NH Energy Strategy 2015/25: Distributed power storage on a smart grid (reference 5.2.3.iii, in draft plan), utilizing upgrades in battery and renewable energy technologies.-William Dowey, BEC.

With the increasing use of electric vehicles (EV) over the next decade, battery technology is and will continue to be advanced and refined. EVs today have batteries in them that have a 50+ kwh capacity (twice the daily demand of a typical residence). These batteries have a usable life of 25+ years, matching the life cycle of today's solar panels. Pairing these together will become a common configuration in the next decade. The NH Energy Strategy plan should should look to promote and to take advantage of this emerging technology pairing.

Utilities are looking at this trend and realizing that they too can share in this evolution, to lower their peak power loading requirements. With some innovative thinking and business model restructuring, on their part, Utility power production costs can be curtailed and consequently their profits increased.

The Utilities could offer financial incentives to renewable energy generators with grid inter-connections who elect to deploy a local facility power storage or Battery Box (BB). This BB will charge from the renewable energy source during the off-peak times and discharge into the grid at the higher demand times (3pm-7pm). The financial incentive could take the form of a higher REC rebate then a non-BB REC recipient. The licensed electrician/solar installer will install the 2 cubic foot BB close to the residence/facility grid interconnect point. This will be done at the time of the renewable energy grid interconnect and REC meter installation, or as a retrofit to existing renewable energy sources.

In addition the utility will have the ability to store power from the grid into the BB directly, augmenting the power from the renewable energy source. This will allow the utility to retrieve the stored power when during times of peak demand. The in and out flow of power, will be managed and accounted in the Utility smart meter at the facility.

This BB could use the emerging configuration of Electric Vehicle (EV) batteries as the storage medium. This will allow a higher number of EV batteries to be manufactured, lowering the cost. Alternatively, recycled/refurbished EV batteries, could be used after their EV 'expiration of use' date has been met. As mention in the introduction, these batteries today have an average capacity of 50+ kwh. This is twice the daily capacity of a usual residence and would represent twice the daily production capacity of a typical 5 kw solar array. So multi-day distributed facility storage and utility power retrieval would be achievable.

In a similar manner utility power users without a renewable energy source could see an adjustment in their rates if they would allow a BB to be installed in their residence/facility. The Utility could then make use of a larger pool of the distributed storage units in off-peak times and retrieval of power at times of peak demand.

During this next decade, 2015-2025, these battery technologies will see an order of magnitude increase in energy density. This will allow prices to drop an order of magnitude and the physical unit could be reduced in volume or upgraded in storage capacity in the original box. As this progression develops, the demand from users will escalate, producing lower manufacturing costs and retail pricing for this localized facility storage.

Coupling of these technology developments will allow for a smarter grid, with distributed localized storage that will result in a lower peak demand curve, this will allow for stabilization in utility generation and power pricing, all of which can be factored into this 2015/25 NH Energy Strategy plan.