In this paper, we address the problem of determining the optimal day-ahead generation profile for a wind power producer by exploiting wind speed forecasts provided by a meteorological service. In the considered framework, the wind power producer is called to take part in the responsibility of system operation by providing day-ahead generation profiles and undergoing penalties in case of deviations from the schedule. Penalties are applied only if the delivered hourly energy deviates from the schedule more than a given relative tolerance. The optimal solution is obtained analytically by formulating and solving a stochastic optimization problem aiming at maximizing the expected profit. The proposed approach consists in exploiting wind speed forecasts to classify the next day into one of several predetermined classes, and then selecting the optimal solution derived for each class. The performance of the bidding strategy is demonstrated using real data from an Italian wind plant and weather forecasts provided by a commercial meteorological service.