Abstract   This paper presents a new framework, utilizing Information-Gap Decision Theory (IGDT), for multi-objective Robust Security-Constrained Unit Commitment (RSCUC) of generating units in the presence of wind farms and gridable vehicles. Both the wind power and load demand uncertainties are considered, and modeled using a bi-objective model. As the main advantage, the framework enables the system operator to take an appropriate operational decision with respect to the extremity of each uncertainty. The proposed problem is solved using Normal Boundary Intersection (NBI) technique. Subsequently, VIKOR, a decision-making tool, is utilized to choose the best Pareto optimal solution. Finally, the IGDT based framework presented in this paper is validated using a 6-bus test system, the IEEE Reliability Test System (RTS) with 24 buses and the IEEE 118-bus system.