

# FORWARD STRATEGY

March 2018

DELIVERING THE  
NUCLEAR PROMISE®



nuclear matters:  
my work • my plant • my industry

# FOREWORD



The nuclear industry should take great pride in the continued outstanding performance of U.S. nuclear power plants. However, in recent years, a number of nuclear plants have been prematurely retired. Some of these plants—due to irregularities in electricity markets—had become uncompetitive and it no longer made sense to operate them. Collectively, industry leadership realized something had to be done or more well-performing nuclear plants would be closed.

The cornerstone of the industry response to this situation is an ongoing initiative called Delivering the Nuclear Promise®. The objectives of this initiative are threefold: maintain focus on safety and reliability, improve the efficiency of operating nuclear plants, and ensure monetary recognition of nuclear energy's value. It wasn't easy but, as usual, our workers responded enthusiastically and got to work.

I am happy to report that Delivering the Nuclear Promise has been a success. As a result of the initiative, U.S. nuclear power plants' operating costs have been reduced by 19 percent since 2012 and we have realized savings of \$1.6 billion. In addition, the Nuclear Regulatory Commission's annual fees for licensees have been reduced by approximately \$130 million.

We not only streamlined our operations, but also pushed to ensure nuclear receives the credit it deserves for delivering electricity safely and reliably. As a result, we saw real action from state governments to keep our nuclear power plants running. Three states—New York, Illinois and Connecticut—have taken concrete steps to properly value nuclear power.

In fact, at least five nuclear power plants operating today likely would have been closed if these states had not taken decisive action.

Now, we must take the next step. The strategy outlined in this document will act as a guide for the future of Delivering the Nuclear Promise. In 2018, the initiative will shift to the "Forward Strategy," which will focus on implementing the most significant savings opportunities in the most efficient manner possible. This is not only vital for our industry, but for the millions of Americans that depend on our nuclear power plants.

Nuclear power provides almost 20 percent of America's electricity. Nuclear plants run 24 hours a day, 7 days a week producing power with unmatched safety and reliability. While the U.S. nuclear fleet is a central part of the nation's critical infrastructure, this national asset should not be taken for granted. In the last five years, six reactors that produced 4,100 megawatts of power have closed. Companies that own nuclear plants have announced the scheduled closure of an additional eight reactors providing another 7,100 megawatts of capacity. In total, over 90 million megawatt-hours of clean generation will have been lost by the early closure of these reactors. It's vital that we preserve and protect this vital source of American energy and Delivering the Nuclear Promise is helping to ensure that happens.

I want to congratulate everyone who works in our industry for their continued dedication and hard work, with a particular thanks to the unions that represent many in the industry. You are the ones who have made this initiative a success. Working together we will ensure that nuclear energy remains a viable option for decades to come.

## **MARIA KORSNICK**

President and Chief Executive Officer  
Nuclear Energy Institute

## The Goals of Delivering the Nuclear Promise

In 2015, companies that operate America's nuclear energy facilities partnered on a long-term strategy to transform the industry and ensure its viability. Recognizing the economic threat to the U.S. commercial nuclear fleet, industry leadership launched the Delivering the Nuclear Promise initiative to:

- maintain focus on safety and reliability
- improve efficiency of operating nuclear plants
- ensure monetary recognition of nuclear energy's value.

It has been successful on all three fronts: Plants have maintained their stellar operating records; states have begun to recognize nuclear's unique value; and operational efficiency has improved.

### Maintain Focus on Safety and Reliability

The industry has been steadfast in its resolve that it must not compromise safety in a more diligent and focused pursuit of innovation and efficiency. Throughout the implementation of Delivering the Nuclear Promise, U.S. nuclear plants have maintained their excellent safety and reliability track records.

We know this is true because we can quantify America's nuclear power plants' performance using safety and reliability metrics. The nuclear industry operates one of the safest working environments, with 0.03 industrial safety accidents per 200,000 worker-hours, according to the World Association of Nuclear Operators. Data compiled by the U.S. Bureau of Labor Statistics shows that it is safer to work at a nuclear power plant than in the manufacturing sector, real estate, healthcare, leisure and hospitality, or financial sectors.

