The interaction between electrical and thermal energy demands represent a potential area for balancing supply and demand that could contribute to the integration of intermittent renewables in energy systems. To enable the interaction between thermal and electric energy, an innovative concept that consists of a ground-source heat pump with possibility of reversing operation as an ORC power cycle combined with solar heating in a single-family building is introduced. The ORC mode enables the use of solar energy in periods of no heat energy demand and reverses the heat pump cycle to supply electrical power. This paper combines a dynamic model based on empirical data of the HP/ORC system with lessons learned from 140 heat pump installations operating in real-life conditions in a cold climate. These installations were monitored for a period up to 5 years. Based on the aforementioned model and real-life conditions knowledge, the paper considers two different sensible energy storage (TES) configurations for the reversible heat pump/organic Rankine cycle (HP/ORC) system: a buffer tank for both space heating and domestic hot water and a hot water storage tank used exclusively for domestic hot water. The results with the two different configurations are simulated in the Modelica language and compared in terms of energy shift potential in order to optimize RES integration, as well as the economic feasibility of the system in a cold climate.