1071-90-132 **Zhen Liu*** (zliu@mst.edu), 600 W. 14th Street, Rolla, MO 65409. *Energy Portfolio Investment with Delayed Entry Decisions.*

Climate change is recognized as the major environmental problem faced by the world. Of most concern factors is the increase in carbon dioxide levels due to emissions from fossil fuel combustion. Therefore construction of a greener power plant, which is subject to huge initial capital investment, is crucial to reducing carbon dioxide emission. The decrease in coal reserves is also pushing power plant to generate more new green energy. Due to the uncertainties in electricity prices, alternative green energy prices, and the cost of carbon dioxide emissions, an energy portfolio should be formed to diversify the risks faced by generators. We formulate the decision-making as an optimization problem to maximize long-term profit through stochastic control and up-wind finite difference method, and solve the following problems: (1) the optimal time to build a new alternative green energy power generating plant, and (2) the optimal dispatch from the existing coal plant and the new plant. (Received March 01, 2011)