The best way to scale a micro grid with very simple design (Version 1):

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Abstract:

Let's think of grids as a wire connection to provide electricity to users. At current as a reference to 2019, We get electricity from centralized utility companies that not necessarily generate energy from renewable or clean sources. Micro grids gives users the opportunity to buy and sell electricity from each other and helps us scale to cleaner generation of energy.
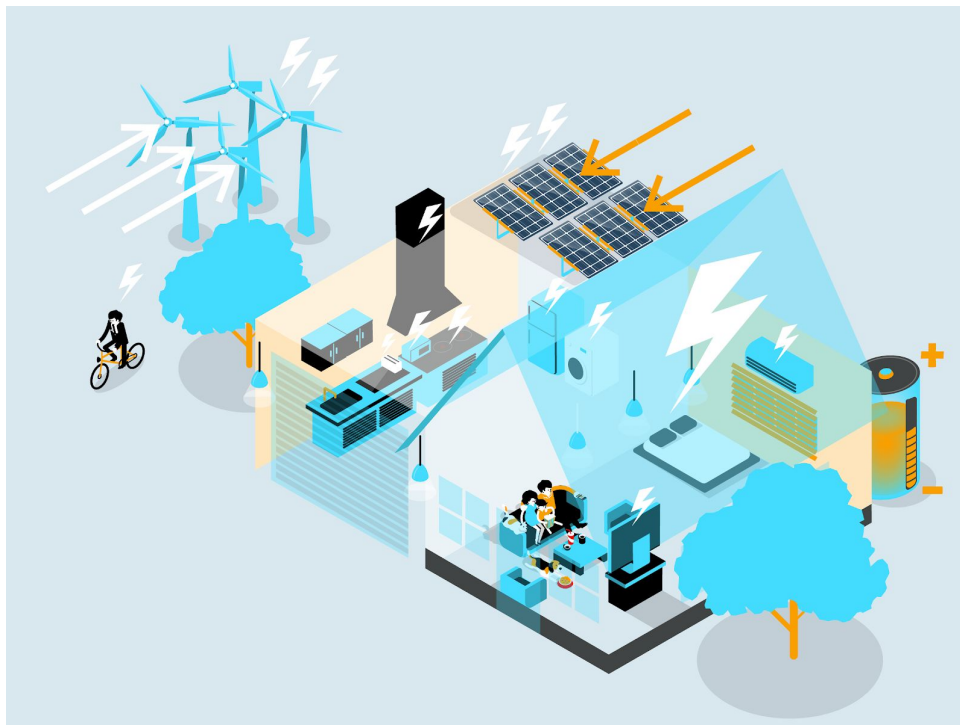
The House we should be aiming for:

Fig 1.1 (https://www.pacificdataintegrators.com/insights/what-is-a-microgrid)

We should have houses that run completely on clean energy. We can houses that generate electricity from the prominent climate conditions. If a bad day hits and we can't gerante our own electricity we should be able to buy electricity from another micro grids or even from a micro

grids from another country. We need to design energy management systems that strive towards a sharing economy and have efficient devices than smart devices.

The Design of a grid that can infinitely scale :

Requirements to make this system work:

1. Every House must have at least one battery (Recommended 2) .
2. Relay switches
3. 1 computer for the grid and each computer inside an individual house or any sort of building.
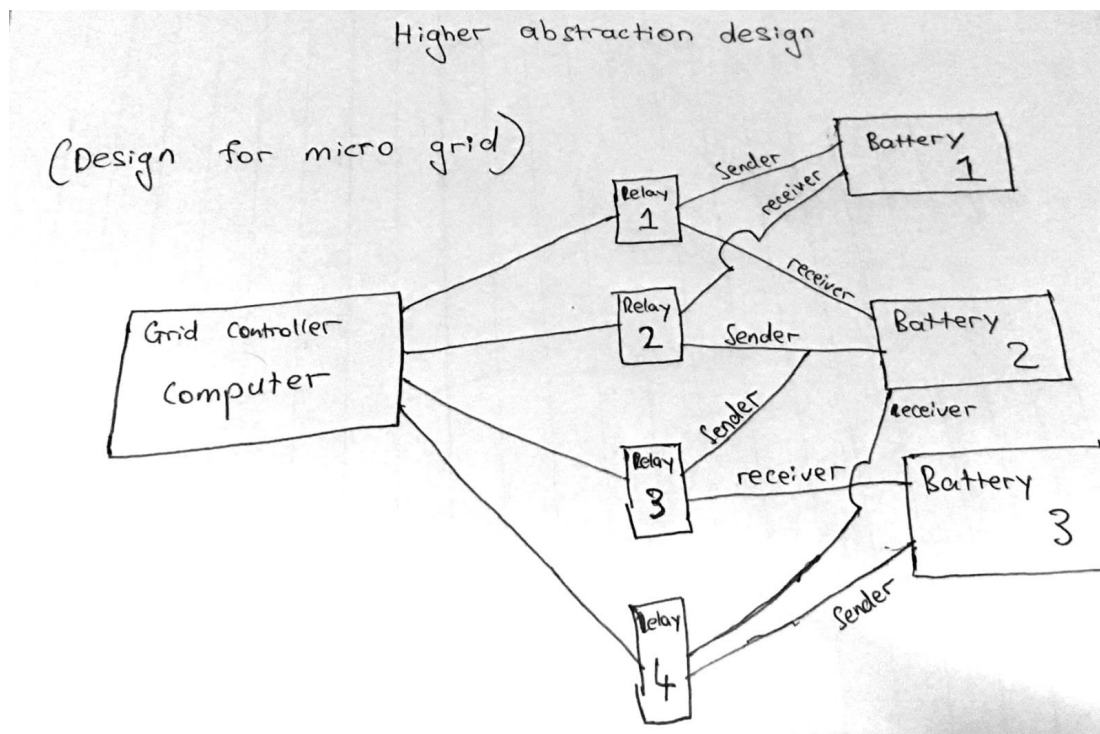
The Base Design:

Fig 2.1

Over here 1 computer controls the flow of electricity through different relays. Each relay has a one way connection from one battery to another. So we can easily device a very simple formula here:

1. If we have 2 Batteries:
     2 Relays for 2 Batteries

2. If we have more than 2 batteries:
     No.of Relays = No.of Batteries + 1

3. If we are connecting to n number of external grids:
     No.of Relays = No.of Batteries + 1 + n

(These formulas for denote the minimum amount connections required for a 2 way electricity transfer).

Let's take a very simple example to understand it even better: My example name is Sexyboy21 and I live in House 1 and My battery is named as battery 1 (fig 2.1). Let's say I am low on energy and need to buy energy from Battery 3 which corresponds to user lol21 , In this case the grid computer will open : Relay 4 , Relay 2 (The current will go through battery 2 then to battery 1 as there is no direct connection [In computer terms a single hop]). When doing this there will be problems by doing such as battery torture for ones it has to hop through.

Computer for battery/batteries:

Each will need to have a computer to store the battery information i.e Max Storage, Current power available and even probably how much of the battery is being used.

Each Battery must have a smart meter that knows where power is going in or out (This can determine battery torture).

Application Layer:

2 versions of the application layer can run either the centralized (Http) or Decentralized like (IPFS). Each having different merits or demerits.

Decentralized: The computer for battery can also be used as a node in the decentralized network storing the users transactions.

Centralized: There will computer controlled by a community or company that creates and implements the rules for transactions.