



# NRC NEWS

**U.S. NUCLEAR REGULATORY COMMISSION**  
Office of Public Affairs      Telephone: 301/415-8200  
Washington, D.C. 20555-0001  
E-mail: [opa@nrc.gov](mailto:opa@nrc.gov)  
Site: <http://www.nrc.gov>

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**Prepared Remarks of NRC Chairman Dale E. Klein  
University of Missouri Energy Summit**

**Columbia, MO  
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Thank you.

Let me congratulate the University of Missouri and everyone involved in putting together this very impressive event. As a regulator, I am not here to promote or advocate nuclear energy. When the Atomic Energy Commission was split in 1974, the advocacy role was given to what would become the Department of Energy, and the regulatory role was given to an independent Commission — the NRC. Our job is safety and security. But I do recognize that energy diversity is widely regarded as an important public policy goal, and I congratulate everyone here who is working to improve America's energy security across the whole spectrum of available technologies.

Let me begin by telling you where things stand with regard to applications for new nuclear power plants. And then I want issue a challenge to everyone who is here today.

As of today, the NRC has received 17 applications to build 26 commercial power reactors. We expect another three applications to build five more reactors later this calendar year. These are the first new reactor license applications to be submitted in decades.

The current process is a great improvement over the old licensing review procedures, because we use what are called "Combined Operating License" applications — a one-step process for reviewing both the proposed construction and operation of the plant. These applications are expected to take the NRC about 30 months to review, plus about 12 months to complete public hearings. For people who are not familiar with the complexity of a nuclear power plant application, this may seem like a long time. The level of detail the NRC requires; the

high standards we demand in engineering, construction, and quality of components; and the thoroughness of our review process — may appear onerous to some people. But it is my belief that these high standards actually benefit industry over the long term.

I do hope that we can eventually reduce the time required to review these COL applications, without any compromise in safety. But any streamlining of the process must maintain a significant role for public participation. Of course, public participation should be reasonable and responsible. False alarms and baseless fears are not meaningful contributions to the process; and I sincerely hope that reasonable points of view don't get overwhelmed by sensational, but unsubstantiated, assertions.

Unfortunately, the media often contribute to the public's inability to evaluate these statements, because they don't shed light on the technical or scientific merits of these claims. I want to come back to that point later on. But first let me say a bit more about the status of new reactor applications.

Assuming that a license application meets all of the NRC's stringent requirements, it is expected that it will take another 44 months or so for construction. And the total price tag, as you may have seen in the press, seems to keep going up. It is now often in the neighborhood of \$5 to \$7 billion per plant.

These all seem like daunting numbers — and they are. But I always say that one of my jobs as Chairman is to put things into perspective. So let me do that now.

The first thing to bear in mind is that these plants — if approved — will be licensed for 40 years, with the possibility of a license renewal for another 20 years. Given that about half of the current 104 operating reactor have received or applied for one of these 20-year license renewals, it seems highly likely that many of the proposed new plants would do so as well.

Forty to sixty years is a pretty long time. Of course, as someone who has a bit of snow on the roof I don't mean to suggest that 60 is old! But it is certainly a good length of time for a complex and highly engineered system.

To get some perspective on the lifespan and costs of proposed new reactors, consider that the newest Nimitz class aircraft carrier in service, the USS Ronald Reagan, cost more than \$4 billion to build 10 years ago. It should have a lifespan of more than 50 years. The oldest active-duty vessel in the U.S. Navy is the Enterprise, which was launched in 1960. It is scheduled for decommissioning within three to five years — which would give it a lifespan of over 50 years. Its construction costs were over \$3 billion in today's dollars. And, by the way, it is powered by eight nuclear reactors

So the cost and planning involved in potential new nuclear power plants doesn't seem so out of proportion when compared to similar projects of comparable scale and complexity, and similar lifetimes. In fact, it seems to me that this is the best way to evaluate the costs and benefits of any electricity source. We should consider the price of construction, of course, but also the replacement of parts, maintenance, and other expenses over the entire life cycle of the power source.

I said earlier that the NRC does not promote the use of nuclear power. But I do think that I can be an advocate, at least on a personal level, for electricity — in part because I have personally experienced the utter transformation electrification brought to the rural Midwest several decades ago, when I was growing up on a farm here in Missouri. So I am in favor of electricity from all sources. And it seems to me that new technologies that are unfolding across all energy sources make this a very exciting time for electricity — which someone once referred to as “organized lightning.”

