

Models and algorithms for multihorizon stochastic programming

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This presentation addresses stochastic optimization models for the energy transition, focusing on multiscale multihorizon systems. We model both long-term investment decisions—such as renewable generation, carbon capture, and decarbonized transport—and short-term operations like storage management and system balancing. To handle uncertainty across both scales, we introduce multihorizon stochastic programming, a framework that captures uncertainty in both strategic and operational time steps. The model structure enables decomposition methods, and we present computational results showing how uncertainty at multiple scales critically shapes optimal energy transition strategies.

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