

Session Title: Nuclear Power as a Power Source for Decarbonization

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The last decade has been a period of unprecedented innovation in the nuclear energy sector. In the US, nuclear reactor designers, based in startups, large companies, national labs, universities, and sometimes consortia of these various entities, have been designing new reactor technologies. Many of these reactors, unlike the traditional large light-water reactors, are envisioned by their developers as community-scale sources of heat and energy with the potential to serve communities on and off the grid. As decisionmakers and communities work towards the decarbonization of energy systems and imagine a potentially large role for nuclear energy technologies in such systems, and as the nuclear energy technologies themselves undergo a fundamental shift, it is time to reconsider practices, pedagogy, and policymaking in the nuclear sector. This talk, which is based on the study of contemporary nuclear reactor design practices, will explore the following questions:

1. How can a fundamental understanding of design be used to improve design practice, design tools, and engineering pedagogy?
2. How can design processes be made more open and participatory such that epistemic plurality and inclusivity are achieved as part of the design process?
3. How can insights from design research be applied to the designs of policies and institutions for the governance — both innovation and regulation — of nuclear technologies?