

Nuclear Technology's Critical Role In The World's Future Energy Supply



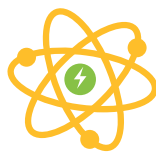
HYDRO



SOLAR



ELECTRIC



NUCLEAR



THERMO



BIO



WIND

Nuclear power is a key component of electricity production. However, electricity is only one facet of overall energy use, and the future will require clean, affordable energy for transportation, industrial production, and other applications. Currently, nuclear energy is primarily used to generate baseload electricity for the grid. But nuclear energy can also provide process-heat and onsite electricity for a variety of beneficial applications, such as district heating, desalination, hydrogen production, and industrial processes.

Because nuclear plants provide clean baseload electricity, they can coordinate with variable, renewable generators to maximize the contribution of clean energy in meeting our needs across all sectors. This coordination and integration allows nuclear plants to ensure a reliable around-the-clock electricity supply, while providing alternative revenue streams during periods in which there is a high availability of relatively inexpensive electricity from intermittent sources.

For example, on sunny or windy days when solar or wind is abundant, the excess heat and electricity from nuclear plants can be repurposed for other uses, reduced through flexible operations, or stored for later use.

Transportation and industrial sectors together account for a majority of the primary energy consumption in industrialized societies. Burning fossil fuels produces most of this energy.

Addressing climate change requires a shift toward energy technologies that generate less carbon dioxide and other greenhouse gases. Furthermore, future energy systems will likely have to meet stricter emissions limits on atmospheric pollutants such as sulfur oxides, nitrogen oxides, mercury, heavy metals, and particulates. Nuclear plants do not emit these pollutants.

In summary, nuclear plants can provide heat and energy for many uses with minimal environmental impacts. To achieve this, the following is required:

- Collaboration between federal government research and development entities, international entities and organizations, electricity generators, reactor developers, and industrial customers, including the development of modeling tools to assess technical and economic viability of integrated energy systems, and the design of experiments to demonstrate the necessary interfaces, controls, and operations.
- Economic research into the valuation, market structure, and ability to finance such integrated systems.
- Policy incentives that will support initial commercial deployment of integrated energy systems and properly value them in the marketplace.