operating at more than 95% capacity, nuclear generation provides reliable, inexpensive electricity to Virginia consumers and helps keep our energy costs low, making Virginia a competitive location for existing and new business. But that's only the beginning of the story of nuclear energy in Virginia's economy. A recent preliminary economic asset survey, produced by the Authority, reveals:

- The nuclear energy sector is driving Virginia's economy in every region, offering highly skilled jobs, supporting research and technology advancement and generating revenues at the state and local level.
- Dominion operates four nuclear units in Virginia: two at the North Anna Power Station in Louisa County, and two at Surry Power Station in Surry County. In addition to their substantial contribution to Virginia's energy mix, these four units collectively employ more than 2,000 professionals at an average salary of more than \$80,000 per year. These four units supply the majority of Virginia's carbon free electricity and are substantial economic drivers for their host regions.
  - In October 2018 Dominion applied to the Nuclear Regulatory Commission for a 20-year license extension for its Surry nuclear power station and told the federal regulatory agency that it plans to operate the plant until 2053.
- Virginia is home to facilities and operations of half a dozen global leaders in the nuclear energy sector. They include Framatome Inc. (Lynchburg), BWX Technologies, Inc. (Lynchburg), NovaTech (Lynchburg), Bechtel (Reston), Dominion (North Anna and Surry) and Newport News Shipbuilding (Newport News).
  - In January, two Virginia companies, Framatome Inc. and Lightbridge Corporation (Reston), launched a joint venture company named Enfission, LLC to commercialize innovative nuclear fuel.
  - In April 2018, Framatome Inc. relocated its North America headquarters to the Commonwealth.
  - BWX Technologies was selected in September 2018 by NuScale Power to begin engineering work to manufacture NuScale's small modular reactor, the first SMR to undergo design certification review by the NRC.
- Three major federal facilities located in Virginia – NASA Langley, Jefferson Lab and the Norfolk Naval Shipyard – are active in research, development and the use of nuclear technology. Between the Naval Shipyard and Newport News Shipbuilding, the nation's nuclear-powered Navy has its home in Virginia.
- Dozens of other companies, located all across Virginia, provide services, supplies and support to these major Virginia facilities. Testing services, materials and



supplies, security, engineering services and much more are provided to the industry by Virginia businesses.

- These companies operate and employ Virginians in towns as diverse as Abingdon, Alexandria, Arlington, Ashland, Chantilly, Charlottesville, Chester, Colonial Beach, Fairfax, Goochland, Hampton, Lynchburg, McLean, Mechanicsville, Roanoke and Virginia Beach to name but a few.
- Because many of these Virginia businesses have operations around the country and the world, it is difficult to determine total jobs and revenue numbers for Virginia alone, but it is likely the number exceeds 100,000 jobs across the Commonwealth and tens of billions of dollars that are tied directly to the nuclear energy sector. These generate substantial state and local tax dollars.
- Virginia Tech, Virginia Commonwealth University (VCU), the University of Virginia (UVA) and Old Dominion University have established degree programs and research relationships to train the next generation of expertise and leadership needed to support the nuclear energy sector in the U.S. and around the world.
- The universities, labs and industrial base in Virginia are involved in cutting-edge, nuclear-related research and development that will drive the Virginia nuclear economy of the future.
- Virginia's existing nuclear assets and capabilities make it a prime location for next generation reactors, and the Commonwealth and industry should work together to attract investment in those technologies.

Additionally, the Authority performed a survey of nuclear engineering degrees, programs and related fields of study at Virginia public and private universities (Appendix A). In addition to the established degree programs at Virginia Tech, VCU, UVA and Old Dominion, many institutions, such as Virginia Military Institute and Central Virginia Community College, offer numerous nuclear energy, nuclear medicine and other related programs, degrees and research.

### **2018 Authority Meeting Activities**

The Authority held four meetings in the past year (November 20, 2017; March 20, 2018; June 7, 2018; and August 15, 2018). Over the course of the year, the group considered several activities on which to focus their work efforts, including:

- Completion/submission of the 2017 Virginia Nuclear Energy Consortium Authority Annual Report to the Governor and members of the General Assembly by November 17, 2017.
- Communication with other energy authorities to determine common goals and opportunities for collaboration.

- Sponsorship of an energy summit to learn more about resources available in the Commonwealth.
- Research on the Regional Greenhouse Gas Initiative (RGGI) and how it will impact Virginia's energy mix.
- Reengagement with the U.S. Department of Energy (DOE) on the Virginia Energy Cluster as a way to promote advanced reactor technology.
- Joint request from the Authority and the Consortium to brief the new Governor and his administration on nuclear issues of importance.
- Nuclear cybersecurity issues.
- Evolution of VNECA efforts to concentrate on educating members via technical and informational presentations, or engaging in advocacy work to focus on nuclear as a vital component of Virginia's energy mix.
- Establishment of a speaker forum for future Authority meetings.
- Education of Authority members about Virginia's nuclear energy strategy and DOE's R&D strategy for universities and industries linked to the five-year Funding Opportunity Announcement(s) (FOA).
- Development of nuclear-related recommendations for the 2018 Virginia Energy Plan.

## **Presentations**

The Authority hosted training and educational sessions for its members at their 2018 meetings, as follows:

- Mandatory annual training for Authority members on the Freedom of Information Act (FOIA) and Conflict of Interest Act (COIA) rule that Authority members must follow in conducting their work activities (conducted by Senior Assistant Attorney General Paul Kugelman).
- Presentation on Accelerator Technology being tested that burns weapons-grade plutonium, converting it to non-weapons grade plutonium, thus reducing the amount of waste to be disposed (presented by Dr. Charles Bowman from ADNA Corporation, introduced by Dr. Ganapati Myneni from the Thomas Jefferson National Accelerator Facility at the Jefferson Lab).
- Update on the 2018 General Assembly legislative session, with an emphasis on a bill permitting DMME and the Virginia Solar Energy Development and Energy Storage Authority to study impacts/policies needed to expand battery storage technology in Virginia, and an overview of SB966 focused on grid transformation and security, renewable energy and energy efficiency (presented by DMME's Policy Manager Michael Skiffington).
- Presentation on the role of the Nuclear Energy Agency (NEA) in fostering international cooperation and regulations for developing nuclear energy,

developing nuclear technology policy, and conducting multinational research into challenging scientific and technological issues (presented by William Magwood IV, Director-General of the NEA).



