

**U.S. Nuclear Regulatory Commission  
Chair Christopher T. Hanson  
Remarks for the  
Institute of Nuclear Power Operations CEO Conference  
November 1, 2022**

**Introduction**

Good afternoon. It's good to be with you and I'm looking forward to our discussion. It is a pleasure to be here with my colleagues from the Commission. The perspectives and thoughts I share today are my own and not a reflection of the collective.

The theme of the conference this year is resilience, and I am pleased to hear it. I think after the events of the last two and a half years, we should all be looking closely at the concept of resilience. Because one of the key lessons of the pandemic for me is that highly optimized systems are not always very resilient. Look at the American healthcare system—whatever its other characteristics, it's a highly efficient and optimized system. But we learned the hard way that it wasn't particularly robust in the face of stochastic events. Looking at this in hindsight, there were many opportunities for the healthcare industry to prepare for such an event, to shore up its infrastructure, and have the resources in the right places. We didn't incorporate up front the relatively modest costs of resilience investments (both human and equipment).

In my visits to licensees over the last two years, I've heard a lot about optimization initiatives. I recognize the link between performance and safety, and I think the safety record of the industry as a whole should be celebrated. As we all seek to extend that record, I welcome Admiral Willard's renewed focus on resilience. And I hope that as I continue my travels, I will hear more about efforts to shore up the resilience of the plants, particularly on the safety side, but also on the non-safety side.

A brief anecdote: Last year, I visited a number of plants in rapid succession, and I heard a lot about optimization—about staff reductions or right-sizing in plant maintenance shops, about centralizing various functions at the corporate level, about reorientation or elimination of systems engineering capabilities. And after a week on the road, I got to my last plant, and after listening to nth iteration of the optimization pitch, I said, "Look, are you all able to see across organizations and functions to identify common or systemic issues or are you just playing whack-a-mole on equipment reliability?" And I got an honest answer: "Yeah, at the moment, we're playing whack-a-mole."

There's a lot of that going around and not just in the nuclear industry. On the pandemic. On inflation. Supply chains. There's an overall sense of precariousness, of fragility in America. This sense cuts across so many areas of our common life—personal finances, natural disasters, politics. And while I understand the drive for optimization, for efficiency, in our little corner of the world, it's resilience that best serves our shared purpose.

While the industry and the regulator are independent, we each have a stake in making sure the future of nuclear is resilient enough to withstand a range of stochastic events, whether external like natural hazards or internal in the form of equipment failures or cyber-attacks. Overall, INPO is going to address the specifics of resilience in plant operations. I'd like to take a step back and address the issue from a different angle. Specifically, I want to talk about resilience in the context of public trust and social license and then how the NRC is addressing resilience in our own house by building institutional competence.

## Public Trust and the Social License

I like this concept of a social license for nuclear power. I'm not sure who coined the phrase, but I've heard it used several places, including by Suzy Baker and Jessica Lovering of the Good Energy Collective, a non-profit focused on the social benefits of nuclear power. It's intuitive, right?

There's no future for nuclear power without continued safe operation of the existing fleet. The public expects both the regulator and the industry to maintain a high level of safety. The public should be comfortable trusting the industry to deliver on its promise of operating safe, reliable and economic nuclear power plants. And the public expects to be able to trust the safety and security decisions of the regulator, which in turn gives the industry credibility. There is a strong correlation between reliable operation and public trust.

We can recognize the social license, but what's it made of? Here's an incomplete list.

First, it's a license from the NRC, an independent, technically competent regulator that is the stand-in for the public. And the regulator has to continue its oversight of operating facilities according to our principles of good regulation: Independence, Openness, Efficiency, Clarity, and Reliability. Let me take a moment to put a plug in for our resident inspectors. I occasionally meet with the community groups around your plants. I consistently hear how much external stakeholders value the role that our residents play in providing independent and objective information about plant performance. As such they play a critical role in allowing you to maintain the social license of a facility.

Second, the social license consists of ongoing strong, safe performance by the licensee. Overall safety across the fleet is quite good. Only three plants are in column 2. The number of plants approaching Performance Indicator thresholds is smaller than usual. However, we're seeing an uptick in number of finalized greater-than-green (GTG) findings this year compared to last year. Also, the number of potential GTG findings has been increasing over the last several months. More special inspections have been completed this year than usual. I'm reluctant to connect dots where I shouldn't, but I will say there is an ongoing opportunity to emphasize conservative decision-making in plant operations for the sake of safety and the long-term health of the asset.

Third, I think Safety Culture is an important element of the social license. It's sometimes funny how the public can sense the erosion of safety culture at a plant. Maybe it's a lack of civic engagement by plant employees, maybe it is more articles in the local paper about outages. I get it. I grew up next to Palisades in the '80s.

When I visit plants, you may have noticed I make a point to meet with the union, Women in Nuclear, and Young Generation in Nuclear. Some of this is to be encouraging in the case of young professionals, but it's also to get a sense of overall investment and pride by employees and whether safety culture messages transmitted by management are making their way through the entire organization. Someday, I'm going to give a full-blown speech about the relationship between breakfast food and safety culture. For now, I'll point out that events like pancake breakfasts in the community say a lot about how invested employees are. One more note from my experience—when employees say, "Welcome to MY radiation control center, central alarm station, emergency response center, etc." there's real accountability there. It's a small thing but makes an impression. In this way and many others, safety culture makes its way out into the public and strengthens the social license.

But it's not all a bed of roses. Just as the nuclear landscape is changing, I think that the issues most important to the public are changing. We need to make sure that we are tracking these trends and keeping abreast of opportunities for education and public engagement. I tend to group the problems of misinformation/disinformation, political polarization, and generalized distrust in institutions in the same category. These are real issues, and we can see anew each day how they are affecting our organizations. But they deserve more attention than I can devote today. In the meantime, we have to double down on communication and transparency.

