

#### DEPARTMENT OF ECONOMICS AND MANAGEMENT

### WEBINAR

# "Deeply Decarbonized Electric Power Systems: Characteristics and Challenges"

## Prof. Richard Schmalensee

Howard W. Johnson Professor of Management Emeritus, Professor of Economics Emeritus, and Dean Emeritus of the MIT Sloan School of Management

## Chair Prof. Sergio Vergalli

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ABSTRACT. In a future where deeply decarbonized electric power systems will be dominated by wind and solar generation and in which energy storage will play an important role, the ratio of fixed costs to variable costs will be much higher than today, and the short-run marginal cost of electricity will often be zero. Professor Schmalensee will present and draw on results from simulations of future decarbonized power systems undertaken as part of a MIT Energy Initiative study on the Future of Storage. He will describe the challenges that utility managers, regulators, and system operators will face in managing decarbonized systems. Very low wholesale prices will be much more common than today, whereas high prices will be more common. Professor Schmalensee will discuss the challenges this change will pose for wholesale market design. Retail customers should be charged with low marginal prices when the marginal cost of electricity is very low in order to encourage efficient economy-wide decarbonization, but it will be politically and socially important to limit their exposure to very high prices. Professor Schmalensee will discuss approaches to meet these challenges.

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