

Nuclear Energy: Recognizing the Value

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69th Annual Meeting**

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NUCLEAR ENERGY INSTITUTE

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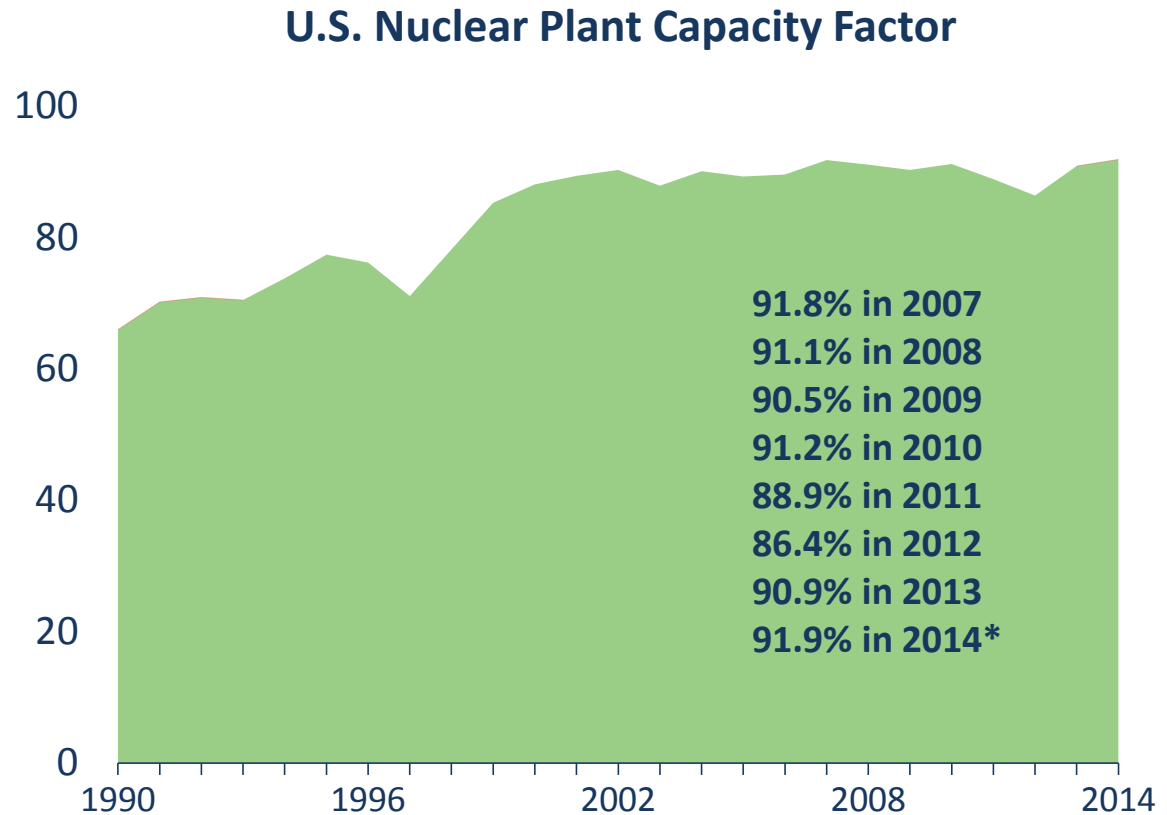
Today's Briefing

- Industry Snapshot – Continued Strong Performance, Life after 60
- Nuclear Value Proposition – Diversity, Zero-Carbon, Reliable
- Economic Challenges – Recognition and Remedies
 - FERC and RTOs
 - State Actions – IL and OH
- New Nuclear Nearing Completion in TN, GA and SC
- Strong Popular Support



