

HYDROGEN ECONOMY

Edmund Merrow-Smith

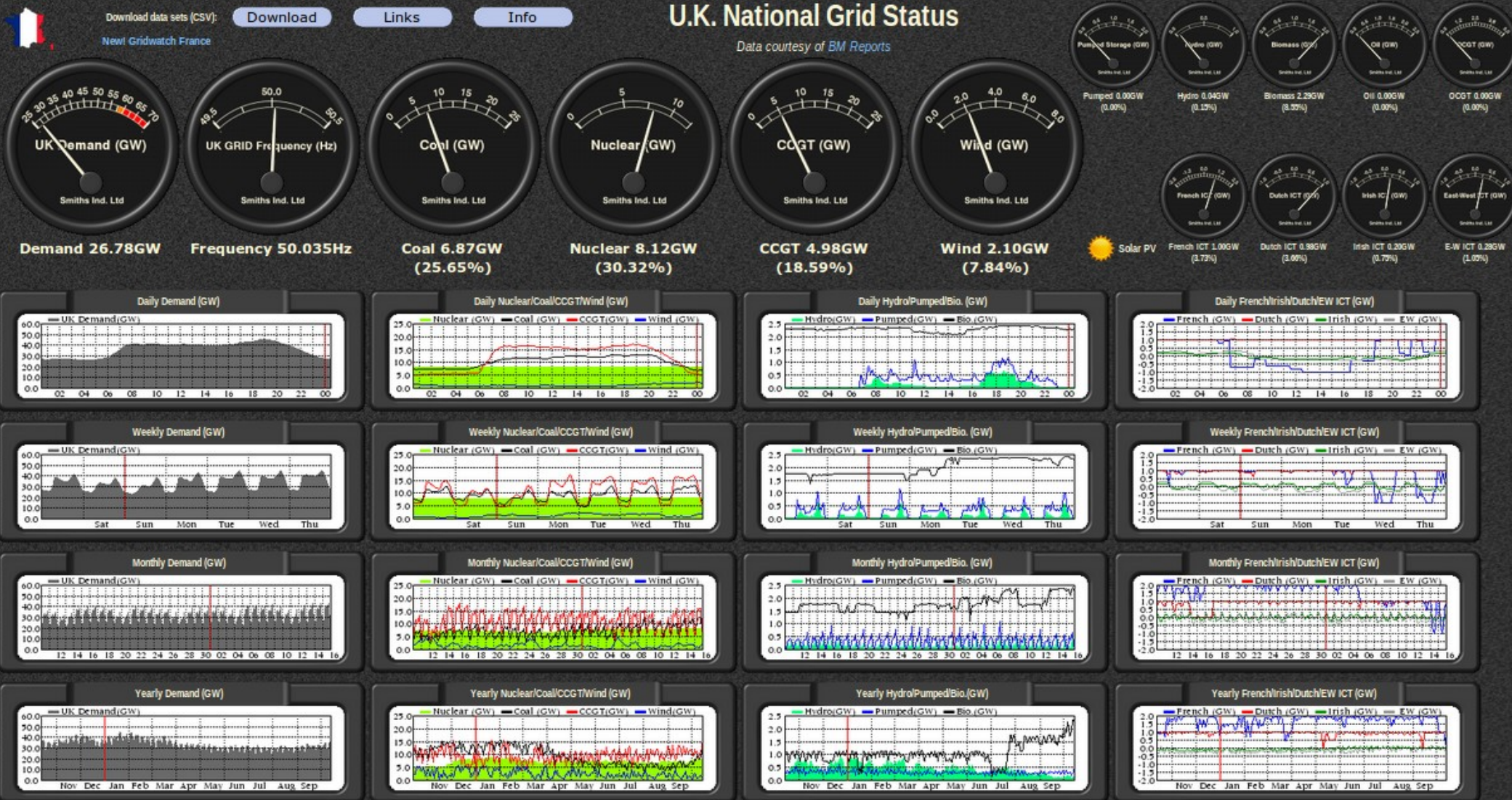