Nuclear power plants are highly reliable sources of power generation—generally operating day and night through a wide array of weather conditions and only shutting down to refuel. The 99 operating U.S. nuclear power plants posted an estimated average capacity factor of 91.9 percent, in 2015.<sup>1</sup> The average capacity factor for nuclear power plants has held at or above 90 percent for each of the past 15 years.<sup>2</sup> For comparison, in 2015 wind turbines had capacity factors of 32 percent<sup>3</sup> and combined-cycle natural gas plants had capacity factors of 56 percent according to the U.S. Energy Information Administration.

## Improve Efficiency of Operating Nuclear Plants

As the Delivering the Nuclear Promise initiative began, industrywide teams of experts analyzed the cost drivers common to all nuclear plants and explored ways to redesign programs and processes to improve their efficiency and effectiveness.

Industry chief executive officers, the NEI board of directors, Institute of Nuclear Power Operations (INPO) and Electric Power Research Institute (EPRI) provided overall governance and oversight while a steering committee led the initiative. The steering committee included representatives of all nuclear operating companies, either directly or through operating alliances. The committee established the structure, priorities and accountabilities for the initiative.

Chief nuclear officer-led teams proposed improvement opportunities and recommended levels of industry accountability to the steering committee. Improvement opportunities were refined and approved by INPO and the Nuclear Strategic Issues Advisory Committee (NSIAC) and then transmitted to the operators of nuclear power plants as efficiency bulletins. These efficiency bulletins rigorously detailed the changes to be made by nuclear power plants to make their operations, procedures and meetings more efficient.

<sup>1</sup> <https://www.nei.org/news/2016/us-nuclear-plants-set-reliability-record-in-2015>

<sup>2</sup> <https://www.nei.org/news/2016/nei-retiring-ceo-marv-fertel-strong-legacy>

<sup>3</sup> <https://www.eia.gov/todayinenergy/detail.php?id=25652>

The results of Delivering the Nuclear Promise have been tangible and substantial. As of December 2017, the industry has issued a total of 67 efficiency bulletins enabling savings of \$1.6 billion. The initiative also was instrumental in lowering NRC annual licensee fees by nearly \$130 million across the entire fleet. From a peak in 2012, total generating costs of nuclear energy have dropped approximately 19 percent. Diligence and hard work at the plant-site level have paid major dividends, fundamentally changing the economics of this leading American electricity source.

## Boosting Efficiency

67

Efficiency  
Bulletins

\$1.6

Billion  
Enabled Savings

\$130

Million  
Annual Licensee Fee Savings

As of December 2017

Generation  
Costs Drop

-19

Percent

### Ensure Monetary Recognition of Nuclear Energy's Value

The industry is actively advocating for legislative and policy solutions to ensure the attributes of nuclear energy are appropriately valued. Those efforts have led to three states adopting measures to compensate nuclear power plants for the value they provide. To date, reforms at the state level have preserved five nuclear power plants: the Ginna, Nine Mile Point, and Fitzpatrick nuclear plants in New York and the Quad Cities and Clinton nuclear plants in Illinois.

In 2016, New York approved a state Clean Energy Standard explicitly recognizing the role nuclear plants play as carbon-free sources of power. The mandate requires New York's investor-owned utilities and other energy suppliers to pay for the intrinsic value of carbon-free emissions from nuclear power plants by purchasing zero-emission credits. Later that same year, Illinois passed a Future Energy Jobs Bill, recognizing the value of nuclear to by introducing a zero-emission standard. In 2017, Connecticut Gov. Dannel Malloy signed a bill that allows nuclear power plants to compete with other clean energy technologies in a zero-carbon emissions procurement program. The action taken in Connecticut levels the playing field for Dominion Energy's Millstone Power Station by allowing the plant to bid into electricity markets along with other zero-carbon energy sources like wind, solar and hydropower.<sup>4</sup>

Similar efforts to properly value and compensate nuclear power plants are underway in other states including Ohio, Pennsylvania and New Jersey.

