Our first two models aims at evaluating each popular existing energy storage system and batteries by several attributes. The Constantaneous and Instantaneous Power Rating of the energy storage system must be able to meet the daily need, both contant and instant one. On this basis, the number and model of batteries can be decided by the following:

* Price: For a certain total battery capacity, having too few or too many batteries in the battery pack will both raise the overall cost, which obviously needs to be taken into consideration. A function is needed to calculate the unit cost by the target capacity, which can in turn be used to calculate the overall cost.
* Reliability: The Instantaneous Power Rating being exactly the max needed is not always the most economic solution. Since the high power-rating appliances are seldom turned on at the same time, the Actual Instantaneous Power Rating can be reduced to below the needed one, to a point where the problem it brings can be solved by changing the routine. A function is needed to evaluate the degree that it affects daily routine.
* Price Lifespan Rate: A battery’s round-trip efficiency declined with its aging. For a certain Needed Constantaneous Power Rating, a too high capacity means a longer lifespan and a higher price, and vice versa. A function is needed to calculate the perfect max capacity, which can in turn be used to calculate Price Lifespan Rate.

By expanding the first two models comes the next one. Its superiority to the last is that it can apply to houses of any area and at any place