tl;dr electricity and cars



Electricity 101

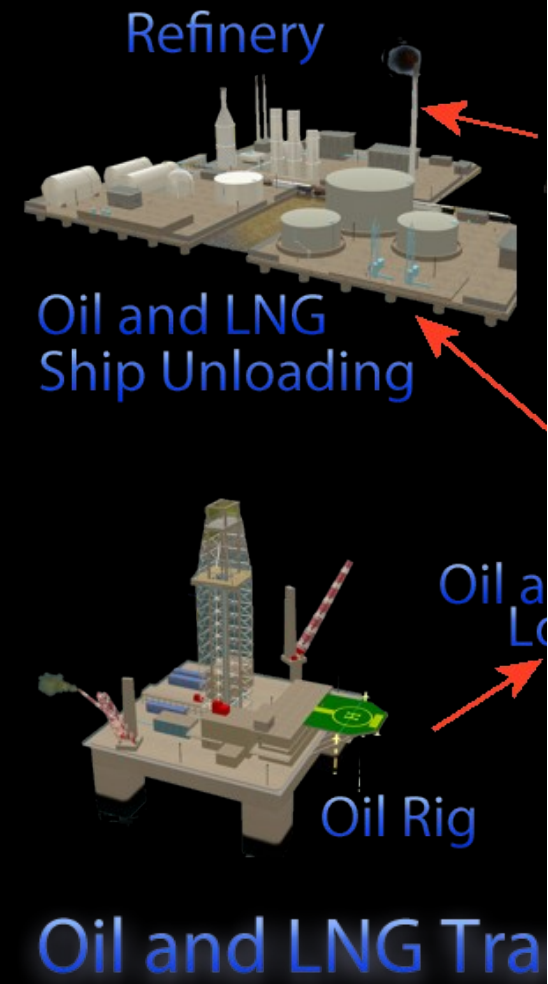
Part 1

