Dr. Dalia Patino-Echeverri

Duke, Nicholas School of the Environment

Gendell Family Associate Professor

Reducing Electric Power Sector GHG emissions in the South East: PV, end-use energy efficiency, energy storage, and better algorithms to schedule and dispatch power plants

Lowering the likelihood of catastrophic climate change requires halving greenhouse gas emissions in the next decade and eliminating them by midcentury. Duke Energy has embraced this challenge pledging to reduce emissions by 50% by 2030 and to net-zero by 2050 in the Carolinas. Growing the capacity to generate electricity from rooftop and utility-scale PV, improving residential energy efficiency, and enabling energy storage are three strategies necessary to achieve these ambitious targets. In this presentation, Dr. Patino-Echeverri will discuss her research group's recent findings on the synergies and interactions between these resources and the implications for the cost of electricity and the cost of carbon abatement. Results and observations are based on annual simulations of hourly operations of the entire power generation fleet of the DEC/DEP system.

Bio: Dr. Patino-Echeverri's research focuses on public policy design for energy systems, with a particular emphasis on managing the risks arising from the uncertainties influencing the outcomes of government actions. Much of her current work focuses on the policies that affect capital investment decisions within the electricity industry, and the corresponding costs to society of electricity and air-emissions levels. Her models explore the effects of different government policies by representing the industry's decisions under uncertainty on future technological advancements, fuel prices, and emissions regulations.