

## Nuclear Industry Leaders

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Humanity faces two urgent, contradictory needs:

The first is more energy. Energy to provide refrigeration and food processing, clean water, heating and cooling, lighting, communications and transportation, for hundreds of millions of people rising out of poverty. The U.S. Energy Information Administration predicts that by 2050 worldwide demand for electricity will rise by nearly 50%. Other estimates are for an even greater increase.

We also need to reduce emissions. Over the same time period, by 2050, the Intergovernmental Panel on Climate Change has said that carbon dioxide emissions from electricity must fall to nearly zero. This will prevent the worst effects of a changing climate: making air more breathable, preventing a rise in global sea levels that could displace more than 150 million people, and maintain levels of rainfall, heat, and cold in the approximate patterns we have relied on as we have built our homes, factories, and farms, and that all the other creatures with which we share the planet are relying on.

How do we reconcile these needs? We must find ways to reduce emissions of our energy systems. Because we depend on electricity for so many critical uses that affect our health, safety and communications, it also means ensuring system reliability by complementing increasing amounts of carbon-free variable energy resources like wind and solar with carbon-free dispatchable power from nuclear—the only scalable, minimal-carbon power source that can fill this need.

Many of us recognize nuclear's indispensable role in solving this equation. But we need to act now, because the challenges are no longer in the distant future. Hunger, thirst, and disease are not abstract issues for those facing them, and droughts, heat waves, cold spells, and more intense storms are not trends we can ignore. In fact, one-fifth of the new century is already behind us, and the scientific consensus is that we need to take urgent action to meet the mid-century goals to avoid yet worse effects of climate change.

These challenges require a fundamental rethinking of energy. Since the inception of commercial energy systems, they have been organized around a least-cost solution. But as the world has become more complex and the health and prosperity of its 7.6 billion people more interrelated, more considerations have come into play. This means that we need to address not only how we integrate zero-carbon technologies into our system, but also how the market compensates these zero-carbon generators.

We will have to integrate vast amounts of new zero-emitting energy generation. Burning fossil fuels was surely simpler, but clean air and a stable climate require something new.

And part of that something will be increased use of nuclear energy. According to the IEA, that requires retaining much of our existing generation and building new nuclear generators, in a plethora of forms, some familiar, some more innovative.

Human ingenuity can solve our problems, through harnessing the power of the sun, the wind, falling water and another elemental force, the atom. We are going to need all of them.

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