Electricity 101

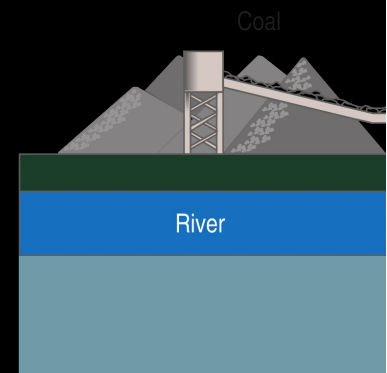
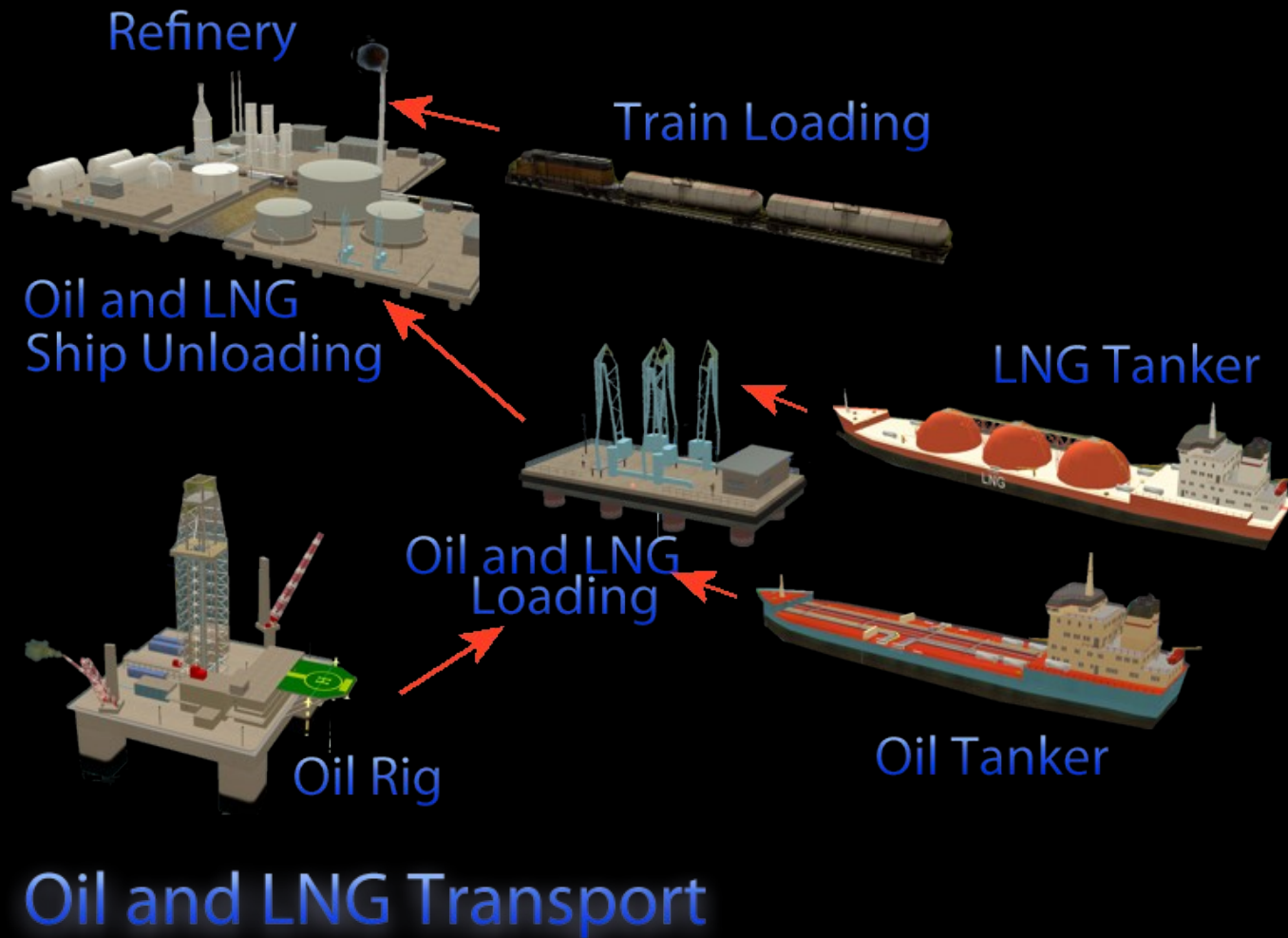


