



More and more people can generate their own electricity, such as through solar panels. At the moment they have to sell excess energy to the grid at a low price compared to what they buy grid electricity for. Peer-to-peer trading is a new approach where people sell electricity directly to neighbours. It is the AirBnB of energy – sellers get more, and buyers save compared to buying from the grid. It could make low-carbon energy more affordable, as well as having other benefits – but also drawbacks.

How it works:

In 'Watts the Deal?' you (or your team) are playing as a household that has decided to take part in a peer-to-peer energy trading scheme. This means you can buy and sell electricity between you, as well as to and from the national grid. We developed the game to help think through important questions about peer-to-peer energy trading, like which households are more likely to win and lose, and why.

There are three basic ways to play the game. Choose one or play them all; however, for a better understanding of the game, we recommend you start with version 1.

Once you've mastered these, check out wattsthedeal.org for other versions – and you can even add your own!

Version 1: **Super Saver**

Make the most money, by selling as much energy as possible and buying as little as possible, while still meeting all your energy demand.

Version 2: **Powerful Personalities**

Win the game by achieving the aim assigned to you through your personality. Be aware that different personalities can start with different playing conditions.

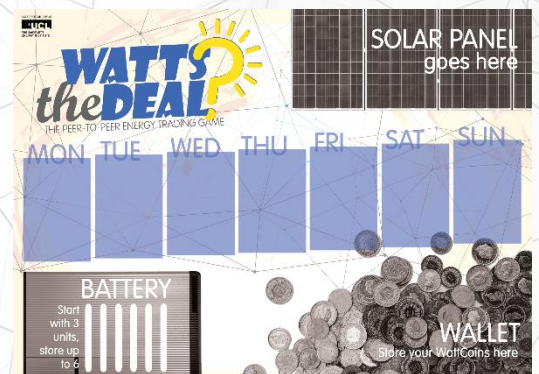
Version 3: **Collective Consumption**

Play as a group, buying as little energy from the grid as possible, by trading energy between the players.

What you need:

Below you can find a checklist of all the materials you need to play the game. If you are using our DIY version, you can download everything from our webpage using the following link: www.wattsthedeal.org

- ☒ 4 x Watts the Deal placemats
- ☒ 28 Electricity Demand Cards (or for DIY, a deck of cards with all cards of value eight and above removed leaving just ace through to seven)
- ☒ 2 Solar Cards
- ☒ 2 Bigger Battery cards
- ☒ 4 Flex Cards
- ☒ The Watts the Deal spinner (or a six-sided die).
- ☒ 140 yellow tokens (WattCoins) and 30 red tokens (DebtCoins) – or for DIY version, 140 of one kind of coin, 30 or another.
- ☒ Matchsticks - 50 each of five different colours, with a box/tin for each colour (for DIY version, you can just play with one colour).
- ☒ 8 Watts the Deal Personality Slips
- ☒ 10 Watts the Deal Event Slips
- ☒ Signs for 'the bank' and 'the grid'



Prepare the game:

1. Place a placemat in front of each player or team.
2. Shuffle and place seven Electricity Demand Cards *face down* on the boxes Monday to Sunday on each placemat.
3. Turn the cards on the first three days (i.e. Monday to Wednesday) face up.
4. Place your 'solar tin/matchbox' with the matchsticks in the right place on the mat.
5. Put three matchsticks from your solar tin into your battery.
6. At the start, each player also needs 20 WattCoin tokens in their wallet (version 1) – the remaining tokens are left in the bag on the 'bank' sign.
7. Place a box of matches is on 'the grid' sign.
8. Before you start playing, each player needs to get an Event Slip. Each player takes it in turn to spin the spinner or roll the die, then picks an Event Slip at random. Without looking at it, place it on the day of the number you spun (i.e. Monday = 1, Tuesday = 2, etc.).

The Electricity Demand Cards represent your electricity demand in units e.g. a 4 equals a demand of 4 units.

The matchsticks represent your own units of generation, which you release by spinning the spinner/rolling the dice.



