

Assumptions		% Uncertainty
Energy Profile	• The new campus overall energy profile will have small peaks in demand only, due it being very unlikely for lots of equipment with high power consumptions to be switched on together	50%
	• Energy demand is assumed to be normally distributed between each half hour period	20%
	• Standard deviation of energy demand equals average between mean and max of data, following the assumption that peaks sizes are proportional to the total demand	40%
	• Daily variation negligible in energy usage is negligible, assume profile is unlikely to change over battery lifetime	20%
	• New campus profile is formed of Senate House, Hall data and Lab data only scaled according to their total footprint size	30%
Energy Billing	• Red rate periods remain the same for the duration of the simulation	50%
	• Energy prices and bills remain the same for the duration of the simulation	90%
	• TRIAD dates kept as close as possible to 4/12/14, 19/01/15, 02/02/15 (no weekends used)	20%
	• TRIAD Bills are divided equally over the next billing year	10%
Battery Health	• Battery degrades linearly from new to it's end of life value of 80%	20%
	• Battery parameters restrict battery to perform under normal use case, 5000 cycles for a max depth of discharge of 80%	40%
	• Battery does not overheat is temperature controlled and allowed to cool over weekends so does temperatures effect is assumed reliable	20%
	• Effect of depth of discharge and discharge rate on battery health is negligible based on normal constraints (effects discussed as secondary results)	80%
	• Normal working parameters prevent over depletion or over charging from occurring	10%
	• Battery cycle life instantaneously degrades when charging	10%
Battery Usage	• Battery efficiency losses occur only when charging	20%
	• Trickle charging and minimum charge rate employed	10%
	• Battery has health monitoring equipment, allowing it's health to be optimised	20%
Battery Costs	• Current Powerpack 2 costs are used to evaluate the cost of the investment. Assumed that the price will decrease and performance of battery's will improve at the time of the new campus build. Current costs are therefore used as a worst case scenario	5%
	• Installation costs have been assumed negligible due to new campus build absorbing this	30%
	• Maintenece cost assumed not applicable , as this cost will be very small	30%