<sup>4</sup><https://www.nei.org/news/2017/nuclear-drumbeat-connecticut-market-reform-bill>

## States Recognize Nuclear's Value



Billion  
In Economic Benefits  
in New York



Billion  
Economic Activity  
in Connecticut



Billion  
Economic Activity  
in Illinois

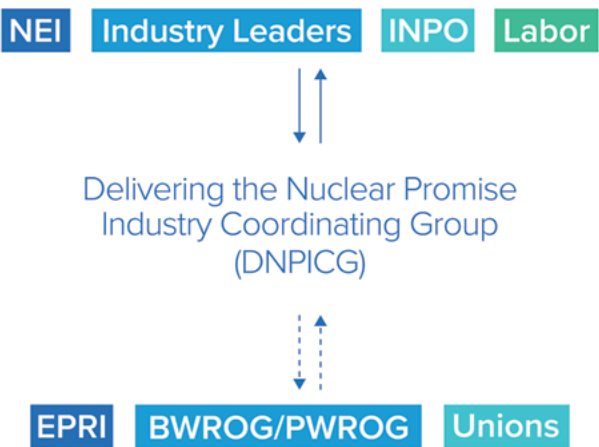
The Next Step in Delivering the Nuclear Promise: The Forward Strategy

For the past two years, the industry has realized significant efficiencies from Delivering the Nuclear Promise. However, it is time to start the next phase of the initiative. Additional efficiency improvements and cost saving opportunities are available and there remains value in continuing our efforts. In the future, the industry will streamline the process of developing, reviewing and approving efficiency-boosting ideas.

In collaboration with NEI, a team of industry leaders will manage the next steps in the initiative known as the “Forward Strategy.” This will include recommending opportunities with the most significant savings opportunities to chief nuclear officers, streamlining the process to align and approve efficiency bulletins and focusing industry groups on driving the next stage of significant cost savings. The Forward Strategy will keep Delivering the Nuclear Promise at the center of everyday life at U.S. nuclear power plants, maintain leadership and accountability, and promote safety and reliability.

New Governance: The DNP Industry Coordinating Group

To realize future efficiencies as part of the Forward Strategy, a Delivering the Nuclear Promise Industry Coordinating Group (DNPICG) was formed with representatives from the cost transformation leaders of the U.S. industry along with representatives from NEI and INPO. The DNPICG will regularly coordinate with other representatives from EPRI, the Boiling Water Reactors Operating Group, the Pressurized Water Reactors Operating Group and unions with an NEI executive providing oversight.



The original Delivering the Nuclear Promise steering committee sunset in 2017 with DNP executive oversight shifted to NEI’s Nuclear Strategic Issues Advisory Committee (NSIAC). The DNPICG will assist NSIAC in this role. The DNPICG will coordinate open items (improvement opportunities and efficiency bulletins),

make recommendations on focus areas that will be most impactful and focus industry working groups on initiatives that will continue to transform the industry.

As part of the Forward Strategy, chief nuclear officers will sponsor fewer, more significant efficiency bulletins recommended by the DNPICG. INPO will continue to review efficiency bulletins and NSIAC will continue to approve them. Nuclear industry chief nuclear officers will remain engaged with existing industry groups to guide efficiency bulletins through the NSIAC approval process.

Efficiency Bulletins

Going forward, only key initiatives and efficiency bulletins that have the potential for significant enabled savings will be considered. The NSIAC will prioritize these initiatives based on feedback from the new DNPICG. The previous practice of developing and approving improvement opportunities will no longer be necessary.

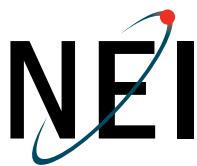
It is expected there will be several highly significant efficiency bulletins per year brought to NSIAC for approval and distribution. Existing safety and reliability reviews (INPO) and cost-saving verifications (NEI) will continue.

The Forward Strategy will allow plant owners and personnel to focus on the most critical efficiency enhancements with the least amount of administrative burden. This will allow our plants to operate more efficiently than ever while retaining safety and reliability.

Discovering New Improvement Opportunities

Previously, approximately 1,000 industry experts on 13 teams were involved in identifying improvement opportunities and turning them into efficiency bulletins to be considered by INPO and NSIAC. These teams helped to identify and define improvement opportunities in their areas of expertise. The teams were setup with very specific attributes to ensure development of high-quality improvements that will stand the test of time.

As part of the Forward Strategy, these DNP-specific teams will be discontinued, but the industry will look to existing, expert-led industry peer groups to highlight and refine improvement opportunities and present them to the DNPICG. This will ensure that new improvement opportunities will continue to be put forward and implemented, while streamlining the process of approving efficiency bulletins. It also will preserve nuclear energy as a viable low-carbon electricity source for decades to come.



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