# Domestic Battery Storage - Game changer?

Everyone's excited about the idea of domestic battery storage.  But there's a lot of  questions to answer first.

JOJU SOLAR
JUST ADD SUNSHINE

*Should storage be at the domestic level?*

No

There's an argument that intermittency is a grid-level issue and will be solved by grid-level solutions - storage on a major scale.

*Is this happening?*

There's a feeling that grid operators aren't entirely up to speed developing storage technologies, and no financial or market incentives for them to do so.

Yes

At present the only financial incentive for storage exists for solar PV householders who have different benefits for self-consumption compared to export.

Mixed

As you can see this flowchart is complex!  Until we know the best solution, storage should be developed at all scales.

*Will the storage be 'dedicated' storage or serve some other purpose?*

Dedicated

This is expensive as you'll be paying the cost of the battery just for a storage function.  With 2 mins power cuts per year in UK, it's a lot of money for very marginal gains.

Multi-purpose

It might be better, and certainly cheaper,  to have your storage embedded in something that serves another purpose.  If you had the same battery in a car, you could do all the grid management AND get low carbon transport.

*How would this work?*

Grid to vehicle

Intermittency on the grid will be smoothed by charging electric vehicles  in times of surplus renewable generation

Vehicle to grid

This works like grid to vehicle, but is two-way - the battery in your car could also discharge back to the grid when the national electricity supply is short of power.

Solar would put a big peak of electricity onto the grid during the day, meaning we'd need extensive car charging ports in the work environment.

Lots of solar

*Where would the charging stations be located?*

Less solar

If surplus was not from solar, but other sources such as wind, then charging stations would be required in the domestic environment.

*Where is the battery getting electricity from?*

Solar PV

Only benefits households with solar PV

*How do solar households benefit?*

Charge in day, discharge at set times

This will discharge to the grid if you're not using the electricity when it discharges.  So you'll lose the benefit of storing it for your own use in the first place.

The grid

*When would the battery charge and discharge*

Charge when you generate, or grid electricity is cheap. Discharge to your loads, or when grid is short of renewable electrcity

Set times

When the grid needs it

This requires time of day tariffs, like Economy 7. You'd charge from grid at cheap rate at night and discharge to your loads, or sell to the grid at a higher rate during the day.

This requires real time pricing of electricity to households.  This doesn't exist yet!  The price you pay might vary depending on amount of renewable supply to whole grid.

This is the dream technical option!  However, it will require real time pricing of electricity to households.

*Will we get real time pricing?*

No

Yes

Domestic battery storage to support the grid is not economically viable without ability to buy low sell high.  This would be for technological innovators only.

This will require the national roll-out of smart metering to finally happen. And the kit installed will need to have this RTP functionality.

*Any other issues with real time pricing?*

Those that can afford storage will opt in to RTP, and financially benefit from providing this service to the grid.

*What happens to households without solar PV?*

This is an equity issue, between those that can afford, and those that can't.

Charge in day, discharge modulated so no export from the house

Battery discharges to dedicated DC circuits

You'll need to get DC circuits installed and a range of DC appliances to use the electricity, or an extra inverter.  The Tesla units do not have an integrated inverter.

This won't discharge to the grid, and requires fancy controls to manage.  But if you don't use the electricity, your battery may be full next morning.

*Are there any issues with this??*

If there were 1000s of batteries all discharging at the same time, this would put a spike onto the grid. So instead of helping grid management, it would actually make it worse!

*What happens if the battery is full next morning?*

You won't be able to charge your battery with solar electricity, so you won't benefit from your low carbon generation.  It will be exported in the normal manner.