The Advanced Nuclear Industry: 2016 Update

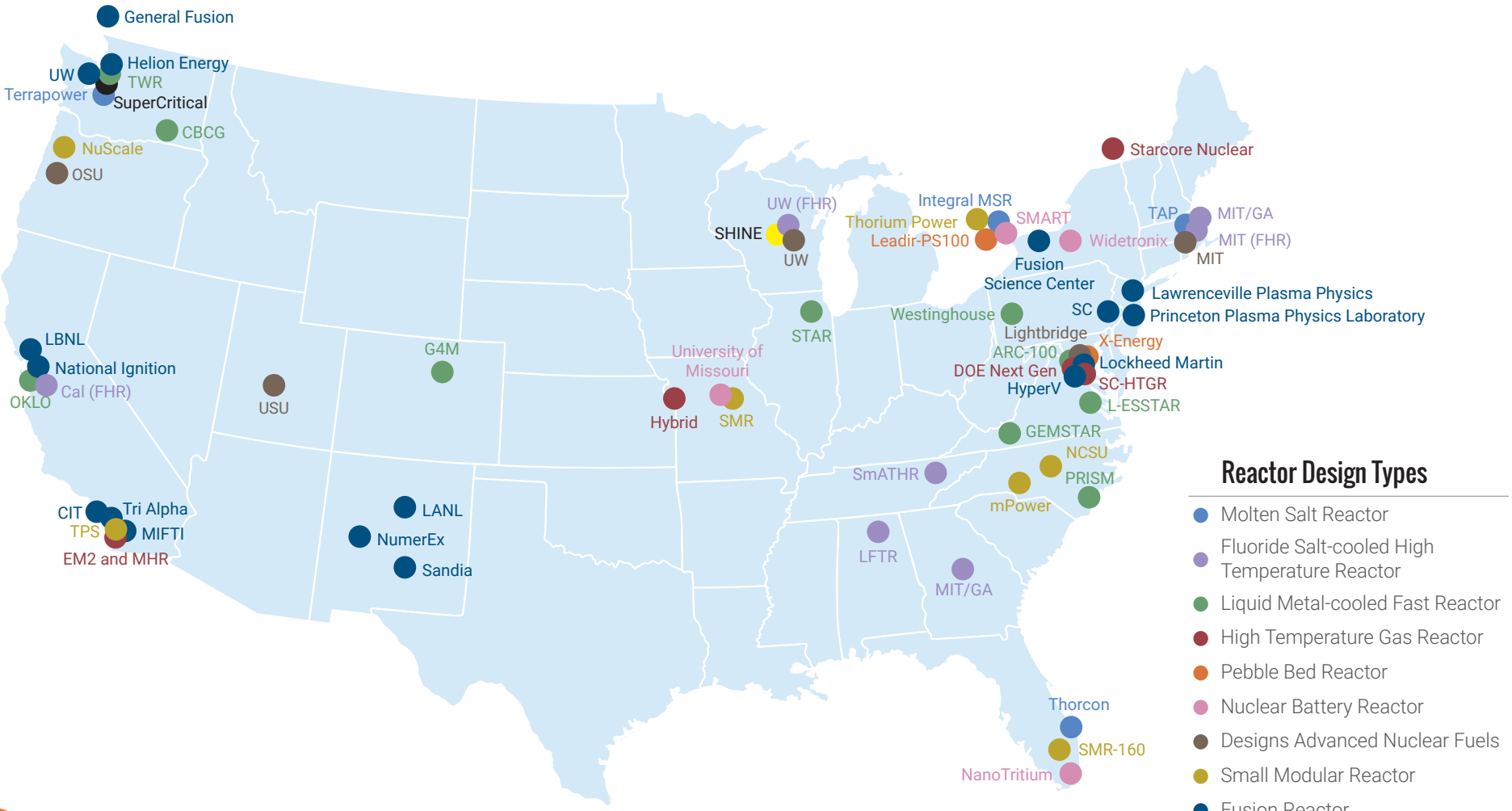
By Todd Allen, Ryan Fitzpatrick, and John Milko | Published: 12/12/16

In June of 2015, Third Way released a **report** identifying 48 companies and research institutions across the country developing advanced nuclear technology. For the first time, each project and its unique technology was catalogued in a central location to provide a snapshot of this emerging industry. These projects included private companies as well as projects with high commercialization potential that are being conducted and/or housed at universities and national laboratories.

Advanced nuclear has captured quite a bit of attention in Washington since that report came out. In November of 2015, the White House, along with Third Way, hosted a Summit on Nuclear Energy and subsequently announced the launch of the Gateway for Accelerated Innovation in Nuclear (GAIN) program—aimed at helping nuclear innovation start-ups get greater access to the resources and expertise of the national labs. Congress has also taken part in supporting the advanced nuclear industry, with bills moving rapidly through both the Senate and House to enhance federal R&D efforts and modernize regulations for advanced reactors. Advanced nuclear innovators are becoming a regular presence in Washington, testifying before Congress, leading working groups with the Department of Energy and the Nuclear Regulatory Commission, and participating in panels on clean energy policy.

