

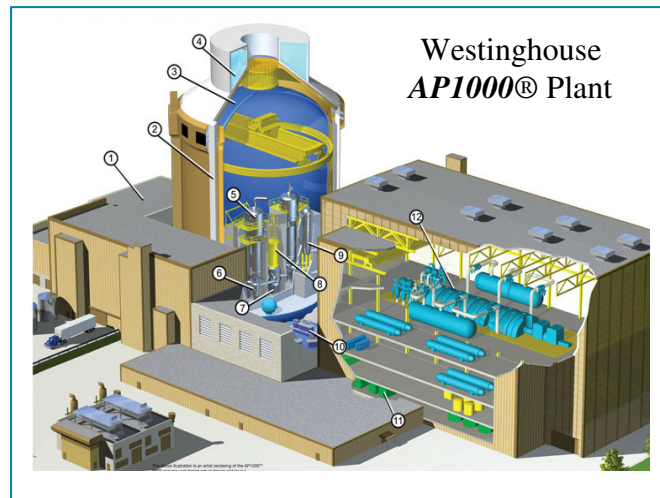
January 5, 2012

One Small Step for Nuclear, One Giant Leap for SMRs

Authors:

John J. Licata
Chief Commodity Strategist
212.346.9161
JLicata@BluePhoenixInc.com

Christopher M. Potts
Associate Analyst
CPotts@BluePhoenixInc.com



Source: Westinghouse Electric Company, LLC

Companies mentioned in this report:

Westinghouse Electric Co. (Private)
Generation mPower, LLC (Private)
NuScale Power, LLC (Private)
SMR, LLC (Private)
TerraPower, LLC (Private)
Hyperion Power Generation (Private)

Products mentioned in this report:

Westinghouse AP1000® Plant
UX Uranium
CL Light Sweet Crude Oil (WTI)
NG Natural Gas Henry Hub

Executive Summary

Picture a world where electronics have become the lifeblood of the human race; a world where humans are almost completely reliant upon electrical devices in every aspect of their lives. This scene is no longer one portrayed only in science fiction novels. Instead, this scene is the world we live in today. From Walkmans to iPods and Hummers to electrical vehicles, this trend toward our dependence on electronics will continue for the foreseeable future. This electronic revolution illustrates how vital the need for increased electrical power has become for the U.S. to remain competitive on the global stage. We must continue to move forward and find tomorrow's energy sources. One way **Blue Phoenix Inc.** (BPI) believes the U.S. can succeed to "power" its future growth and industrial swagger is by implementing *small modular nuclear reactors* (SMRs). Our analysis of the SMR industry in our 12/16/2011 piece titled *Small Modular Nuclear Reactors: LEGO for Adults or the New PC Revolution?* expressed our belief that SMRs are essential for U.S. energy growth. A recent government approval shows we at BPI are not the only ones with this view.

Background

BPI believes that in order to satisfy the U.S.'s growing electricity needs and to meet the country's goal of cutting carbon emissions by 28% from 2008 levels by 2020, we must utilize a diverse energy basket. We will never be fully independent of oil, but instead must complement its use through alternative energy sources. Moving forward with solar, wind, and hydro projects is necessary, as well as hydraulic fracturing to obtain natural gas. However, nuclear energy should be the biggest contributor of these alternative energy sources near-term due to the ability to generate 24/7 baseload power in an era where storing energy is still challenged. **With our forecast for rising prices of Light Sweet WTI Crude Oil (CL) on the CME to continue a march toward \$150pbl within two years, coupled with the potential environmental effects of hydraulic fracturing to obtain natural gas, nuclear energy stands out as an obvious alternative energy source.** Quite simply, nuclear energy is clean and reliable. It is a carbon-free energy source that does not release air pollution like present-day fossil fuel plants.

On 2011 December 22, the U.S. Nuclear Regulatory Commission (NRC) gave final approval to **Westinghouse Electric Company, LLC's** design of its Westinghouse **AP1000®** pressurized water reactor (PWR). This is the reactor that a number of power companies intend to use for building the first new nuclear plants in the U.S. in 30 years.¹ This is a step in the right direction for the nuclear industry overall, as well as for meeting the country's future emissions target goal. Additionally, this is also a step in the right direction for the SMR industry.

