Steps to be taken for electricity and water cost containment

	Key Resp.	Electricity	Water
Increase low cost supply	Procurement	a. Commercial meter for sales office b. HT metering for sites c. Ensuring that lowest cost provider is chosen if multiple providers are available at a given location d. Taking advantage of all incentives for timely payment / e-payment etc.	a. Municipal connection flow to be maximized b. Bore well at all sites; if required RO to ensure that bore well water is usable. c. Ensuring rates of water tankers are negotiated taking seasonal variation into account + ensuring that there are atleast 2 suppliers on each site. d. Construction of final UG tanks at early stage to enable storage of water.
Reduce leakage/theft	Controls	a. Monitoring of DG set readings v. diesel consumption on b. monthly basis. c. Quarterly electricity consumption of each site to be monitored vis-à-vis const spend and CM + Procurement to take steps to ensure that 1% limit for water + electricity is not crossed. d. If electricity costs are to be debited to contractor, ensure that full costs (including all costs in relation to fuel surcharge / penalty etc. are also used to calculate the debit rate).	a. Using water flow meter for emptying of all tankers, cross supervised by CM and Security. b. No drinking water tankers c. Quarterly electricity consumption of each site to be monitored vis-à-vis construction spend and CM + Procurement to take steps to ensure that 1% limit for water + electricity is not crossed.

Reduce Consumption	Procurement + Design + Const Mgmt/ HRMS (for sample flat/ sales office)	**Construction** a. Have sub-meter for each wing and monitor/note amount of monthly consumption and compare best v. worst. b. Switch off electricity supply to labour camp from 9 am to 5 pm c. All contractor-owner equipment to be diesel operated, unless there is no diesel alternative eg. Crane d. To check the penalty for power factor & maximum demand at HT connections. e. There is TOD tariff (Time of day tariff) to HT connections. Non priority activities to be carried out in the time when supply is cheap. For ex. Water pump running at late night or early morning. f. Use DG's with MTU engines if they are being ordered during construction phase. For those DG's which are ordered solely for operation phase, regular engines are fine. g. No halogens to be used as far as possible. Use 'Metal Halides' for area lighting. h. For future equipment procurement (internal and contractor) insist in VFD for high power consumption equipment like cranes, hoists and welding machines. MEP Design team to develop power distribution plan for each site, at time of site start, and same to be followed by CM to ensure that load factor doesn't fall too much. **Sales Office/Sample Flat / Site Office** <u>AC's</u> a. Use 4-star (or better) AC's for Sales offices and sample flats. b. All cabins/conf rooms to have AC's controllable from within the room (split AC or AHU controlled). c. AC temperature to be set at 24 C (never below 22 C). d. Use shading devices to reduce heat gain on east and west facades	a. Use low water fittings in toilets. b. No usage of mineral water – use filtered water with special focus on maintain hygiene of the mineral water. c. Monitoring water CTC on monthly/quarterly basis and tracking water intensity (water consumed per sq. ft. of construction done at that site). Taking special efforts to reduce consumption at high water intensity locations.

		Lighting e. Use electricity consumption of lights by: a. Providing Lighting Voltage Controller to reduce lighting energy consumption in common area. Since, lighting is the linear load optimizing the input voltage supply shall reduce the electric energy consumption of the same. Provided lamps must be installed with dimmable chokes or ballast. For implementing the same, separate lighting supply feeder is must and all the lighting load in common area should have supply from voltage controller. b. Consider using LED lights instead of tubes/bulbs (PLs/ tube lights / foot lamps) in common areas (if cost effective) OR Use lamps with low watt loss copper choke or dimmable electronic choke, instead of electronic non-dimmable chokes Other f. Sample flat lights and AC to be linked to motion sensor (all lights come one when someone enters the main door lobby). g. Reduce operational hours of AC during non-peak customer days. h. Review committed/maximum demand on quarterly basis and if our usage is above/below acceptable variance and we are being penalized for it, take steps to amend the committed/maximum demand. i. Use capacity banks to enhance power factor, even for LT connections. j. Monitoring electricity CTC on monthly/quarterly basis and tracking energy intensity (energy consumed per sq. ft. of construction done at that site). Taking special efforts to reduce consumption at high energy intensity locations.	

On a separate note, ensuring that permanent/final works for various items which can be useful during construction phase are done in timely manner to reduce rework/temporary works costs – this includes:

a. UG Tanks for water storage
b. Vertical distribution of electricity and water
c. Borewells and associated RO plant (if needed)
d. Compound wall
e. Electronic security measures (CCTV etc.)
f. Clubhouse to be used for sales office/sample flat