Strong Performance – Record Capacity Factor in 2014

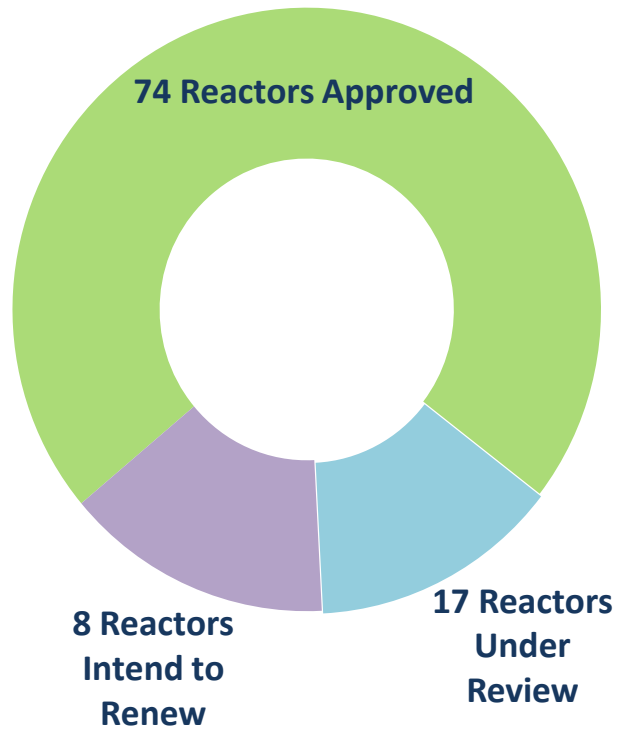
- U.S. reactors set record capacity factor: 91.9%
- Nuclear plants generated 798.4 billion kWh in 2014
- Refueling outage duration declined again:
 - 2014: 37.2 days
 - 2013: 41 days
 - 2012: 46 days



