

Workshop on Smart Grid Control
American Control Conference
July 5, 2016
Marriott Copley Place Hotel, Boston

Organizers: Jakob Stoustrup, Anuradha Annaswamy, Zhihua Qu, Amro Farid, Umesh Vaidya

Motivated by the growing energy needs amidst compelling sustainability and environmental concerns, a new architecture for energy management, labeled Smart Grid, is emerging where increasingly energy generation, transmission and distribution are expected to be controlled by cyber-enabled and cyber-secure components. Concepts of systems and control occupy a central role in this area in a wide range of topics ranging from pricing and markets to issues of estimation and integration at the transmission level to issues at the distribution, consumers, and demand management. This workshop focuses on three major topics in this area, and aims to provide a tutorial exposition of these topics in the morning, followed by outlines of the main challenges and problems that lie ahead in the same three topics in the afternoon. Given the strong participation and interest from academics, government, and industry, the workshop will also provide perspectives from these three sectors.

Tentative Schedule

8.30-8.35	Introduction
8.40-10.00	Academic, Government, and Industry perspectives <i>Pramod Khargonekar, NSF</i> <i>Sonja Glavaski, ARPA-E</i> <i>David Sun, Alstom</i>
10-noon	Tutorial on Topic 1 - Wholesale-retail markets (Annaswamy) Tutorial on Topic 2 - Distributed control solutions for DER integration (Stoustrup) Tutorial on Topic 3 - Wide-area control using real-time data (Chakraborty)
Noon-1	Lunch (public lecture, Mass Public Utility Commission - tentative)
1-2.20	Topic 1 – <i>Electricity markets</i> <i>Na Li, Mardavij Roozbehani, Dilip Kalathil, Anuradha Annaswamy</i>
2.20-3.40	Topic 2 – <i>Distributed control for DER integration</i> <i>Zhihua Qu, Amro Farid, Dennice Gayme, Prabir Barooah</i>
3.40-5.00	Topic 3 – <i>Wide-area control using real-time data</i> <i>Florian Dorfler, Meng Wang, Kai Sun, Aranya Chakraborty</i>
5-5.30	Next steps – Publication on “Smart Grid Control – An overview, challenges, and opportunities,” Special Issue in a premier journal