This study investigated the performances of five different substation configurations in single-family houses supplied with ULTDH (ultra-low-temperature district heating). The temperature at the heat plant is 46 degrees C and around 40 degrees C at the substations. To avoid the proliferation of Legionella in the DHW (domestic hot water) and assure the comfortable temperature, all substations were installed with supplementary heating devices. Detailed measurements were taken in the substations, including the electricity demand of the supplementary heating devices. To compare the energy and economic performance of the substations, separate models were built based on standard assumptions. The relative heat and electricity delivered for preparing DHW were calculated. The results showed that substations with storage tanks and heat pumps have high relative electricity demand, which leads to higher integrated costs considering both heat and electricity for DHW preparation. The substations with in-line electric heaters have low relative electricity usage because very little heat is lost due to the instantaneous DHW preparation. Accordingly, the substations with in-line electric heaters would have the lowest energy cost for DHW preparation. To achieve optimal design and operation for the ULTDH substation, the electricity peak loads of the in-line electric heaters were analysed according to different DHW-heating strategies.