



Power Systems Engineering Research Center

An Engineering and Economic Evaluation of the Impact of Cap-and-Trade for CO₂ on Electric Power

William Schulze

Robinson Professor of Applied Economics and Public Policy
Cornell University

PSERC Public Webinar
December 1, 2009

2:00-3:00 p.m. Eastern Time (11:00-12:00 p.m. Pacific)

(Joint Report from PSERC and the [Consortium for Electric Reliability Solutions \(Full Report\)](#))

Description: Emerging environmental policies to reduce CO₂ emissions will raise a number of challenges for the electric power industry as it continues to maintain a reasonably priced and reliable supply of electricity. For instance, the industry faces the likelihood of:

- increased generation from numerous and diverse new energy sources that emit less CO₂ (if any) than traditional alternatives
- ever more restrictive caps on CO₂ emissions from all generation sources
- increased loads from plug-in hybrids and other forms of energy storage
- wide-ranging demand response programs using smart grid technologies.

Besides policies for reducing CO₂ emissions, there is the possibility of tighter standards on NO_x and SO₂ emissions to reduce ozone and fine particulates. Careful analysis of the implications of those environmental policies is warranted because of the effects they could have on retail prices, on the system-wide cost of operation, on reliability, and on emissions of all pollutants. Our study focused on a particular environmental policy: cap-and-trade as proposed for CO₂ and is currently applied to NO_x and SO₂. We use an economic/engineering model of the power system in the northeastern United States as the conceptual framework for analyzing the impact of environmental regulation. In our study, we conducted simulations using a 2007 power system with network reduction to capture both power flows and voltage constraints, thereby enabling “stress testing” of the current power system.

Biography: **William D. Schulze** is the Robinson Professor in the Department of Applied Economics and Management at Cornell University. He is the founding director of the Laboratory for Experimental Economics and Decision Research and is also co-Director of the Center for Behavioral Economics and Decision Research in the Johnson Graduate School of Management. He received his Ph.D. in economics from the University of California at Riverside and specializes in experimental and behavioral economics, public economics, and resource and environmental economics. His current research includes grants from NSF, CERTS, PSERC, and USEPA and focuses on the design of electric power markets, behavior and the provision of public goods, and mechanisms for efficient environmental regulation.

Speaker Contact Information

William Schulze
wds3@cornell.edu

Participation by Webcast: You can participate in PSERC webinars via webcast. Before the webinar, [click here](#) and then on 12/1/09 when the status is "In Progress." Note that the web page at that address does not automatically refresh. The webcast will include the audio and the slides so you will not have to download the slides in advance. If you want to ask questions, you should register for participation by phone. The archived audio-slide production of the webinar will be available for [webstreaming](#) after the webinar.

Registration for Webcast Participation: None required. There is no charge for participating!

Assistance

If you have any questions, please contact Theresa Herr, PSERC's administrative assistant, at 480-965-1643 or Theresa.Herr@asu.edu. You can also contact Dennis Ray, PSERC Executive Director, at 608-265-3808 or djray@engr.wisc.edu.

PSERC's Webinar Coordinator

Shmuel Oren, University of California at Berkeley

Email: oren@ieor.berkeley.edu

Shmuel welcomes feedback on the webinars and suggestions for future ones.

Related PSERC webinars:

[The Effects of Greenhouse Gas Limits on Electric Power System Dispatch and Operations](#) (08-10; September 2, 2008)

[Designing CO2 Trading Markets for the Power Sector: Does It Matter Who Gets the Allowances and Who Must Comply?](#) (08-05; April 1, 2008)

[The Electric Power Industry and Climate Change: Power Systems Research Possibilities](#) (07-05; June 5, 2007)