There have certainly been significant improvements in nuclear reactor technology in recent decades. But what is also noteworthy is that the NRC is now expecting to have much more complete and more standardized designs as it conducts its reviews. During the last round of NRC's licensing process for new reactors, several decades ago, the designs were very incomplete — and led to a design-as-you-go approach to construction — which meant that every plant was different. That is why I like to joke that the United States has 104 kinds of nuclear reactors, but one kind of cheese. While France — which gets 80 percent of its electricity from nuclear — has 104 kinds of cheese, but one kind of reactor. So I think that more complete designs, and higher degree of standardization for potential new plants, will make them more efficient and also safer.

These are all important considerations that I wish more people understood, and that brings me back to the point I raised earlier about public confidence and the role of the media. You see, I didn't tailor my remarks only to the engineers in the audience, but also to the journalism students. Mizzou has a great journalism program, and I wanted to say something to that part of the audience as well.

Two years ago I gave a speech to professionals in the field of nuclear medicine, and I pointed out that because there is so much focus on the NRC's work on reactors, many people don't appreciate the other half of what we do — which is regulating the safe use of nuclear materials for research, medical applications, and other purposes. That's unfortunate for several reasons. If more people understood the nature of radiation — and the important role it plays in our everyday lives — they might be less afflicted by what you might call “radiation phobia.” This would make my job as a regulator easier, because it would allow the public, and the NRC, to focus on issues of real safety significance, rather than getting sidetracked by basic misunderstandings. In response to my speech, the Health Physics Society created a website called [radiationanswers.org](http://radiationanswers.org). It's very good — with clear, concise, and accurate information. I recommend it as an excellent resource for anyone interested in understanding more about radiation issues.

Let me be clear that there are, of course, very real issues and grave dangers involved with radiation. But I think you would agree that the public also deserves to know what not to be afraid of. The conference where I first brought this up comprised several thousand health professionals. And I pointed out that as doctors, nurses and medical technicians, they had a position of trust and confidence that could help them undertake this effort in a credible way. But journalists are in an even better position to educate the general population. That is, after all, what you are supposed to do. And while most of the energy reporters that I know from the major media outlets are very good and reliable that is not true across the board. And even more unfortunately, the problem of reporters who don't have a good grasp of nuclear issues — or even basic science — is not a recent development.

The 30th anniversary of the accident at Three Mile Island occurred a few weeks ago. After the accident a blue-ribbon panel, called the Kemeny Commission, was set up to review what happened, and figure out what lessons could be learned to prevent it from happening again. They issued dozens of specific recommendations, nearly all of which were implemented. One was about the obligation of the news media to provide accurate and timely information.

The Kemeny Commission recommended that — quote — “All major media outlets hire and train specialists who have more than a passing familiarity with reactors and the language of radiation.” If that recommendation had been followed it would have made my job a lot easier; although a minor detail like the First Amendment meant that not even Congress had the authority to implement that suggestion. But all of you — not only the journalists, but also the engineers, representatives from industry, scientists at the National Laboratories, and others — can follow up on that idea, and do your part to elevate the public discussion of these issues.

I will tell you a brief story that is a great way to transition into this topic. A few years ago, I visited the Port of Seattle and toured the radiation detectors operated by U.S. Customs and Border Patrol. While I was there one cargo container triggered the alarms. But it wasn't a dirty bomb; it was a shipment of Chinese fireworks that contained potassium 40. The Customs agents told me about another port that receives nothing but bananas — which also contain potassium — and virtually every shipment sets off the detectors. That struck a chord with me, because members of the Commission have sometimes joked about establishing the “standard banana” as a harmless unit of radioactivity. So the next time the subject of radiation comes up, and you think you can help improve someone's understanding of these issues, ask them if they know about “The Standard Banana.”

That's a great way to break the ice, and I would hope that in the land of Harry Truman and Mark Twain — two of the greatest storytellers in American history — any self-respecting Missourian would be able to take it from there. And speaking of great storytellers, let me conclude with a quotation from Franklin Roosevelt, which is not about telling a story, but about giving a speech. Roosevelt's advice was, “Be brief, be sincere, be seated.”

So with that, let me thank you very much for inviting me to share some thoughts with you. I am honored to be here and to participate in this major conference.