## **AUTHORITY ADMINISTRATION**

The Virginia Nuclear Energy Consortium Authority Board elected the following slate of officers to lead the Board for 2018:

Chairman – Tom DePonty

Vice Chairman – Gary Tepper

Treasurer – Eugene Grecheck

Secretary – Bob Bailey

The full list of Authority Board Members is included in Appendix C.

Additionally, the Authority maintains a webpage on the Secretary of Commerce and Trade's website that serves as an information resource for nuclear energy in Virginia and the activities of the Authority. Authority Website -

<https://commerce.virginia.gov/initiatives/va-nuclear>

## **VIRGINIA NUCLEAR ENERGY CONSORTIUM UPDATE**

The Virginia Nuclear Energy Consortium (the Consortium) was formally launched in 2015 and now has been in operation for over three years in accordance with Section 67-1404 of the laws of the Commonwealth. The full 2018 Consortium activity report and membership roster are included as Appendix D.





**Appendix A: Virginia Nuclear Energy  
Educational Institutions and Asset Inventory**





## Nuclear in Virginia -- Educational Institutions

| Entity  | Logo  | Nature of Activity                        | Applicable Program(s)  | Leadership                      | Virginia Presence                         | Founded | Revenue/<br>Funding,<br>\$1M       | Employees                     | Website  |
|---|---|---|--|---------------------------------|---|---------|------------------------------------|-------------------------------|--|
| Virginia Polytechnic Institute and State University |  | Public University, Research Institution   | Nuclear Engineering Program (Ph.D., MS,ME)   | Dr. Timothy D. Sands, President | Blacksburg, VA, 24061-0002                | 1872    | 1,284.3 budget (FY13)              | 7,263                         | <a href="http://www.vt.edu">www.vt.edu</a>             |
| University of Virginia                              |  | Public Research University, Health System | Physics (Ph.D, MS, MA, MAPE, BS, BA), Division of Nuclear Medicine   | Teresa A. Sullivan, President   | Charlottesville, VA 22904-4203            | 1819    | 1,410 (academic division, FY13-14) | 8,311                         | <a href="http://www.virginia.edu">www.virginia.edu</a> |
| Virginia Commonwealth University                    |  | Public Research University, Health System | Nuclear Engineering Concentration (B.S), Nuclear Engineering (M.S., Ph.D.), Department of Radiation Sciences | Michael Rao, President          | 821 West Franklin St, Richmond, VA, 23284 | 1838    | 967.4 budget (FY13-14)             | 20,241 (incl. medical center) | <a href="http://www.vcu.edu">www.vcu.edu</a>           |

## Nuclear in Virginia -- Educational Institutions (cont.)



| Entity                            | Logo   | Nature of Activity             | Applicable Program(s)  | Leadership                    | Virginia Presence  | Founded | Revenue/<br>Funding,<br>\$1M | Employees                      | Website  |
|-----------------------------------|--|--------------------------------|--|-------------------------------|--|---------|------------------------------|--------------------------------|--|
| Liberty                           |   | Private University             | Mechanical Engineering (B.S.)  | Jerry Falwell, Jr.            | 1971 University Blvd, Lynchburg, VA, 24515                                   | 1971    | -                            | ~2,500 faculty                 | <a href="http://www.liberty.edu">www.liberty.edu</a> |
| Christopher Newport University    |   | Public Liberal Arts University | Applied Physics (B.S.),<br>Computational and Applied Mathematics (B.S) | Paul S. Tribble Jr, President | Christopher Newport University, 1 Avenue of the Arts, Newport News, VA 23606 | 1961    | 166.5 (total revenue FY12)   | ~400 faculty                   | <a href="http://www.cnu.edu">www.cnu.edu</a>         |
| Virginia Community College System |   | Community College Network      | Engineering (AS),<br>Engineering Technology (ASS)                      | Glenn DuBois, Chancellor      | 101 N. 14th Street, 15th Floor, Richmond, VA, 23219                          | 1966    | 1,276 (total revenue FY13)   | 11,000+ total faculty          | <a href="http://www.vccs.edu">www.vccs.edu</a>       |
| George Mason University           |  | Public University              | Systems Engineering (B.S.),<br>Applied and Engineering Physics (M.S.)  | Ángel Cabrera, President      | 4400 University Dr, Fairfax, VA 22030  | 1957    | 911 budget (FY14)            | 1,801 (includes part-time FTE) | <a href="http://www.gmu.edu">www.gmu.edu</a>         |

## Nuclear in Virginia -- Federal Research Laboratories

| <i>Entity</i>                                  | <i>Logo</i>   | <i>Nature of Activity</i>                   | <i>Leadership</i>                 | <i>Virginia Presence</i>                      | <i>Founded</i> | <i>Revenue/<br/>Funding,<br/>\$1M</i> | <i>Employees</i> | <i>Website</i>   |
|--|---|---|-----------------------------------|---|----------------|---------------------------------------|------------------|--|
| Thomas Jefferson National Accelerator Facility |  | Nuclear Physics Research                    | Hugh E. Montgomery, Director      | 12000 Jefferson Ave, Newport News, VA 23606   | 1984           | 133.9 (FY13)                          | 700              | <a href="http://www.jlab.org/">www.jlab.org/</a>   |
| US Navy (Norfolk Naval Shipyard)               |  | Manufacturing, R&D, and support for US Navy | Capt. Mark Bridenstine, Commander | Norfolk Naval Shipyard, Portsmouth, VA, 23709 | 1767           | 1,016 (FY11-12)                       |                  | <a href="http://www.navsea.navy.mil/shipyards/norfolk/">www.navsea.navy.mil/shipyards/norfolk/</a> |