Source: Energy Information Administration
* NEI estimate

Status of First License Renewal

Applications for License Renewal

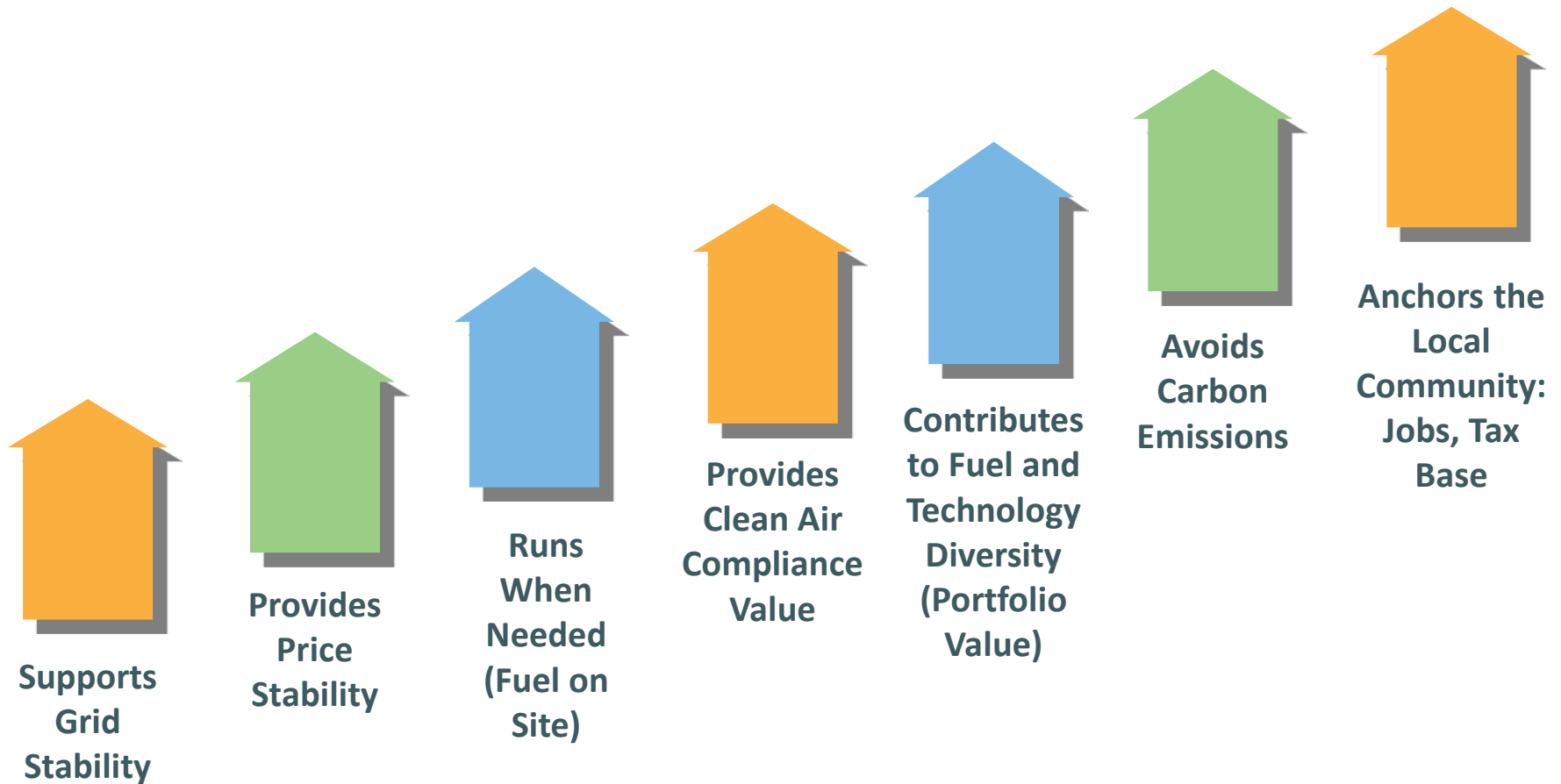


Steam generator replacement in progress

Source: Nuclear Regulatory Commission

Nuclear Energy's Solid Value Proposition

Safe, Reliable Electricity 24/7 Plus ...

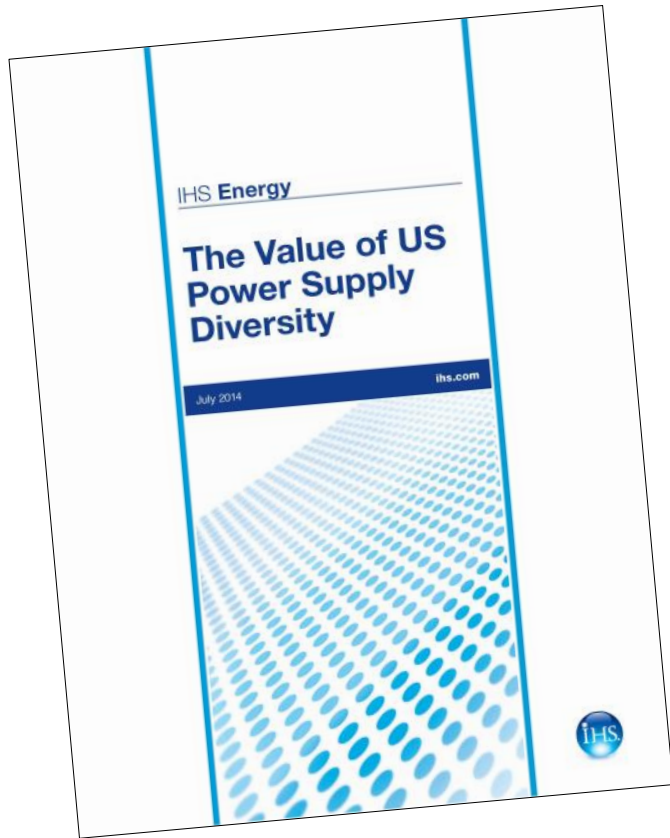


America's Power Supply Challenge: Fuel Diversity at Risk

- As much as one-third of today's coal-fired capacity may be lost in next 5-10 years
- 342,000 megawatts of gas-fired generation built since 1995 (75% of all new capacity)
- Renewables will expand, but they're not baseload



Impacts of Losing Electricity Diversity



- \$93 billion increase in cost of electricity per year
- 25% increase in retail power prices, along with increased price volatility
- \$200 billion reduction in GDP each year due to higher electricity prices
- 1 million fewer jobs resulting from lower GDP
- \$2,100 increase in electricity costs per year for the typical household

Spotlight on Nuclear Energy's Value

- Powering through the Polar Vortex
 - Value of baseload capacity with firm fuel supply
- EPA Clean Power Plan proposal to reduce CO₂ emissions by 30% by 2030
 - Cannot be achieved and sustained without preserving existing nuclear generating capacity and building new nuclear capacity

Forbes

Polar Vortex - Nuclear Saves The Day



Last week, a polar vortex pushed frigid air down into the U.S. for some extreme temperatures, affecting energy production as well as . Fortunately, most of the nuclear plants loved it, using the large temperature difference to produce more energy than normal. Other energy sources did not fair so well. Source: NOAA

It's all about diversity. Whether in biology, in culture, in training, or in technology, when conditions change a system survives if there is sufficient diversity to adapt. Otherwise it dies. And things always change.

