FUTURE VIGNETTE 2050: USER-LED ENERGY STORAGE

You wake up and make your way to the kitchen giving a passing glance to your real time display which shows your energy usage. The household battery unit is charging from your rooftop solar panels, but this soon changes as you switch on the kettle for your morning cupper.

After breakfast you hasten the teenager out of the door, and unplug your electric car from the roadside charging point. You're pleased to see it has paid for the overnight charge by releasing a quarter of its charge back to the grid to help meet the morning surge of kettles, toasters and TVs tuning on. Fortunately you've set the battery up to make sure you always have enough for the morning commute- although you do miss being able to travel the length and breadth of the country without having to stop for a 30 minute rapid charge.

As you settle in for your day in the office, you glance out of your window at a view dotted with solar panels and wind turbines. You switch on your low energy computer and quickly scan through your emailed bills and bank statements. You notice a message from your energy supplier warning that: "due to a combination of cloud and low winds, peak time electricity prices are likely to be unusually high for the next week".

The battery in your kitchen will help you avoid the worst of it. Charging from your solar panels or the grid during off peak hours, it kicks in automatically when the prices are at their highest to protect you from weather related price spikes. Still you make a mental note to try and get some laundry done before the cloud arrives tomorrow morning.

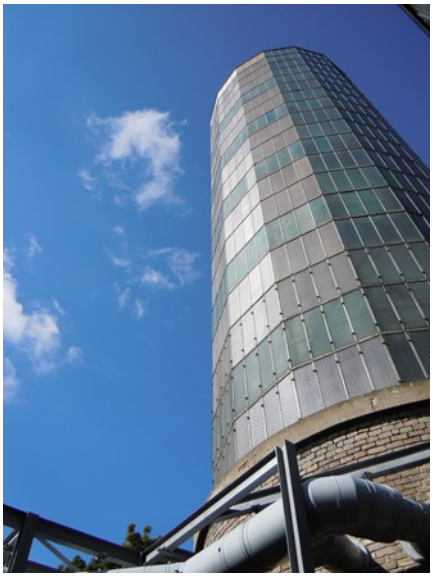
It's a cold day but your heavily insulated home only requires a short burst from the hot water tank in the attic to top up the warmth generated by your ground source heat pump. It was a bit chilly this morning so after work you adjust the settings on the system to make sure the shower and heating will be warm enough tomorrow morning.

Preparing dinner that evening, you cast your mind back to the days when you cooked and heated your home using gas. To your children this now sounds a bit pre-historic and quite dangerous! On your way to bed you turn to your energy display to ensure all appliances are turned off and the home energy system is set to auto- managing your energy while you sleep.

FUTURE VIGNETTE 2050: DECENTRALISED ENERGY STORAGE

You wake up to the quiet hum of traffic on the street below your flat. As you step out of bed you're pleased to find the room nice and warm. Thanks to the new district heating system, your bills are low enough that you no longer worry the cost of turning the radiators up in winter.

You gaze out of the window at the insulated water tanks in the old carpark, wondering who else in the community is waking up thinking the same thing. You jump in the shower and, as usual the water supplied through the system is satisfyingly hot.



After breakfast, you walk around the corner to the nearest car club pick up point, select one of the fully charged electric cars on offer, and get inside. As you adjust the seats you think back to when you were younger and your parents owned their own car- MOT's, repair costs, and the hassle of recycling the old batteries means hardly anyone bothers with this anymore. The car club has a deal with the council and once used, the old batteries are fitted to a substation around the corner to help balance the local electricity network. As you approach your office, you remember just in time that the road outside is being dug up to lay the pipes for the latest extension of the district heating network. Not wanting to be late you park up and walk the last few minutes of your journey.

You arrive at the office, corridor lights switching on and off automatically as you cross the floor to your desk. The first message in your email inbox is a reminder from the company energy manager that all non-essential appliances should be switched off overnight to allow the building batteries and hot-water tanks to charge. You scratch your head and wonder how anyone could still be forgetting to do this at this day in age. During your lunch break you make a special effort to shut down your computer just in case the batteries are running low.

After dinner at home, your neighbor drops round with a letter from the building energy cooperative. It contains a statement showing your small share of the profits from the solar panels on the roof, and information about a new battery unit for the basement which could reduce the fees you pay to the local grid for balancing your supply. Neither of you fully understand how all this works but you agree to attend the meeting next week to find out more.

FUTURE VIGNETTE 2050: CENTRALISED PROVISION

As you climb out of bed in the morning, you are happy to find the house warm and cozy. Thinking back to last night you remember your partners decision that now it's November, the time had finally come to turn on the old gas boiler. Every year you try to delay doing this, but it's worth it for the extra comfort it provides.

As you arrive in the kitchen you discover a letter informing you to expect a visit from the energy company next week. They are finally getting around to converting the gas network in your area to run on hydrogen. This should help keep the bills down a bit, but you'll need to book a morning off work so workmen can come in and convert or replace your old appliances and boiler.

After a quick breakfast you unplug your electric car on the driveway and head to work. As you crest the hill the new massive wind farm off the coast where you live comes into view ("Powering our Nation" – you smile at the thought of their cheesy slogan). In the distance you can see the old nuclear power station on the peninsula. Huge overhead cables connect both plants to a new power-to-gas facility further inland. Perhaps the hydrogen you use after next week will be locally produced!

In the car on the way home, there's a special report on the radio about a new compressed air energy storage facility in an adjacent county. It's the first of its kind in the UK and sounds very impressive but some locals are unhappy about the effect of construction traffic and the need for new electricity pylons to support it.

You understand why people get upset about these things but surely this is better than the regular blackouts you get in countries that didn't start building this stuff years ago.

You arrive home to find the latest electricity bill on your doormat, you roll your eyes and decide that perhaps the boiler could be turned down a bit after all- at least until the conversion team arrive next week!

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