

ATS/CIRA Colloquium

Alexander E. MacDonald

Visiting ATS from Spire Global, Inc.

The Global Energy-Carbon Dilemma is Solved!

Hosted by Scott Denning

Friday, Sept. 29, 2017

ATS room 101

Discussion will begin at 11:15 a.m.

Refreshments will be served at 10:45 a.m. in the weather lab

The United States and other developed countries have underpinned their economic advances around cheap and reliable energy during the last 130 years. In the 21st century there are two more requirements that must be met; energy must also be secure and sustainable. The dangers of climate change are now obvious to everyone except those with a vested interest in the existing system. Wind and solar energy are dropping rapidly in cost, but will never command a large share of the energy market until the variability problem is solved. A recent study at NOAA ESRL in Boulder shows a way to provide low cost and low carbon energy. The key to the idea is the Rossby radius; we must be able to move wind and solar energy over a domain big enough that it has low variability in time. Fortunately, the technology of High Voltage Direct Current transmission of electricity has reached a level of capability that it is ready to do the job. The extreme dependence of modern economies on electricity means that a modernization of the electricity system could be designed to be robust and resilient, while creating a system that provides affordable, reliable, secure and sustainable energy. Why is this idea so hard to sell? I will briefly discuss my many interactions with US officials in the congress and the administration.

Cost optimized US Electric Power System for 2030