This is no less true for electricity production. Having a diverse energy mix is key to a society surviving changes in demographics, government, geologic processes and natural disasters, supply disruption during war, and extreme weather changes.

Industry Recommendations for EPA's Clean Power Plan

- States should demonstrate how they intend to preserve existing nuclear capacity in State Implementation Plans
- Power uprates completed after 2012 should count toward compliance
- License renewals after 2012 should be considered new capacity and count toward compliance
- Plants under construction should not be part of rate-setting formula, should count toward compliance when operating

Change and Economic Challenges

- Low gas prices;
- Low or zero electricity demand growth;
- state policies that mandate production from certain sources of electricity;
- growing reliance on renewable and intermittent resources, which creates operational challenges
- Growing reliance on Out-of-Market revenues
- Greater reliance on demand resources, which represent a challenge to the definition of the capacity product

FERC Initiatives to Address Market Issues

- Technical workshop on capacity markets (Sept. 2013)
- Lessons learned from Polar Vortex (April 2014)
- 3 technical workshops on price formation in energy markets
- Order to RTOs on fuel assurance (Nov. 2014)
- Approves PJM Capacity Performance Product (June 2015)



FERC Recognizes Value of Baseload Capacity

“[T]he Commission is right now actively considering – both how our capacity markets are designed, and whether the full value of a baseload plant is included in the payments they’re getting from the capacity market, but also whether we have the right set of products out there, that will incent the resources that can provide reliability”

– Arnold Quinn, Director, FERC Division of Economic and Technical Analysis, at joint FERC-NRC Meeting, May 28, 2014



The Evolution at PJM: From April 2014 ...

“I think we may look at potentially paying more for firm winter fuels. And obviously I think nuclear would easily fall into that [I]t concerns us when nuclear units start to prematurely retire, only because we're not going to get them back once they go. And so we are taking a very hard look at our markets, and **we may be coming to you with changes if our markets are not paying enough.**”

– *Michael Kormos, Executive Vice President, PJM, at FERC Workshop, April 1, 2014*



The Evolution at PJM: From April 2014 to December 2014



“[T]he PJM Board has authorized the filing of a Capacity Performance initiative at FERC. ...Stronger incentives within the existing capacity market structure should be established to encourage needed investment by both new and existing resources. PJM is acting now to begin reversing trends in generation performance and fuel security that will continue to deteriorate reliability.”

– *Terry Boston, PJM President and CEO,
December 3, 2014*

Growing Recognition of Nuclear Energy's Value

- FERC, EPA, RTOs, states recognize value of nuclear power plants, consequences of nuclear plant shutdowns
 - Electricity consumers lose long-term, low-cost power at stable price
 - Jobs, state and local economies suffer
 - Reliability at risk
- Initiatives underway to monetize that value

“Vernon [is] now facing the loss of its largest employer and taxpayer, significant budget cuts, and mounting questions about its financial footing.”

– Patricia O’Donnell
Chair
Board of Selectmen
Vernon, Vermont

Impact of Plant Shutdowns in Illinois

- PJM analysis for Illinois Commerce Commission:
 - \$307 million-\$437 million annual increase in load payments in ComEd zone
 - \$752 million-\$1.3 billion annual increase in load payments in PJM
 - “Significant thermal and voltage violations”
- NEI analysis:
 - 2,500 direct jobs lost; 9,000 direct and indirect
 - \$2.4 billion in direct lost economic value; \$3.6 billion direct and indirect



Recent State Activities

- Illinois Low-Carbon Portfolio Standard
 - Requires State's Utilities to obtain low carbon energy credits matching an amount = 70% of the electricity used on the Distribution System.
- Ohio: Tax Legislation and Regulation
 - Shift of property tax on generation to T & D ratepayers
 - Pending Rate Case would require 3 regional distribution companies to by all power from large nuclear and coal plants



Nuclear Energy Does Matter

America's nuclear energy plants empower us. Let's keep them running strong.

