

## Topical Briefs:

### Economics of Advanced Nuclear Energy

#### Summary

- Nuclear energy is an economically viable energy source essential to deep decarbonization.
- Advanced nuclear reactor designs promise to lower capital costs and reduce investor risks associated with construction.
- Once built, nuclear reactors are low cost to operate and maintain.
- Commercial nuclear plants provide high-paying union jobs, bring investment, support the local taxbase, and stimulate local economies.

#### Overview

**Nuclear energy continues to be an economically competitive energy source that can help meet deep decarbonization goals.** Once built, nuclear reactors have nearly constant operating and fuel costs, can support local economies, and produce carbon-free reliable electricity at stable prices. Nuclear reactors, however, are conventionally considered construction mega-projects that are prone to cost and time overruns due to their size and complexity. Construction cost overrun risks have stymied growth in conventional nuclear energy development despite increasing demands for clean energy.

**In response to these economic pressures, developers are pursuing advanced reactor (AR) designs that minimize construction costs and maximize cost competitiveness.** AR designs feature smaller physical footprints, reduced capital investment, and less construction complexity. This enables faster construction, which can provide scalable, incremental power additions to meet energy demand as needed. ARs may also be designed with limited water requirements and elimination of the need for off-site emergency evacuation requirements, opening up deployment at sites not possible for larger, conventional nuclear reactors. Further, smaller designs like microreactors can unlock new customer types and enable decarbonization of high-cost, carbon-intensive remote grids. These factors together reduce overall capital costs and investor risk, making advanced reactors attractive assets for utilities and companies seeking low-cost clean energy.

**Beyond competitively priced power, nuclear energy brings significant economic benefits to states and local communities.** Nuclear jobs have the highest median hourly wages of the ten energy industries and a high rate of hiring military veterans. Compared to median energy wages that hover around \$25 an hour, nuclear power can boast a median [\\$39.19 hourly wage](#) and a high rate of unionization, providing additional benefits to workers. Each year, a typical commercial U.S. reactor generates tens of millions of dollars in state and local tax revenue, stimulating local economies through local infrastructure development and maintenance. Construction of new nuclear power plants also benefits local and regional suppliers of design, engineering, procurement, construction and consulting services [to billion dollar nuclear projects](#).

**Finally, advanced reactors have the new potential to supply low-cost energy for markets outside of just electricity production.** Researchers are currently examining the feasibility of using advanced nuclear reactors for multiple purposes. Advanced reactors can play a significant role and are already expected to produce hydrogen, clean water, and chemicals, and to be used in other industrial applications requiring high-temperature heat and steam. These systems can also couple nuclear reactors with renewable energy—a combination that will further increase economic competitiveness, job creation and grid reliability.

**For more information, please visit: <https://nuclearinnovationalliance.org/economics>**