## Nuclear in Virginia -- Utilities

| <i>Entity</i>                        | <i>Logo</i>   | <i>Nature of Activity</i>                          | <i>Leadership</i>                          | <i>Virginia Presence</i>  | <i>Founded</i> | <i>Revenue/<br/>Funding,<br/>\$1M</i> | <i>Employees</i>  | <i>Website</i>                                   |
|--------------------------------------|---|--|--|---|----------------|---------------------------------------|-------------------|--|
| Dominion Resources                   |  | Power Generation,<br>Transmission,<br>Distribution | Thomas F.<br>Farrell II                    | One James River Plaza (●JRP),<br>701 East Cary Street, Richmond,<br>VA, 23219 | 1983           | 13,120<br>(FY13)                      | 14,500<br>(total) | <a href="http://www.dom.com">www.dom.com</a>     |
| Old Dominion Electric<br>Cooperative |  | Electricity Provider                               | Jackson<br>Reasor,<br>President<br>and CEO | 4201 Dominion Blvd, Glen Allen,<br>VA, 23060                                  | 1948           | 842.1<br>(FY13)                       | ~100              | <a href="http://www.odec.com/">www.odec.com/</a> |

## Nuclear in Virginia -- Private Industry







| Entity                             | Logo  | Nature of Activity                                     | Leadership                         | Virginia Presence                             | Founded | Revenue/<br>Funding,<br>\$1M | Employees                             | Website  |
|------------------------------------|---|--|------------------------------------|---|---------|------------------------------|---------------------------------------|--|
| Huntington Ingalls                 |    | Shipbuilding, Nuclear Operations, Engineering Services | Mike Petters, President and CEO    | 4101 Washington Ave., Newport News, VA, 23607 | 2008    | 6,800 (FY13)                 | 39,000+ (total)                       | <a href="http://www.huntingtoningalls.com">www.huntingtoningalls.com</a>   |
| Framatome Inc                      |    | Nuclear Fuel Cycle Support                             | Gary Mignogna, CEO                 | North American Headquarters, Lynchburg VA     | 2001    | ~1,000                       | ~2,500 (North America)                | <a href="http://www.framatome.com">www.framatome.com</a>   |
| Mitsubishi Nuclear Energy Systems  |    | Vendor, Nuclear Services                               | Makoto Toyama, President and CEO   | 1001 19th St N #2000, Arlington, VA           | 2006    |                              | 200+ (site-specific)                  | <a href="http://www.mnes-us.com/">www.mnes-us.com/</a>   |
| B&W Technical Services Group, Inc. |   | Site Operations, Technical Services                    | Charles G. Spencer, COO            | 2016 Mount Athos Road, Lynchburg, VA, 24504   |         |                              | 8,400 (incl. Pantex/Y-12 contractors) | <a href="http://www.babcock.com/about/Pages/Babcock-Wilcox-Technical-Services-Group.aspx">www.babcock.com/about/Pages/Babcock-Wilcox-Technical-Services-Group.aspx</a> |
| B&W Nuclear Operations Group, Inc. |  | Design and Manufacturing                               | Peyton S. Baker, President and COO | 2017 Mount Athos Road, Lynchburg, VA, 24504   |         |                              | 2,150                                 | <a href="http://www.babcock.com/about/Pages/NOG-Lynchburg.aspx">www.babcock.com/about/Pages/NOG-Lynchburg.aspx</a>   |
| Bechtel                            |  | Engineering, Construction                              | Riley Bechtel, Chairman            | 12011 Sunset Hills Rd, Reston, VA, 20190      | 1898    | 37,900 (FY12)                | 53,000+ (total)                       | <a href="http://www.bechtel.com/">www.bechtel.com/</a>   |

## Nuclear in Virginia -- Private Industry (cont.)

| Entity                     | Logo  | Nature of Activity                    | Leadership                           | Virginia Presence                                      | Founded | Revenue/<br>Funding,<br>\$1M | Employees                 | Website  |
|----------------------------|---|---------------------------------------|--------------------------------------|--|---------|------------------------------|---------------------------|--|
| Excel Services Corporation |    | Consulting, Technical Services        | Donald R. Hoffman, President and CEO | 11921 Rockville Pike, Suite 100, Rockville, MD, 20852  | 1985    |                              |                           | <a href="http://www.excelservices.com/">www.excelservices.com/</a>     |
| Aerofin                    |    | Heat transfer applications supplier   | David Corell, President              | 4621 Murry Place, P.O. Box 10819, Lynchburg, VA, 24502 | 1923    |                              |                           | <a href="http://www.aerofin.com">www.aerofin.com</a>                   |
| F.N. Anderson & Associates |   | Engineering Analysis and Services     | Floyd N. Anderson, President         | 87 Braxton Lane, Forest, VA, 24551                     | 1993    |                              | ~4                        | <a href="http://www.fnaai.com">www.fnaai.com</a>                       |
| Ares Security Corporation  |    | Security Consulting and Applications  | Ben Eazzetta, President              | 8045 Leesburg Pike, Suite 400, Tysons Corner VA 22182  | 2012    |                              | 850+ (incl. ARES Holding) | <a href="http://www.aressecuritycorp.com">www.aressecuritycorp.com</a> |
| Bauer Compressors, Inc.    |  | Compressors and High Pressure Systems | Tony Bayat, President                | 1328 Azalea Garden Rd, Norfolk, VA 23502               | 1946    |                              |                           | <a href="http://www.bauercomp.com">www.bauercomp.com</a>               |
| Chemetrics, Inc.           |  | Water Testing                         | Bruce H. Rampy, President            | 4295 Catlett Rd, Midland, VA, 22728                    | 1969    |                              | 55+                       | <a href="http://www.chemetrics.com">www.chemetrics.com</a>             |