A critical source for clean, reliable, affordable energy needs your support. Flawed energy policies are threatening the long-term viability of some of America's nuclear energy plants. Nearly 20% of our nation's electricity comes from these plants, and they are the only energy source that runs 24/7, 365 days a year. If we want to keep America working, then we need to keep these plants working.

If you agree that it's important to support policies that level the playing field for clean, reliable and affordable energy production, please join us on Facebook to make your voice heard.

NUCLEAR MATTERS

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CARBON-FREE BENEFITS OF AMERICA'S NUCLEAR ENERGY PLANTS

OUR LARGEST SOURCE OF CARBON-FREE ENERGY

Nuclear energy plants generate more carbon-free energy than all other sources combined.

| | | |
|------------------|----------------|----------------------|
| 63.3% NUCLEAR | 21.2% HYDRO | 15.4% SOLAR, ETC. |
|------------------|----------------|----------------------|

*I can't believe what I believe on climate change and oppose nuclear energy. Nuclear is an important part of how we make energy in this country.***

CAROL M. BROWNER
 Director of White House Office of Energy & Climate Change
 2009-2011
 EPA Administrator
 1993-2001

NUCLEAR MATTERS NEW YORK SOUNDABLE DISCUSSION
 SEPTEMBER 16, 2014

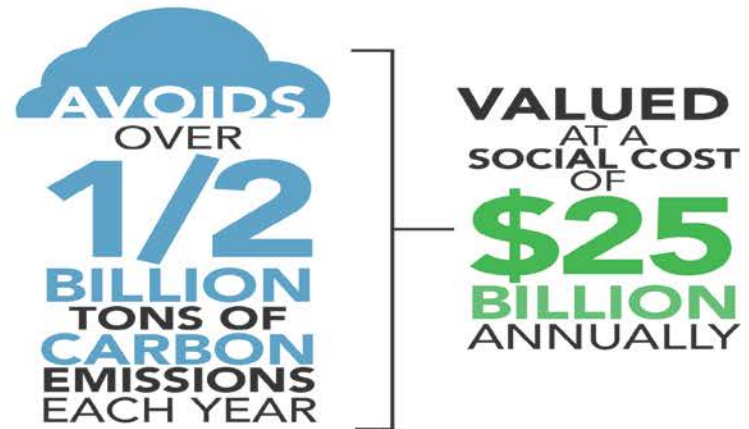
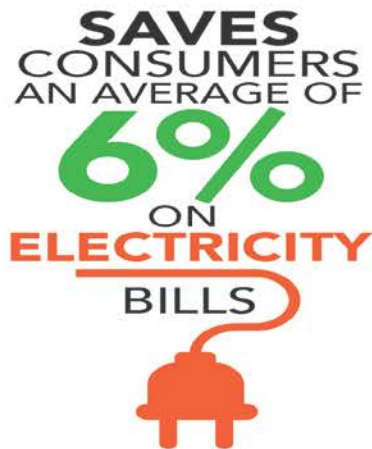