But there are other real, concrete issues—climate change, extended operations, waste management—that are getting the public's attention. Just last week NBC news ran a piece focusing on nuclear power in the United States that included these exact issues with a focus on Turkey Point.

The public is understandably taking an interest in the extended operation of nuclear plants. It is in everyone's best interest for the subsequent license renewal process to be comprehensive with significant opportunities for public engagement, including on the environmental assessment. Indeed, there is an opportunity here for licensees to demonstrate not just to the regulator, but to the public, that with inspections and appropriate aging management programs, these plants can continue to operate safely and continue to provide carbon-free power. A record of consistent and reliable operation, clearly laid out in a subsequent license renewal application, will be critical to gaining the trust of the public to continue operation of plants beyond their initial renewal terms. Public outreach and education are paramount to both the regulatory and social license processes.

This same level of engagement should be prioritized to help address the public's concerns about the resilience of plants (both physical and human capital) to extreme weather events caused or exacerbated by climate change. The NRC is working to find opportunities to educate the public about our processes and the types of analyses that power plants are required to perform to get a license from us. But this should also be an opportunity for the industry to point to its safety record throughout recent weather events—it's impressive and you all shouldn't be shy about that. Responsible and conservative operation of these plants is the best way to demonstrate through action that the nuclear industry's top priority is the safety of the people it serves. This is reliability in action and should be emphasized by the industry with the goal of bolstering its social license.

### **Institutional Capacity**

As I think about the future and how to make NRC responsive to change, even dare I say more agile, as well as resilient, let me share with you some of my priorities for our work on the existing fleet. To succeed in this area, both the regulator and the regulated need to focus on maintaining institutions that have the expertise and capacity to face the challenges ahead.

### **Staffing**

Let me first talk about staffing overall at the NRC. This is an issue I know we all share—building a technically competent and diverse workforce of the future. And like most of you, the NRC hasn't done much hiring in the last 10 years. As many of you know, we shrank from high of roughly 4,000 employees in 2010 to about 2,700 today. This was perfectly appropriate given the workload. But times are changing. As of about 6 months ago, 24% of our staff are over the age of 60. Another 30% are between 50 and 59. So that means more than half the agency is over 50. Under 30? 3%. An informal survey during my visits says you all are about 10-15% for the under-30 crowd.

We are not hiring for its own sake. Through our strategic workforce planning initiatives, we are focused on striking a balance between shoring up our expertise and intentional hiring efforts to fill specific skillsets in areas of current or future needs.

We have been working on university outreach through our University Nuclear Leadership Program. And we are looking to expand our outreach not just to big programs—but to all schools for things like operation and maintenance and radiation protection. We are also focusing on HBCUs and MSIs. And we are facilitating grant programs and visits. For instance, I am visiting Georgia Tech tomorrow as part of my travels.

We need to hire the best and the brightest and build a safety culture that supports questioning attitudes and innovation. We need to make strides in knowledge management as some of our most senior staff retire. We need a strong and capable staff that has the technical wherewithal to engage with advances in technology and seek new ways to improve our processes. And we need to do this while responding to applications, topical reports, and comments from the public on our ongoing activities.

### **Continue to strengthen risk culture and risk-informed decision making**

We cannot hire our way out of this problem, so the agency recognizes the need to change the way we work while upholding our safety mission. We have to be data-driven. Risk-informing our work for me has been and will continue to be about data. What does the data tell us is most safety significant? And where we do not have data, or data of sufficient resolution, then we focus more on deterministic approaches and defense-in-depth.

Jointly, we have had some successes. The first Risk-Informed Process for Evaluations, or RIPE, approval last spring is just one example. We learned a lot, are honing that program, and are looking at expanding it to include tech specs. 10 CFR 50.69 is another area where we have seen progress and it has yielded some pretty interesting results as to safety significance for the licensees that have gone through it. And we are continuing to apply and explore the boundaries of the Very Low Safety Significant Issue Resolution Process.

### **New technologies**

So, where does the rubber meet the road on these efforts? In the near term, we will be working through digital I&C, which I know is a long time coming. We'll also be reviewing the use of accident tolerant fuel and considering the safety margin that goes with it. There's also higher enrichment and high burn-up fuel, and FFRD.

But again, sticking to this theme of resilience, there is nothing more steadfast than numbers. Data is the language we should be using to speak to one another and to the public. And base regulatory decisions on data in return. I get asked occasionally by foreign utility executives how they can better communicate with their regulator. I tell them consistently, "Focus on data. That should be your common language."

### **Conclusion**

I want to reiterate that one of the most important parts of maintaining the resilience of a regulatory institution is assuring that there is consistency and predictability in our regulatory framework. We create resilience over time by making processes and procedures predictable and reliable so that stakeholders understand the expectations and requirements of the agency.

Resilience isn't focusing on a few things here or there, it is seeing the entire field and making informed decisions based on that wider perspective. The NRC's transformation initiatives are about preparing the agency for a range of possible futures. As we evaluate those futures, we have to incorporate internal factors like workforce structure, rulemakings, processes and procedures. But we also have to incorporate external factors like industry and market dynamics, climate change, and public sentiment.

The agency's priority has been and will always be safety. But through consistent evaluation of the way we do business through the lens of safety significance we uncover opportunities to use things like operating data and lessons learned to better adapt our framework to regulate safety. We need engagement from experienced operators like yourselves.

We all share the ultimate goal of the safe and secure use of nuclear power. Thank you for your attention, I look forward to your questions.