## Nuclear in Virginia -- Private Industry (cont.)

| Entity                                       | Logo  | Nature of Activity                             | Leadership  | Virginia Presence                                       | Founded | Revenue/<br>Funding,<br>\$1M | Employees           | Website  |
|--|---|--|---|---|---------|------------------------------|---------------------|--|
| Coastal Network of Virginia, LLC             |   | Radiation Safety                               |   | 600 Plantation Ct,<br>Charlottesville, VA,<br>22903     | 1987    |                              | 5                   | <a href="http://www.nuclearsupply.com">www.nuclearsupply.com</a>           |
| Communications-Applied Technology            |    | Communication Systems Design and Manufacturing | Seth Leyman,<br>President and Founder               | 11250-14 Roger Bacon Drive, Reston, VA, 20190           | 1982    |                              | ~15                 | <a href="http://www.c-at.com">www.c-at.com</a>                             |
| Donley Technology                            |    | Environmental Health and Safety Information    | Elizabeth M. Donley, Founder and Executive Director | P.O. Box 152,<br>Colonial Beach, VA,<br>22443           | 1988    |                              |                     | <a href="http://www.donleytech.com">www.donleytech.com</a>                 |
| Electric Motor and Contracting Company, Inc. |    | Motor repair, decontamination, refurbishment   | James L. King, President CEO                        | 3703 Cook Blvd,<br>Chesapeake, VA,<br>23323             | 1960    | ~30                          | ~200                | <a href="http://www.emc-co.com">www.emc-co.com</a>                         |
| Interdevelopment, Inc.                       |    | Management Consulting and Business Research    | Margareta Luddemann,<br>President and CEO           | P.O. Box 15249,<br>Arlington, VA, 22215                 | 1967    | <1                           | ~10                 | <a href="http://www.interdevelopment.com">www.interdevelopment.com</a>     |
| KSB, Inc.                                    |  | Pumps, valves, and systems supplier            | Ed Harvie,<br>President (KSB USA)                   | 4415 Sarellen Rd,<br>Henrico, VA, 23231                 |         | ~3,125                       | 16,500+<br>(global) | <a href="http://www.ksb.com">www.ksb.com</a>                               |
| Mega-Tech Services, LLC                      |  | Tooling, Engineering Consulting                | Deanna R. Bowen, President                          | 11118 Manor View Drive,<br>Mechanicsville, VA,<br>23116 |         |                              |                     | <a href="http://www.mecha-techservices.biz">www.mecha-techservices.biz</a> |

## Nuclear in Virginia -- Private Industry (cont.)

| Entity                     | Logo  | Nature of Activity                     | Leadership                                   | Virginia Presence  | Founded              | Revenue/<br>Funding,<br>\$1M | Employees                | Website  |
|----------------------------|---|--|--|--|----------------------|------------------------------|--------------------------|--|
| MPR Associates, Inc.       |    | Engineering and Management Services    | Bob Coward, Principle Officer                | 320 King St, Alexandria, VA, 22314   | 1964                 |                              | ~200                     | <a href="http://www.mpr.com">www.mpr.com</a>                                 |
| Proxtronic, Dosimetry LLC  |    | Dosimetry Services                     | W. Guy Davis, President and CEO              | 85 S. Bragg St, Suite 400, Alexandria, VA, 22312   | 1990                 |                              |                          | <a href="http://www.proxtronicdosimetry.com">www.proxtronicdosimetry.com</a> |
| Radium, Inc.               |    | Steam Generator Services, Products     | Cam Abernethy, President and Owner           | 463 Dinwiddie Ave, Waynesboro, VA, 22980   | 2004                 |                              | ~10                      | <a href="http://www.radiuminc.com">www.radiuminc.com</a>                     |
| River Technologies, LLC    |    | Radiological Decontamination           | Robert Kozma, COO                            | 2107 Graves Mill Rd, Suite A, Forest, VA, 24551  | 2003                 |                              | ~10                      | <a href="http://www.rivertechnologies.biz">www.rivertechnologies.biz</a>     |
| Robatel Technologies, LLC  |    | Engineering Services                   | Teo Grochowski, CEO                          | 5115 Bernard Drive, Suite 304, Roanoke, VA, 24018  | 2009 (US subsidiary) |                              | 115 (Robatel Industries) | <a href="http://www.robateltech.com">www.robateltech.com</a>                 |
| TeamBest                   |   | Radiation Protection, Cancer Treatment | Krishnan Suthanthiran, President and Founder | 7643 Fullerton Rd, Springfield, VA 22153   | 1977                 |                              |                          | <a href="http://www.teambest.com">www.teambest.com</a>                       |
| Applied Technical Services |  | Nondestructive Testing                 | Jim Hills, President                         | 2312 Commerce Center Drive, Suite A, Rockville, VA 23146; 5566 General Washington Drive, Alexandria, VA, 22312; 1325-B Cavalier Blvd, Chesapeake, VA | 1967                 |                              | ~600                     | <a href="http://www.atslab.com">www.atslab.com</a>                           |