Nuclear Matters Co-Chairs -- Former Sens. Evan Bayh and Judd Gregg

THE **Brattle** GROUP

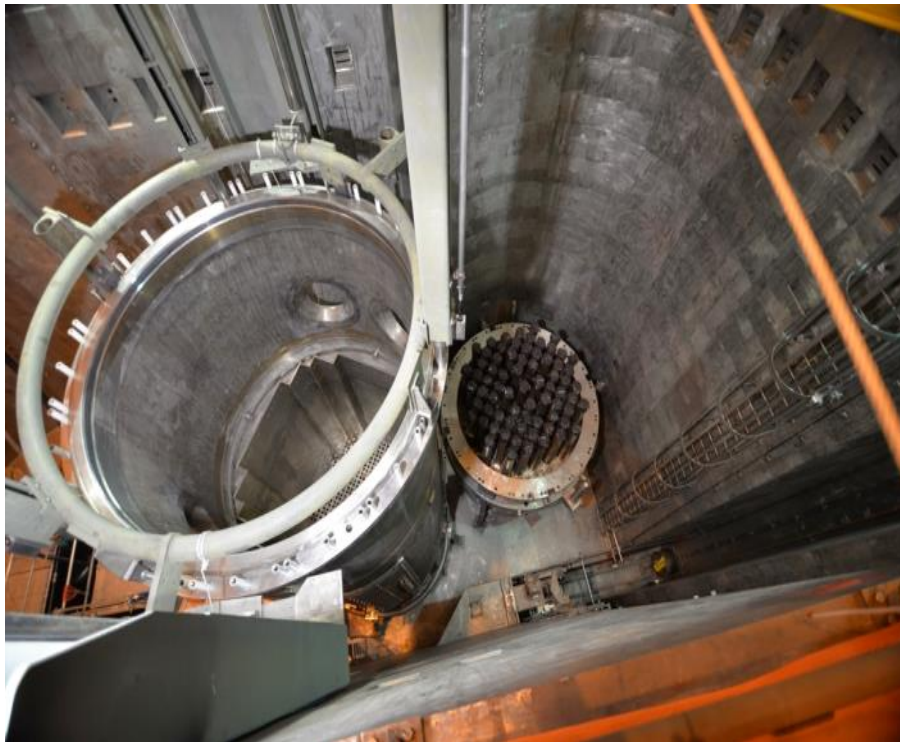
Brattle Group Study

“The Nuclear Industry’s Contributions to the U.S. Economy”



