The first two models aim at deciding the most suitable energy storage system and batteries for a 1600-square-foot remote house, which means that connecting to the grid needs too high a price. Two factors decide the energy storage system: the (Needed) Constantaneous and Instantaneous Power Rating. And three factors decide the batteries. Since both too many batteries in the pack and too few make the total price high, there is a lowest cost. The second factor is Reliability which means the gap between Needed Power Rating and actual (planned) one. The last factor is Price Lifespan Rate. Since each battery’s Round-trip Efficiency is constant, for a certain needed capacity, the higher capacity, the higher its price and the longer its lifespan, so there is a minimum Price Lifespan Rate.

The next model is an expanding of the last two, which allows any location and area of house. It allows and takes into account the connection to the grid and the number of residents, which depends on the area of the house. And we evaluate the model.

The last model is the application of cement batteries, a novel kind of battery to the model. We analyze its features, evaluate it and compare it with other relatively mature batteries.