## Nuclear in Virginia -- Private Industry (cont.)








| Entity                             | Logo  | Nature of Activity                         | Leadership   | Virginia Presence  | Founded | Revenue/<br>Funding, \$1M       | Employees              | Website  |
|------------------------------------|---|--|--|--|---------|---------------------------------|------------------------|--|
| Fuji Electric America              |    | Power Electronics Technology               | Michihiro Kitazawa, President and Chairman (Fuji Global) | 5115 Bernard Drive, Suite 102, Roanoke, VA, 24018 (Drives and Inverters Dept.) | 1923    | 7,315 (consolidated sales FY12) | ~25,000                | <a href="http://www.fujielectric.com">www.fujielectric.com</a>       |
| JGW Group                          |    | Business Development, Training, Consulting | Andrew Wilson, President                                 | 1801 Robert Fulton Drive, Suite 400, Reston, VA, 20191                         | 1980    |                                 | 10 (+int'l associates) | <a href="http://www.jgwgroup.com">www.jgwgroup.com</a>               |
| Honeywell (Uvex Safety Frames)     |    | Safety Products, Eye + Face Protection     | David M. Cote, Chairman and CEO                          | 690 HP Way, Chester, VA, 23836   | 1906    | 37,665 (FY12)                   | ~132,000 (worldwide)   | <a href="http://www.honeywellsafety.com">www.honeywellsafety.com</a> |
| Action Technology, Inc.            |    | Staffing, Consulting, Training             | Bonnie Lonon, President and CEO                          | 3121 E. Boundary Ct., Midlothian, VA, 23112                                    | 1982    | 24                              | ~250                   | <a href="http://www.action-tech.com">www.action-tech.com</a>         |
| American Operations Corp.          |    | Analysis, Consultancy, Specialist Services | L. Frank 'Smokey' Field, Chairman and CEO                | 14030 Thunderbolt Place, Suite 700, Chantilly, VA, 20151                       | 1983    |                                 | ~200                   | <a href="http://www.aocwins.com">www.aocwins.com</a>                 |
| Beta Analytics International, Inc. |   | Access Control, Security, Fire Protection  | Darden Hood, President                                   | 2677 Prosperity Avenue, Suite 400, Fairfax, VA, 22031                          | 1979    |                                 | ~300                   | <a href="http://www.radiocarbon.com">www.radiocarbon.com</a>         |
| Boh Environmental, LLC             |  | Container Systems                          | Eric Hediger, President                                  | 14520 Avion Pkwy, Chantilly, VA 20151  | 1998    |                                 | ~15                    | <a href="http://www.bohfupsystems.com">www.bohfupsystems.com</a>     |

## Nuclear in Virginia -- Private Industry (cont.)

| Entity                     | Logo  | Nature of Activity               | Leadership                                    | Virginia Presence   | Founded | Revenue/<br>Funding,<br>\$1M | Employees | Website  |
|----------------------------|---|----------------------------------|---|---|---------|------------------------------|-----------|--|
| Caliper Inc.               |    | Staffing and Recruitment         | Robert Y. Green, Jr, President and CEO        | 512 Central Drive, Virginia Beach, VA, 23454; 4907 Fitzhugh Ave, Suite 201, Richmond, VA, 23230; 11325 Random Hills Rd, Suite 360, Fairfax, VA, 22030 | 1984    |                              |           | <a href="http://www.caliper.net">www.caliper.net</a>     |
| CraneTech Solutions<br>CTS |    | Cranes & Lifting Equipment       | Frank Hegan, President                        | 2030 Ponderosa St, Portsmouth, VA, 23701  | 1958    |                              |           | <a href="http://www.ct-sol.com">www.ct-sol.com</a>       |
| Abbitz Measurement, Inc.   |    | Pressure Systems Instrumentation | Tammy Nicoli, President                       | 1619D Diamond Springs Rd, Virginia Beach, VA, 23455   | 2009    |                              | ~10-20    | <a href="http://www.abbitz.com">www.abbitz.com</a>       |
| Dominion Engineering, Inc. |    | Technical Consulting Services    | Robert D. Varrin, JR, Ph.D, Principle Officer | 12100 Sunrise Valley Drive, Suite 220, Reston, VA, 20191  | 1980    |                              | <50       | <a href="http://www.domeng.com">www.domeng.com</a>       |
| Invensys Eurotherm         |  | I&C sales, support, repair       | Mike Caliel, President and CEO (Invensys)     | 44621 Guilford Drive, Ashburn, Virginia, 20147  | 1952    |                              |           | <a href="http://www.eurotherm.com">www.eurotherm.com</a> |
| FlowsERVE                  |  | Pumps, Valves, Tubing            | Mark A. Blinn, President and CEO              | 5114 Woodall Rd, Lynchburg, VA 24502  | 1997    | 4,954 (FY13)                 | 15,000+   | <a href="http://www.flowserve.com">www.flowserve.com</a> |
| Lightbridge                |  | Fuel Cycle Consulting and Design | Seth Grae, President and CEO                  | 1600 Tysons Blvd, Suite 550, Tysons Corner, VA, 22102   | 1992    |                              |           | <a href="http://www.ltbridge.com">www.ltbridge.com</a>   |



## Nuclear in Virginia -- Private Industry (cont.)

| Entity                             | Logo  | Nature of Activity                  | Leadership                         | Virginia Presence  | Founded | Revenue/<br>Funding,<br>\$1M | Employees | Website  |
|------------------------------------|---|-------------------------------------|------------------------------------|--|---------|------------------------------|-----------|--|
| Thermal Spray Solutions            |   | Thermal Spray Coatings              |                                    | 1105 International Plaza, Suite B, Chesapeake, VA, 23323         |         |                              |           |  |
| ABZ, Inc.                          |    | Fluid Flow Consulting               | Ed Abbott, President               | 4451 Brookfield Corporate Drive, Suite 101, Chantilly, VA, 20151 | 1986    |                              | ~10       | <a href="http://www.abzinc.com">www.abzinc.com</a>                 |
| Advex Corporation                  |    | Machining and Fabrication           | George Hill Jr, President          | 121 Floyd Thompson Drive, Hampton, VA, 23666                     | 1969    |                              | 180       |  |
| Affordable Fastener Supply Company |    | Hardware Supply                     | Carl Grunthaler, President and CEO | 312-G Old York Hampton Highway, Yorktown, Virginia, 23692        | 2005    |                              |           | <a href="http://www.affordablefast.com">www.affordablefast.com</a> |
| Air Systems, Inc.                  |    | Filtration, Air Systems             | David Angelico, President          | 821 Juniper Crescent, Chesapeake, VA, 23320                      |         |                              | 42        | <a href="http://www.airsystems.cc">www.airsystems.cc</a>           |
| Axiom Quality Assurance            |   | Consulting and Analysis             |                                    | P.O. Box 328, McLean, VA, 22101                                  |         |                              |           | <a href="http://www.axiomqa.com">www.axiomqa.com</a>               |
| CBG, LLC                           |  | Metal Disintegration & Stud Removal | Ken Guthrie, Owner                 | 4013 Seaboard Court, Suite A-3, Portsmouth, VA, 23701            | 2002    |                              |           | <a href="http://www.cbgmaintenance.com">www.cbgmaintenance.com</a> |
| CMC Technical                      |  | Staffing and Recruitment            |                                    | 502 Viking Drive, #102, Virginia Beach, VA, 23452                | 1978    |                              |           | <a href="http://www.cmc-jobs.com">www.cmc-jobs.com</a>             |