Watts Bar 2 Nearing Completion

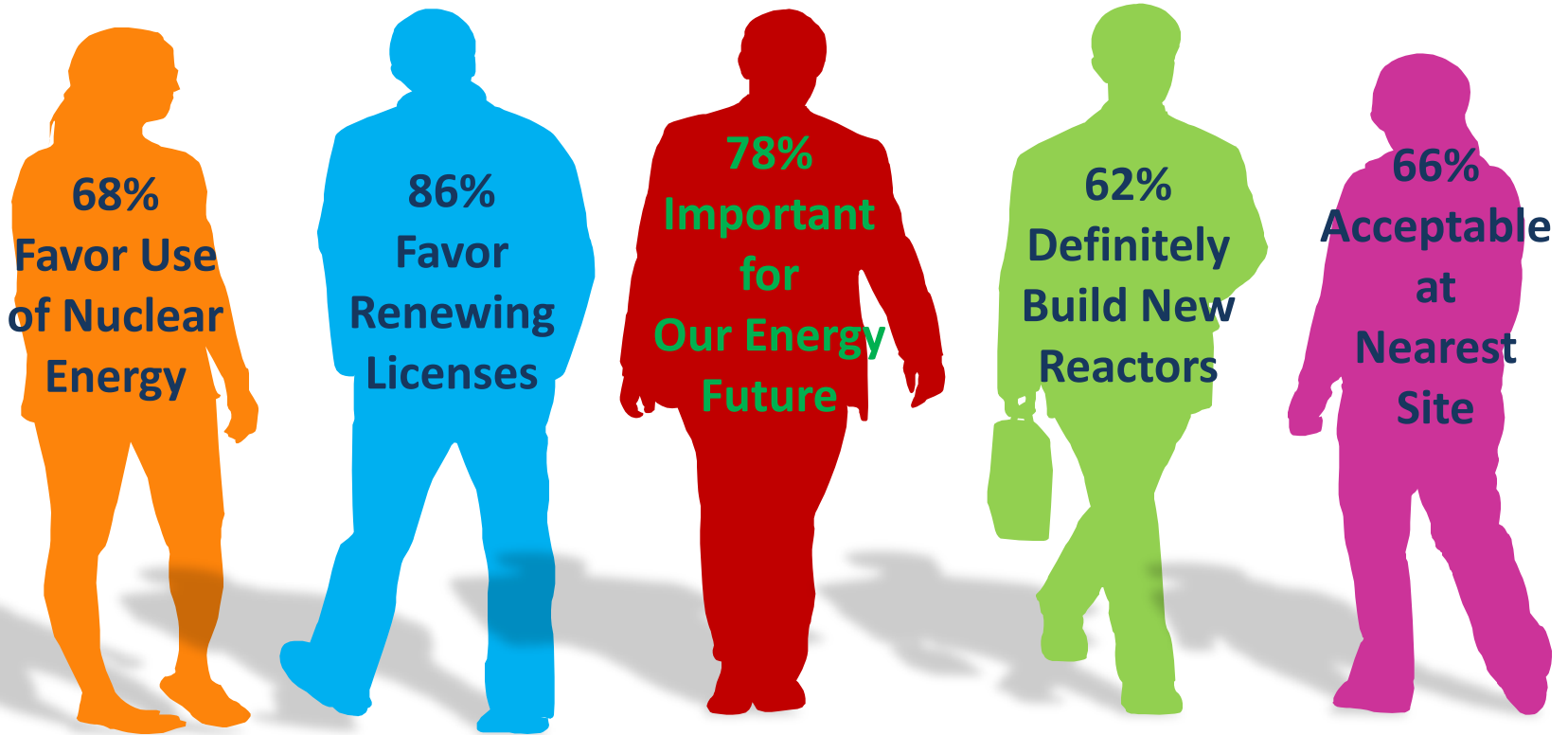
Operation begins early 2016



Progress at Vogtle 3 & 4, Summer 2 & 3



Strong Public Support Continues



Source: Bisconti Research Inc.

March 2015 poll of 1,000 U.S. adults; margin of error is +/- 3%

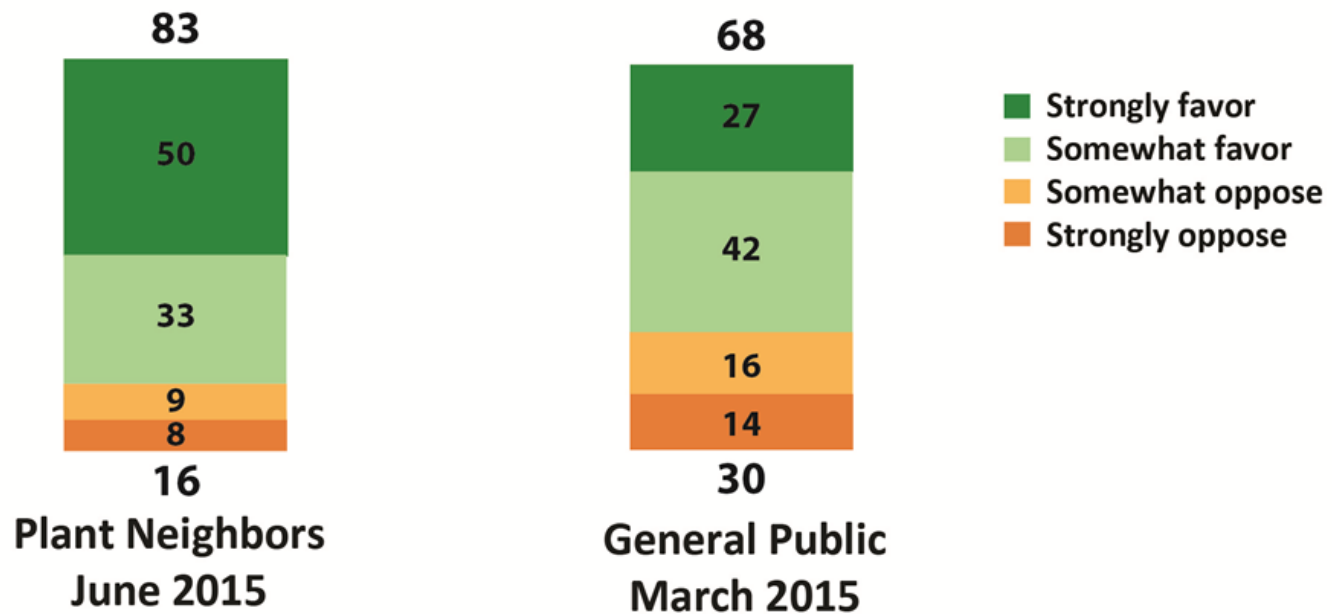


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Plant Neighbors More Favorable to Nuclear Energy Than General Public

Overall, do you strongly favor, somewhat favor, somewhat oppose, or strongly oppose the use of nuclear as one of the ways to provide electricity in the United States? (%)



**6th Biennial National Survey of U.S. Nuclear Power Plant Neighbors 2015*

Questions?



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