Investment Thesis

The NRC's approval of the Westinghouse **AP1000®** PWR is clearly beneficial for the nuclear industry and that should help boost investor interest in the CME's Uranium contract (UX) which we believe could see \$64/lb. in 2012 (see our 11/22/2011 note titled **Uranium: The Case for \$64/lb.**). Let's face it, construction of four **AP1000®** PWRs has already begun with two reactors in Georgia and the remaining two in South Carolina. The first reactor is estimated to be completed in 2016.² Westinghouse also expects to re-open negotiations with China for additional **AP1000®** units in early 2012 after a brief delay in response to the Fukushima disaster.³ The **AP1000®** also gained approval by Britain's nuclear regulator, giving foreign utilities companies confidence that the design is suitable, as the rest of Europe will likely follow Britain's lead.⁴ All of these events mean job creation and work for the American people (building the plants, refueling, plant modifications, etc.), as well as the country as a whole moving toward meeting our

¹ <http://thehill.com/blogs/e2-wire/e2-wire/201017-nuke-regulators-bless-reactor-design-amid-capitol-hill-cheers-jeers>

² <http://www.post-gazette.com/pg/11354/1198025-28-0.stm?cmpid=newspanel3>

³ http://online.wsj.com/article/SB10001424052970204083204577082192585315530.html?mod=dist_smartbrief

⁴ <http://www.reuters.com/article/2011/12/14/britain-nuclear-approval-idUSL6E7NE2IE20111214>

emissions target goal. The **AP1000**® PWR also offers a number of improvements in safety, security, reliability, and economics.⁵

Less obvious may be the approval's importance for the SMR industry. Now that the **AP1000**® PWR has cleared its last regulatory hurdle, Westinghouse can focus on its SMR. This project will become the largest development program at the company.⁶ The Westinghouse **AP1000**® PWR is now the only Generation III+ reactor to receive design certification by the NRC.⁷ The Westinghouse SMR's design is based upon the **AP1000**® design (essentially just scaled down in size). With Westinghouse's full concentration on its SMR, with an already proven design, BPI believes it should not be long before this SMR gains approval by the NRC as well. Michael Anness, Westinghouse SMR Product Manager, seems to agree and had this to say:

The Westinghouse SMR is well positioned for first-to-market NRC licensing. Its smaller size and underground profile make it an appealing, emissions-free and flexible generation source. The 2012 Department of Energy investment in SMRs gives U.S. utilities the policy certainty they need to pursue a license as a partner with Westinghouse. Our experience provides the certainty that we can deliver the safest, most economic and most advanced SMR available.⁸

The NRC's approval of the Westinghouse **AP1000**® PWR is a key step in developing and commercializing the company's SMR. This is a significant milestone for the nuclear community, as well as the SMR industry. The Department of Energy's (DOE) generous financial support for SMRs in FY2012 is further confirmation of the future growth in this sector. This portrays not only a promising outlook for Westinghouse, but other SMR manufacturers as well. The \$67mln appropriated by the DOE for the "SMR Licensing Process" of Generation III+ SMRs is good news for other companies such as **Generation mPower, LLC**; **NuScale Power, LLC**; and **SMR, LLC**. In addition, companies investing in Generation IV SMRs like **TerraPower, LLC** and **Hyperion Power Generation** should be pleased by the DOE's decision to set aside \$29mln in funding for "SMR Advanced Concepts Research and Development."⁹ Please refer to our 12/16/2011 piece titled *Small Modular Nuclear Reactors: LEGO for Adults or the New PC Revolution?* for details about each company.

For more information and to inquire about receiving a copy of *Small Modular Nuclear Reactors: LEGO for Adults or the New PC Revolution?*, please contact us at info@bluephoenixinc.com.

⁵ http://www.ap1000.westinghousenuclear.com/ap1000_glance.html

⁶ <http://www.post-gazette.com/pg/11354/1198025-28-0.stm?cmpid=newspanel3>

⁷ http://www.ap1000.westinghousenuclear.com/ap1000_glance.html

⁸ Interview with Michael Anness, Westinghouse Electric Company LLC, SMR Product Manager, 01/05/2012

⁹ <http://neutroneconomy.blogspot.com/2011/06/excellent-op-ed-on-small-modular.html>

Please direct inquiries to info@bluephoenixinc.com.

Disclaimer: The information and views set forth in this report may be subject to change for numerous reasons, which may include changes in market conditions. Blue Phoenix shall have no obligation to provide any further research reports on any of the matters covered in this report. The publication of this report is not to be construed as, and does not purport to be, a solicitation of an offer to buy or sell any security or other financial product. Blue Phoenix expressly disclaims any responsibility for any decisions made with respect to the securities covered by this report or for the suitability of any security or transaction based on it. By accepting this report, you agree not to hold Blue Phoenix liable for any possible claim for damages arising from any decision you make based on the information and/or views set forth in this report.