## Nuclear in Virginia -- Private Industry (cont.)

| Entity                                     | Logo  | Nature of Activity                         | Leadership                                   | Virginia Presence                                   | Founded           | Revenue/<br>Funding,<br>\$1M | Employees           | Website  |
|--|---|--|--|---|-------------------|------------------------------|---------------------|--|
| Eddy Current Technology, Inc.              |    | Eddy Current Testing                       |  | 201A Horace Ave, Virginia Beach, VA, 23462          |                   |                              |                     | <a href="http://www.eddy-current.com">www.eddy-current.com</a>                 |
| Finite Matters, Ltd.                       |    | Management Solutions, Consulting, Software | Anthony Luca, Owner                          | 3064 River Road West, Suite B, Goochland, VA, 23063 | 1991              |                              | <10                 | <a href="http://www.fml.com">www.fml.com</a>                                   |
| ICF International, Inc.                    |    | IT Services, Research, and Consulting      | Sudhakar Kesavan, Chairman and CEO           | 9300 Lee Hwy, Fairfax, VA, 22031                    | 1969              | 949 (FY13)                   | 4,500+              | <a href="http://www.ifci.com">www.ifci.com</a>                                 |
| ITC Learning                               |    | Industrial Skills Training                 | Gloria MacCorkindale, Vice President         | 13515 Dulles Technology Drive, Herndon, VA, 22171   |                   | ~3                           | ~40                 | <a href="http://www.itclearning.com">www.itclearning.com</a>                   |
| Limitorque Corp. (subsidiary of Flowserve) |    | Actuators                                  | Mark A. Blinn, President and CEO (Flowserve) | 5114 Woodall Rd, Lynchburg, VA 24502                | 1929 (Limitorque) | 4,954 (FY13) (Flowserve)     | 15,000+ (Flowserve) | <a href="http://www.flowserve.com/Limitorque">www.flowserve.com/Limitorque</a> |
| Nuclear Energy Support International, LLC  |  | Staffing and Recruitment                   | Mary Ann Snyder, Owner                       | 209 58th Street, Suite B, Virginia Beach, VA, 23451 | 1983              |                              |                     | <a href="http://www.nesillc.com">www.nesillc.com</a>                           |
| OFI Custom Metal Fabrication               |  | Safety Related Fabrication                 | Jim Clifford, President                      | 10412 Design Road, Ashland, VA, 23005               | 1982              |                              |                     | <a href="http://www.osfi.com">www.osfi.com</a>                                 |

## Nuclear in Virginia -- Private Industry (cont.)

| Entity                              | Logo  | Nature of Activity                          | Leadership                            | Virginia Presence   | Founded | Revenue/<br>Funding,<br>\$1M | Employees     | Website  |
|-------------------------------------|---|---|---------------------------------------|---|---------|------------------------------|---------------|--|
| AMEC                                |    | Engineering, Project Management, Consulting | Samir Brikho, CEO                     | 14424 Albemarle Point Place, Suite 115, Chantilly, VA, 20151; 1070 West Main St, Suite 5, Abingdon, VA, 24210; 2028 Dabney Rd, Suite E-18, Richmond, VA, 23230; One Colubums Center, Suite 600, Virginia Beach, VA, 23642 | 1982    | 6,735 (FY13)                 | ~27,000       | <a href="http://www.amec.com">www.amec.com</a>   |
| DynCorp International               |    | Security Training and Consulting            | Steven F. Gaffney, Chairman and CEO   | 1700 Old Meadow Road, McLean, VA 22102  | 1946    | ~3,000 (FY10)                | 16,800 (2009) | <a href="http://www.intellpros.com">www.intellpros.com</a>                                 |
| Radiological Training Services, LLC |    | Radiological Training                       | John Duley, Producer                  | 6538 Koziara Drive Burke, VA, 22015   | 1999    |                              | <5            | <a href="http://www.radiationvideos.com/about.html">www.radiationvideos.com/about.html</a> |
| SC&A, Inc.                          |   | Environmental and Energy Consulting         | Gregory P. Beronja, President and CEO | 1608 Spring Hill Road, Vienna, VA, 22182  | 1981    |                              |               | <a href="http://www.scainc.com">www.scainc.com</a>   |
| Seaward Marine Services             |  | Cleaning and Inspection                     | Edward A. Wardwell, Founder           | 5409 Beamon Road Norfolk, VA 23513 United States  | 1972    |                              |               | <a href="http://www.seaward-marine.com">www.seaward-marine.com</a>                         |
| TalentHunter                        |  | Recruitment and Staffing                    | Al Visco, Vice President              | PO Box 275, Ashburn, VA, 20146  | 1982    |                              |               | <a href="http://www.talenthunter.com">www.talenthunter.com</a>                             |
| Weidmuller Inc.                     |  | IT Products and Services                    | Brian Schofner, President             | 821 Southlake Blvd., Richmond, VA, 23235  | 1850    | ~40                          | ~100          | <a href="http://www.weidmuller.com">www.weidmuller.com</a>                                 |

