



SMU | LYLE

*Engineering Management, Information, and Systems  
Seminar Series*

Research Seminar

AC Unit Commitment



**Dr. Antonio Conejo**  
**Professor**  
**The Ohio State University**

**Friday, April 30, 2021**

**11:00 a.m. – 12:15 p.m.**

**Zoom link: <https://smu.zoom.us/j/95095343594>**

**Abstract:** We approach the solution of the AC unit commitment (UC) problem using a three-step strategy. First, we solve a linearized UC version of the original AC UC problem to obtain an initial solution and to identify potentially congested lines. Second, we solve a second-order-conic relaxation of the original AC UC

problem using an active set strategy regarding line congestion and using as initial solution that of step 1. Third, to ensure AC feasibility, we fix the binary variables to their optimal values in step 2 and solve a collection of increasingly accurate continuous and convex approximations of the original AC problem. For very large instances, we solve the relaxed problem in step 2 via Benders' decomposition. We provide results from an Illinois 200-node 49-unit 245-line system and a Texas 2000-node 544-unit 3206-line system.

**Biography:** Antonio J. Conejo, professor at The Ohio State University, OH, received an M.S. from MIT, and a Ph.D. from the Royal Institute of Technology, Sweden. He has published over 220 papers in refereed journals, and is the author or coauthor of books published by Springer, John Wiley, McGraw-Hill and CRC. He has been the principal investigator of many research projects financed by public agencies and the power industry and has supervised 24 PhD theses. He is an INFORMS Fellow, an IEEE Fellow and a former Editor-in-Chief of the IEEE Transactions on Power Systems, the flagship journal of the power engineering profession.