Abstract   This paper presents an energy management method for the interconnected operation of power, heat, Combined Heat and Power (CHP) units to settle the Day-Ahead market in the presence of a demand response program (DRP). A major challenge in this regard is the price uncertainty for DRP participants. First, the definitive model of the problem is introduced from the perspective of the Regional Market Manager (RMM) in order to minimize the total supply cost in the presence of TOU program, which is a type of DRP. Furthermore, a market-oriented tensile model is presented in the form of a combination of over-lapping generations (OLG) and price elasticity (PE) formulations to determine the amount of electricity demand in the TOU program. Then, a price uncertainty model of the proposed problem is introduced according to the IGDT risk aversion and risk-taking strategies considering information gap decision theory (IGDT). The above problem is solved through the use of the co-evolutionary particle swarm optimization (C-PSO) algorithm and the proposed model is implemented on a standard seven-unit system for a period of 24 hours.