## Nuclear in Virginia -- Other

| Entity                                    | Logo  | Nature of Activity   | Leadership  | Virginia Presence   | Founded | Revenue/<br>Funding,<br>\$1M      | Employees      | Website  |
|---|---|--|---|---|---------|-----------------------------------|----------------|--|
| ANS                                       |    | Not-for-profit, International, Scientific and Educational Organization | Donald R. Hoffman, President                      | 555 North Kensington Avenue, La Grange Park, Illinois, 60526      | 1954    |                                   | 11,000 members | <a href="http://www.ans.org">www.ans.org</a>                     |
| Department of Mines, Minerals, and Energy |    | Governmental research and regulatory body                              | Conrad Spangler, Director                         | Washington Building, 8th Floor, 1100 Bank St, Richmond, VA, 23219 |         |                                   |                | <a href="http://www.dmme.virginia.gov">www.dmme.virginia.gov</a> |
| Virginia Economic Development Partnership |    | State Authority for business advocacy, development, and support        | Don Seale, Chairman of the Board                  | P.O. Box 798, 901 East Byrd Street, Richmond, VA, 23218           | 1995    | 17.8 (State General fund, FY2014) | ~100           | <a href="http://www.yesvirginia.org">www.yesvirginia.org</a>     |
| Center Advanced Engineering and Research  |  | Non-profit educational and research corporation                        | Board of Directors, Executive Director Bob Bailey | 1173 Research Way, Forest, VA 2455                                | 2006    |                                   | 3              | <a href="http://www.caer.us">www.caer.us</a>                     |



## **Appendix B: 2018 Virginia Energy Plan Recommendations**



PO Box 3504  
Arlington, VA 22203-0504  
703-570-4234  
info@virginiannuclear.org  
www.virginiannuclear.org

VNEC Members Include:

Dominion Energy  
Enbridge  
Newport News Shipbuilding  
Virginia Commonwealth University  
Virginia Tech University

August 16, 2018

Governor Ralph Northam  
PO Box 1475  
Richmond, VA 23218

Dear Governor Northam,

Attached please find a copy of the recommendations for nuclear energy to be included in the 2018 Virginia Energy Plan. In line with the Energy Plan's mission to advance Virginia's energy objectives (Va. Code § 67-101), the Virginia Nuclear Energy Consortium Authority (VNECA) and the Virginia Nuclear Energy Consortium (VNEC) have drafted these recommendations to specifically address the long-term goals of the Commonwealth.

The industry recommendations fall in three major categories:

- workforce training and education improvements that will allow Virginia companies to attract and retain skilled employees
- opportunities for funding to grow Virginia's research capacity in advanced nuclear technologies
- investment in next-gen energy through attraction and development of a small modular reactor (SMR) project in Virginia

We feel it is important that the Energy Plan include these policy priorities to further enhance the state's academic, generation, and defense nuclear capabilities. We invite you to review these recommendations and include them in the plan. Should you want to discuss these recommendations in more detail, we would be happy to visit with you or your staff to discuss them.

Thanks for your commitment to Virginia and your consideration of these recommendations.

Sincerely,

Alireza Haghghat, PhD  
VNEC Nonprofit Chairman  
Professor  
Director of Nuclear Engineering Program  
Director of Mechanical Eng. at NCR  
Mechanical Engineering Department

Tom DePonty  
VNECA Board Chairman  
Director, Government Affairs &  
Advocacy  
Framatome (formerly AREVA NP Inc.)

## 2018 Virginia Energy Plan – Nuclear Recommendations

Support nuclear energy generation, research, development, and deployment of advanced technologies, education and workforce development and recognize nuclear energy's vital role in the Commonwealth's diverse electricity generation portfolio.

- **Workforce**

- Virginia's nuclear industry requires a highly skilled workforce with specialized training to support existing and next-generation nuclear reactor operations. To support the requirements of this workforce, Virginia shall establish an energy workforce and education pathway, and adopt an Energy Workforce Cluster.
- The nuclear workforce is diverse in its levels of skill and training required. The Commonwealth shall expand and develop its support for university degree and community college programs.
- The Commonwealth shall also work closely with industry to ensure the availability of skilled-craft labor; providing a pipeline of well-educated, skilled workers necessary to continue creating high-paying jobs for Virginians to enhance and develop the nuclear industry in the long term.
- STEM education is critical for the future workforce. Virginia shall expand and enhance STEM education, which the industry will support and assist with nuclear industry-specific content and opportunities.

- **New Technology & Innovation**

- Virginia is a global leader in nuclear energy, thanks to companies like Lightbridge, Framatome, BWX Technologies, Inc., Bechtel, Newport News Shipbuilding, Dominion and many others, and the Commonwealth's university education and research programs. The Commonwealth shall promote these assets and capabilities through support for additional research opportunities, funding, and establishment of new technology innovation centers. State support for federal research funding requests by providing matching funds will ensure continued development by our universities.
- Virginia shall continue to advance its role as a nuclear leader by working with the industry and educators to identify and support the next generation of technologies in the Commonwealth; helping attract opportunities for investment and public-private partnerships for new, advanced technology projects.

- **Promoting the Nuclear Industry and Education**

- Reinforce the efforts of the Virginia Nuclear Energy Consortium Authority and the Virginia Nuclear Energy Consortium to make the Commonwealth a national and global leader in nuclear energy and serving as an interdisciplinary study, research, and information resource for the Commonwealth on nuclear energy issues.

- Regulatory certainty is essential given the long-lead decisions required for the continued safe and efficient operation of existing nuclear assets and the substantial capital commitments associated with constructing new nuclear units. Virginia's energy policy shall view nuclear assets as 'clean' baseload source of electricity, which is responsible for significant reduction in greenhouse gas emissions.
- Virginia plays a critical role in the national security as the home to one of the two nuclear-powered shipbuilding companies in the United States. The Commonwealth shall recognize and continue to support the naval nuclear fleet and lead efforts to ensure continued funding for the current and future class of aircraft carriers and submarines at the federal level.



