

Ralph O'Connor Sustainable Energy Institute

The **Ralph O'Connor Sustainable Energy Institute (ROSEI)** serves as the nexus for sustainable energy-related research and educational programs at Johns Hopkins University. Founded in 2021, the institute has brought together extensive sustainable energy activities already underway at the university, as well as developed a series of initiatives to participate in the transformation of the energy sector to combat climate change.

The institute's mission is to create and implement clean, renewable, and sustainable energy technologies; educate future energy leaders; and support implementation, markets, and policies that promote an affordable green energy future. ROSEI's experts recognize that complex problems demand visionary solutions, so their research is focused on four distinct pillars:

- **carbon:** extracting carbon from the atmosphere and from fuels and upcycling and repurposing the captured carbon into high value materials
- **storage:** innovating unique integrated, multifunctional, and stable storage solutions that provide sustainable storage for all uses from personal, off-the-grid, to society-wide, grid-scale storage
- **wind:** creating efficient wind farms through improved controls integrated with efficient open models of the wind fields and their interactions, and developing reliable and resilient systems for wind farms under natural hazards
- **grid:** developing new power systems, markets, and policies that demonstrate equitable pathways to transforming the electric grid into high-penetration renewable energy



ROSEI brings together top experts from across Johns Hopkins to create and implement clean, renewable energy for the benefit of the world.

In addition, ROSEI is developing a national high school outreach program in sustainable energy, has established a minor in energy for undergraduates, and runs a robust set of programs for building the energy research community at Hopkins. ROSEI is hiring new faculty, and provides energy-focused research seminars, workshops, a yearly conference, direct funding, and extensive support for building new research teams and responding to energy research needs established by agencies and foundations. ROSEI is also supporting the development of a commercial translation ecosystem at Hopkins.

While rooted in the Whiting School of Engineering, ROSEI brings together experts from across Hopkins, including the Krieger School of Arts and Sciences, the Applied Physics Laboratory, the School of Advanced International Studies, the Carey Business School, and the Bloomberg School of Public Health.