However, as in any nascent industry, most of the pioneering innovators in advanced nuclear won't make it to the end of the commercialization pipeline. That's just the nature of innovation. Our updated map and table reflect the cancellation of several projects that were previously featured. We've also added a handful of new projects that have emerged since our initial report, and adjusted certain entries to more accurately reflect the engagement of multiple sponsors on a single project.

Advanced Nuclear Industry: Next Generation



Reactor Design Types

- Molten Salt Reactor
- Fluoride Salt-cooled High Temperature Reactor
- Liquid Metal-cooled Fast Reactor
- High Temperature Gas Reactor
- Pebble Bed Reactor
- Nuclear Battery Reactor
- Designs Advanced Nuclear Fuels
- Small Modular Reactor
- Fusion Reactor
- Super-Critical CO_2 Reactor
- Accelerator Driven System

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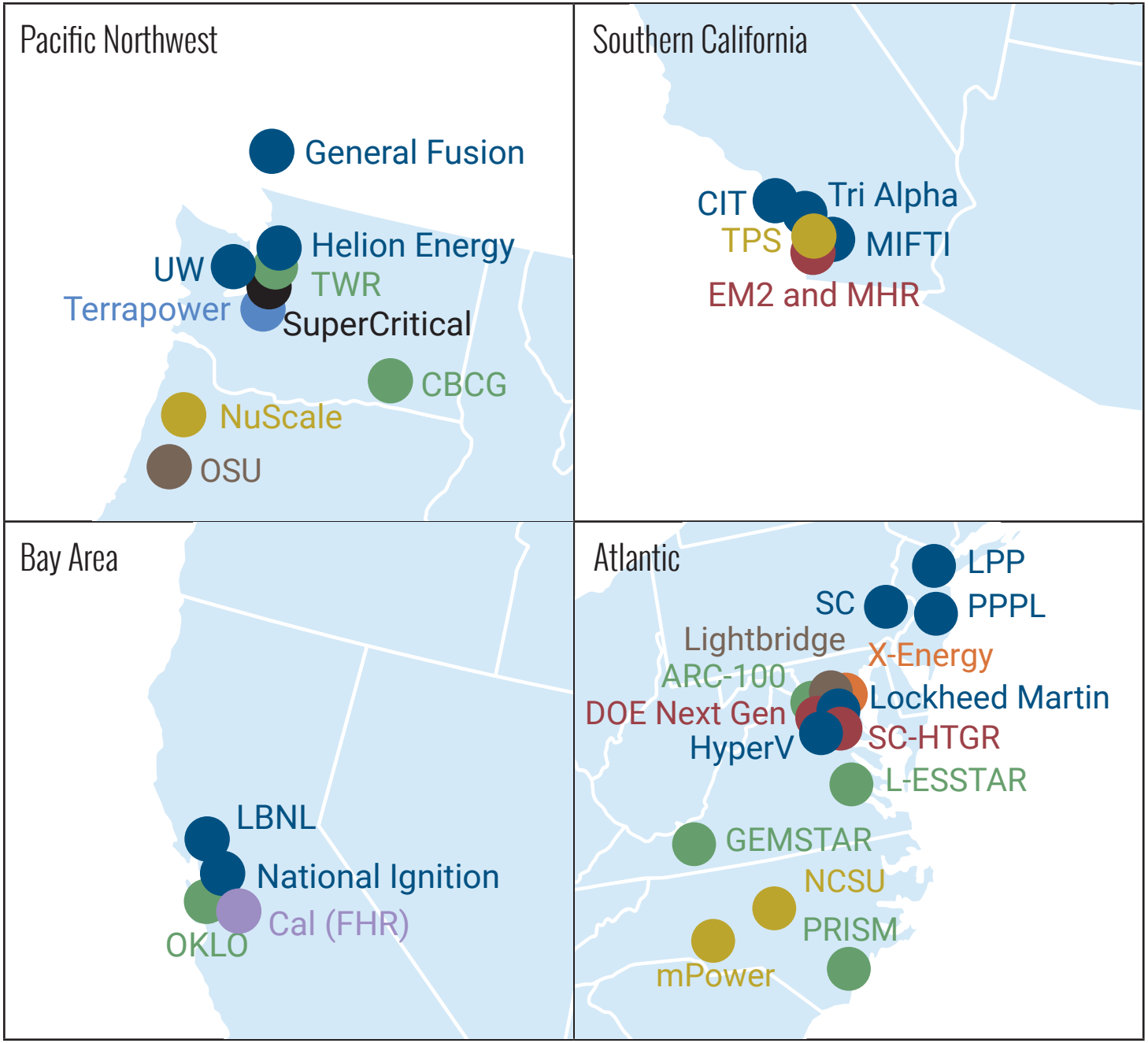