**Appendix C: Virginia Nuclear Energy  
Consortium Authority Roster**

# Virginia Nuclear Energy Consortium Authority

## 2018 Roster

| Roster        | First Name | Last Name   | Organization  |
|---------------|------------|-------------|---|
| Member        | Regina     | Carter      | BWX Technologies                                    |
| Member        | Michael    | Lempke      | Huntington Ingalls Industries                       |
| Member        | Colleen    | Deegan      | Bechtel   |
| Member        | Woody      | Lawman      | Flowserve-Limitorque                                |
| Chairman      | Tom        | DePonty     | Framatome Inc.                                      |
| Member        | David      | Christian   | Dominion Energy                                     |
| Treasurer     | Eugene     | Grecheck    | American Nuclear Society                            |
| Member        | Andrew     | Hutton      | Jefferson Lab                                       |
| Member        | Rich       | Diddams     | Center of Energy Research and Education (CERE)      |
| Member        | Bill       | Briscoe     | George Washington University                        |
| Vice Chairman | Gary       | Tepper      | Virginia Commonwealth University                    |
| Member        | Pam        | Norris      | University of Virginia                              |
| Member        | John       | Capps       | Virginia Community Colleges System                  |
| Member        | Al         | Christopher | Department of Mines, Minerals, and Energy (DMME)    |
| Member        | Jack       | Lesko       | Virginia Tech                                       |
| Member        | Tim        | Stuller     | Virginia Economic Development Partnership           |
| Member        | Ken        | Ball        | George Mason University                             |
| Secretary     | Bob        | Bailey      | Center for Advanced Engineering and Research (CAER) |

**Appendix D: Virginia Nuclear Energy  
Consortium Roster and 2018 Report**



## Virginia Nuclear Energy Consortium 2018 Report

### Overview

The Consortium has been in operation for over three years in accordance with Section 67-1404 of the laws of the Commonwealth. Following is a brief outline of the Consortium's activities in 2018:

- 2018-2019 Strategic Plan adopted by the Consortium Board
- Current membership:
  - Dominion Energy Services
  - Enfission, LLC
  - Newport News Shipbuilding
  - Virginia Commonwealth University
  - Virginia Tech University
- 2018 officer selection:
  - Chairman - Alireza Haghighat, Virginia Tech
  - Vice-Chair - Supathorn Phongikaroon, Virginia Commonwealth University
  - Treasurer - John Harrell, Dominion
- Developed relationships for potential 2019 members

### Strategic Priorities

- Workforce
  - 17th Energy Workforce Cluster
  - Encourage of the Commonwealth of Virginia to establish Energy Workforce Cluster
  - Educational opportunities
  - STEM programs
  - Community colleges - skilled labor
  - Universities - nuclear engineers and scientists
- New Technology & Innovation
  - Enhance opportunities for nuclear research in Virginia
    - Establish a Center on Advanced Nuclear Reactors & Technologies
    - Promote public-private investment for attraction of research funding from federal government
    - Promote and leverage Virginia nuclear assets and capabilities
  - Support development of new nuclear technologies



- Identify and support next-gen/small modular reactor technologies in Virginia
  - Identify and attract new technologies and opportunities
  - Identify possible locations to facilitate new technologies
- Engage
  - Act as primary nuclear advocate in Virginia
    - Promote Virginia nuclear assets and capabilities
    - Promote new nuclear facilities and projects in Virginia
    - Promote creation of public-private investment opportunities in Virginia
    - Position the Consortium as the nuclear organization and advocate in Virginia
    - Advocate for nuclear with other states (OH, PA, NY, etc.)
    - Pro-active coordination with state and federal officials advocating for more federal research investment and manufacturing dollars in Virginia
    - Identify legislative issues benefiting nuclear growth

## Activities and Mission

Over the past year, the Consortium has had continued success in influencing the discussion of nuclear issues in the Commonwealth and has been an integral part of efforts to align workforce development with company needs, to support nuclear research opportunities, and to support the CAER/IST facility.

The Consortium has provided:

- Advocacy for nuclear-supportive public policy and served as a resource
- Support for nuclear research opportunities for Virginia universities
- Direction and support to meet nuclear and overall energy industry workforce needs
- Support for the CAER/IST research center
- Public information and education
- Policy-makers with briefings on activities

The Consortium's mission supports:

- Virginia's Nuclear Workforce
  - Virginia nuclear workforce needs
  - Creation of a 17th Career Cluster for the energy workforce
  - Support for community colleges for training of skilled labor
  - Support for universities for training of nuclear engineers and scientists
- Promotion of Virginia's nuclear assets and capabilities
  - Worked with members of the General Assembly and a variety of state agencies—Education, Commerce and Trade, Economic Development Partnership, and Department of Mines, Minerals and Energy
    - Provided education and information regarding the nuclear industry contribution to clean air, the importance of license extension for

Virginia reactors, new technologies and innovation opportunities, and general topics related to nuclear in Virginia

- Coordination with the Virginia Congressional Delegation
  - Informed and advised staff regarding the importance of the Virginia nuclear industry to domestic energy, the economy and national security, and new technologies and innovation
  - Reviewed Virginia's nuclear research capabilities
- Creating enhanced opportunities for nuclear research in Virginia
  - Worked with Virginia elected officials to help develop awareness and recognition of the research assets and capabilities of Virginia nuclear engineering programs
    - Helped to assist in coordination within the Virginia research and nuclear business community
- Current development of new nuclear technologies
  - Promoted advanced technologies and establishing a Center on Advanced Nuclear Reactor in Virginia
  - Worked to identify public-private investment opportunities
- Advocacy for the nuclear industry
  - Continued membership in the Virginia Chamber of Commerce
    - Participated in their Energy & Sustainability Conference
  - Continued Affiliation with Nuclear Energy Institute (NEI)
    - Working with NEI to develop outreach opportunities
  - Assisted the Virginia local section of the American Nuclear Society (VA-ANS), in collaboration with the VCU student section of the ANS (VCU-ANS), and the VCU Department of Mechanical and Nuclear Engineering (VCU MNE) to implement advocacy campaign in Virginia to support the long-term development of new nuclear facilities and technologies
  - Provided recommendations for the Governor's 2019 Virginia Energy Plan in coordination with the Virginia Nuclear Energy Consortium Authority (the Authority)
  - Organized a "Day on the Hill" in Richmond for nuclear engineering students
    - Developed an issue sheet for the students to discuss during meetings
    - Group was recognized by the Virginia Senate