Data last recorded on Friday the 16th. of October, 2015 at 00:30 BST

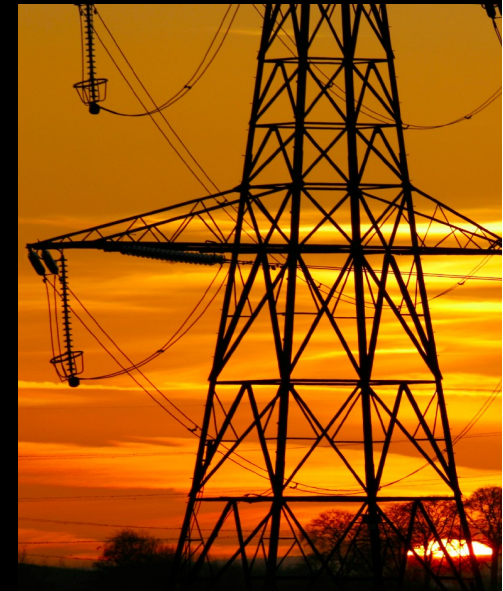
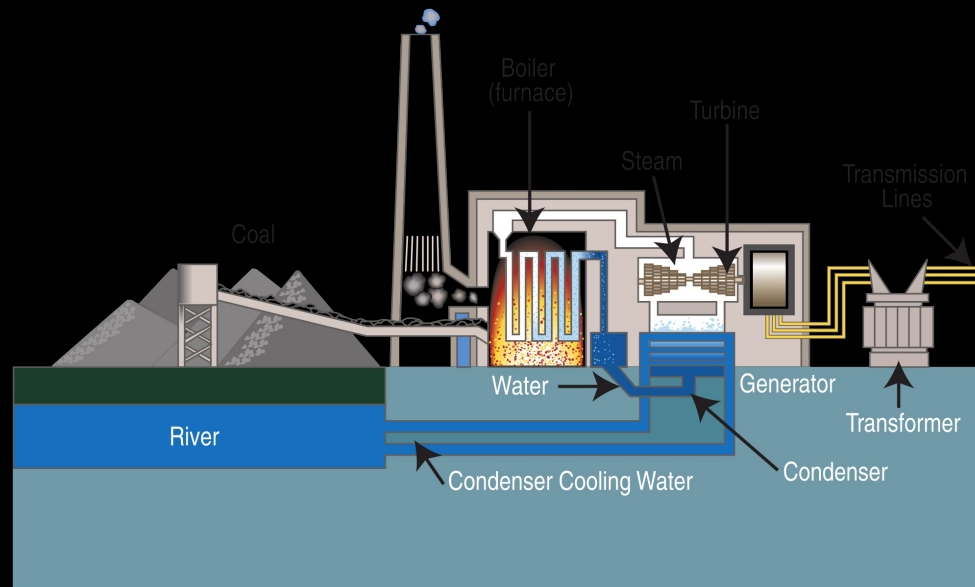
Step 1: Dig carbon