In the game, each player (or team) represents a household with electricity generation and demand. Each version consists of seven days, Monday to Sunday. For each day there are two phases: generation and trading. You should read the version 1 rules before you play the version 2 or 3, as they provide some general guidance for the game.

How to play:

Version 1: Super Saver

Energy Generation Phase:

Spin the spinner and place the spun number of matchsticks on top of the Monday card. Don't forget to open your Event Slip (if you have one) and adjust your generation or consumption accordingly. Note that the minimum consumption each day is at least 1 energy unit as there are always some devices using energy even at night (i.e. fridge).

If you have too many sticks on top of your card, you can either store the excess in your battery (up to maximum 6) or sell it (next phase). If you have too few sticks, you can either take some from your battery or buy extra energy (next phase).

Energy Trading Phase:

Once every player has spun/rolled for Monday, it is time to trade.

You can:

- Buy from the grid for 3 WattCoins
- Sell to the grid for 1 WattCoin
- Buy or sell to other players for 2 WattCoins (or if you like you can negotiate or donate...)

There are no rules on who leads the trading phase – so be sure to let people know if you want to buy or sell! At the end of trading, everyone has to meet Monday's energy demand exactly (i.e. have the right number of matchsticks on top of the card).

Move onto Tuesday and play as above. At the end of Wednesday, you can turn over the Thursday to Saturday Electricity Demand Cards – and at the end of Saturday, turn over Sunday. At the end of Sunday, any sticks left in batteries must be sold. If anyone becomes broke during the game, they can borrow money from the bank, with debt represented by the coins covered by DebtCoin tokens. It must be paid back when the person regains funds. Count your money – whoever made the most profit wins!

Version 2: Powerful Personalities

Version 2 of the game is exactly the same as version 1, except at the beginning each player draws a 'personality' at random that they read to the group – all except their goal (which will be either maximising profit or maximising self-consumption) which they keep to themselves. Players play to meet this goal, and the winner(s) is/are identified at the end according to their set goal.

Version 3: Collective Consumption

You play this version exactly as in version 1, except the group works together to buy as little from the grid as possible. The aim is to end up with a few 'grid matches' on everyone's cards at the end as possible. On any day, if a player has to buy from the grid, all players must pay a flat fee of 1 WattCoin to the bank.

If you want to play this game competitively, you will need multiple copies of the game so communities can play against each other, or a league table.

Add-Ons

Below are some add-ons which you can buy or play at any point in the game:

- | | |
|------------------------|--|
| Bigger Battery: | Buy this card for 8 WattCoins to increase your total battery size by 1 unit. |
| More Solar: | Buy this card for 12 WattCoins to add 1 energy unit to every generation phase. |
| Flex Card: | Everyone starts with one Flex Card. Play it to shift 1 unit of demand from today to tomorrow, or from tomorrow to today. |

What next?

Watts the Deal? was designed to give you an understanding on how peer-to-peer energy trading systems could look like in the future. The rules and setups of the game were designed to make the game easy to understand but fun to play. Nothing we designed is set in stone. How about you try your own rules and trading strategies? Here are some ideas:

- Change the time period over which you see your electricity demand forecast – for example, only turn over one day ahead instead of three days at a time.
- The energy consumption doesn't have to be random. Each player takes 7 cards and can decide in which order they place them on the placemat
- Create your own personalities and come up with new ideas for random events. What might trigger a shift in demand or generation in your household?
- Play multiple weeks one after the other.

You will find more ideas and detailed description on our website, www.wattsthedeal.org.

After playing the game, have a think about some of the questions below and discuss them with the other players. (If you want to use the game to facilitate a discussion, you will find a guide on the website.)

- **Was the game fair? Why (or why not)?**
- **Are there other ways to play than just for profit?**
- **Why did you play in the way you did?**
- **If you win, who loses?**

'Watts the Deal?' was developed with funding from the EPSRC grant PETRAS P2P-IoET. Additional funding was received through the UKRI Centre for Research into Energy Demand Solutions (grant number EP/R035288/1). The name was kindly suggested by Noel Cass. Please see the website (www.wattsthedeal.org) for further acknowledgements.