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Company	Location	Design Type
Transatomic (TAP)	Cambridge, MA	Molten Salt Reactor
Terrestrial Energy (Integral MSR)	Mississauga, Canada	Molten Salt Reactor
Martingale Inc (Thorcon)	Stuart, FL	Molten Salt Reactor
Flibe Energy (LFTR)	Huntsville, AL	Molten Salt Reactor
Oak Ridge National Laboratory (SmATHR)	Oak Ridge, TN	Molten Salt Reactor
Massachusetts Institute of Technology (FHR)	Cambridge, MA	Molten Salt Reactor
University of California, Berkeley (FHR)	Berkeley, CA	
University of Wisconsin (FHR)	Madison, WI	
Massachusetts Institute of Technology	Cambridge, MA	Molten Salt Reactor
Georgia Tech	Atlanta, GA	
General Electric-Hitachi (PRISM)	Wilmington, NC	Liquid Metal-cooled Fast Reactors
Advanced Reactor Concepts (ARC-100)	Reston, VA	Liquid Metal-cooled Fast Reactors
Argonne National Laboratory (STAR)	Lemont, IL	Liquid Metal-cooled Fast Reactors
Gen4 Energy (G4M)	Denver, CO	Liquid Metal-cooled Fast Reactors
Virginia Tech and ADNA Corp. (GEMSTAR)	Blacksburg, VA	Liquid Metal-cooled Fast Reactors
Westinghouse	Pittsburgh, PA	Liquid Metal-cooled Fast Reactors
Terrapower (TWR)	Bellevue, WA	Liquid Metal-cooled Fast Reactors (Variant)
OKLO	Mountain View, CA	Liquid Metal-cooled Fast Reactors
Columbia Basin Consulting Group	Kennewick, WA	Liquid Metal-cooled Fast Reactors
Starcore Nuclear	Montreal, Canada	High Temperature Gas Reactor
General Atomics (EM2 and MHR)	San Diego, CA	High Temperature Gas Reactor
Areva (SC-HTGR)	Bethesda, MD	High Temperature Gas Reactor
DOE Next Generation Nuclear Plant	Bethesda, MD	High Temperature Gas Reactor (Collaborative Project)
Hybrid Power Technologies (Hybrid)	Kansas City, KS	High Temperature Gas Reactor (Variant)
X-Energy	Greenbelt, MD	Pebble Bed Modular Reactor
Northern Nuclear (Leadir-PS100)	Cambridge, Canada	Pebble Bed Modular Reactor (Lead Cooled)
University of Missouri	Columbia, MO	Nuclear Battery
CityLabs (NanoTritium)	Homestead, FL	Nuclear Battery
Dunedin (SMART)	Toronto, Canada	Nuclear Battery
Widetronix	Ithica, NY	Nuclear Battery

SHINE	Monona, WI	Accelerator Driven System Project
SuperCritical Technologies	Seattle, WA	Super-Critical CO2 Reactor
Lightbridge	Tysons Corner, VA	Designs Advanced Nuclear Fuels
Utah State University	Logan, UT	Designs Advanced Nuclear Fuels
Oregon State University	Corvallis, OR	Designs Advanced Nuclear Fuels
University of Wisconsin	Madison, WI	Designs Advanced Nuclear Fuels
Massachusetts Institute of Technology	Cambridge, MA	Designs Advanced Nuclear Fuels
Thorium Power	Toronto, Canada	Small Modular Reactor (PWR)
North Carolina State University	Raleigh, NC	Small Modular Reactor (PWR)
B&W Company and Bechtel Power Corp. (mPower)	Charlotte, NC	Small Modular Reactor (PWR)
NuScale Power (NuScale)	Corvallis, OR	Small Modular Reactor (PWR)
Holtec (SMR-160)	Jupiter, FL	Small Modular Reactor (PWR)
Westinghouse (SMR)	Fulton, MO	Small Modular Reactor (PWR)
General Atomics (TPS)	San Diego, CA	Small Modular Reactor (PWR)
National Ignition Facility	Livermore, CA	Fusion
General Fusion	Burnaby, Canada	Fusion
Lawrenceville Plasma Physics	Middlesex, NJ	Fusion
Lockheed Martin	Bethesda, MD	Fusion
Tri Alpha	Foothill Ranch, CA	Fusion
Princeton Plasma Physics Laboratory	Princeton, NJ	Fusion
Fusion Science Center	Rochester, NY	Fusion
Hyper V Technologies	Chantilly, VA	Fusion
Helion Energy (Alpha)	Redmond, WA	Fusion
Lawrence Berkeley National Laboratory (Alpha)	Berkeley, CA	Fusion
California Institute of Technology (Alpha)	Pasadena, CA	Fusion
University of Washington (Alpha)	Seattle, WA	Fusion
Los Alamos National Laboratory (Alpha)	Los Alamos, NM	Fusion
NumerEX (Alpha)	Albuquerque, NM	Fusion
Sandia National Laboratory (Alpha)	Albuquerque, NM	Fusion
Swarthmore College (Alpha)	Swarthmore, PA	Fusion
Magneto-Inertial Fusion Technologies (Alpha)	Tustin, CA	Fusion