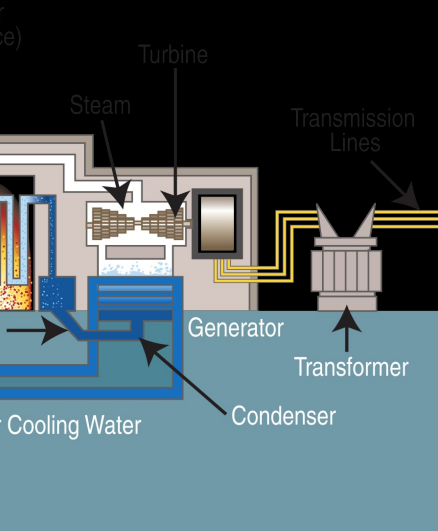
Step 2: Avoid explosions



Step 3: Carbon to electron device



Step 4: Additional pylons



Step 5: Plug in



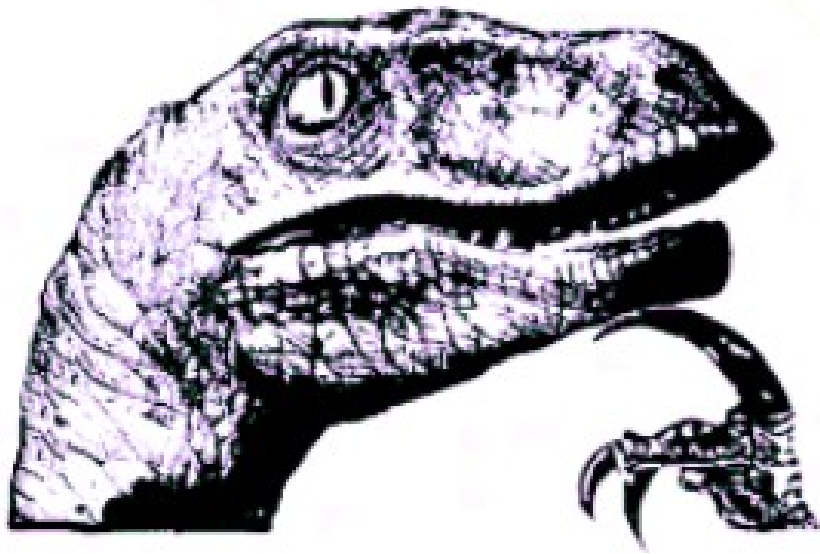
Step 6: Have a good time



Renewables 101

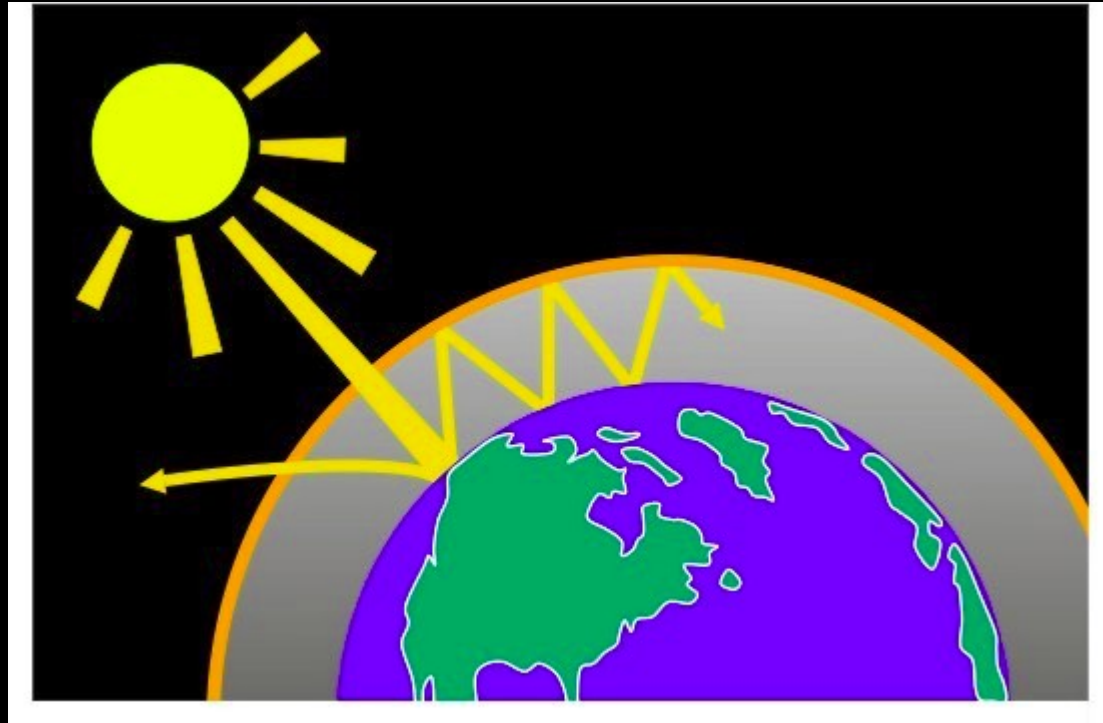
Part 2

Renewables 101

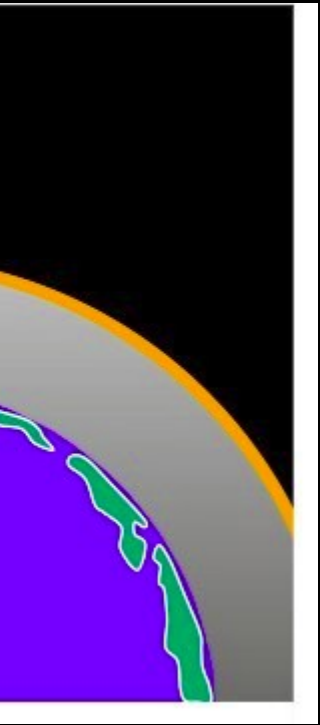


6	12.011
4197	2.5
3827	
C	
[He]2s ² 2p ²	
2.25	2,±4

Step 1: Stop with the carbon



Step 2: Nature to electron device



Step 3: Additional pylons



Step 4: Plug in



Step 5: Have a brown-out



Power Grids 101

Part 3

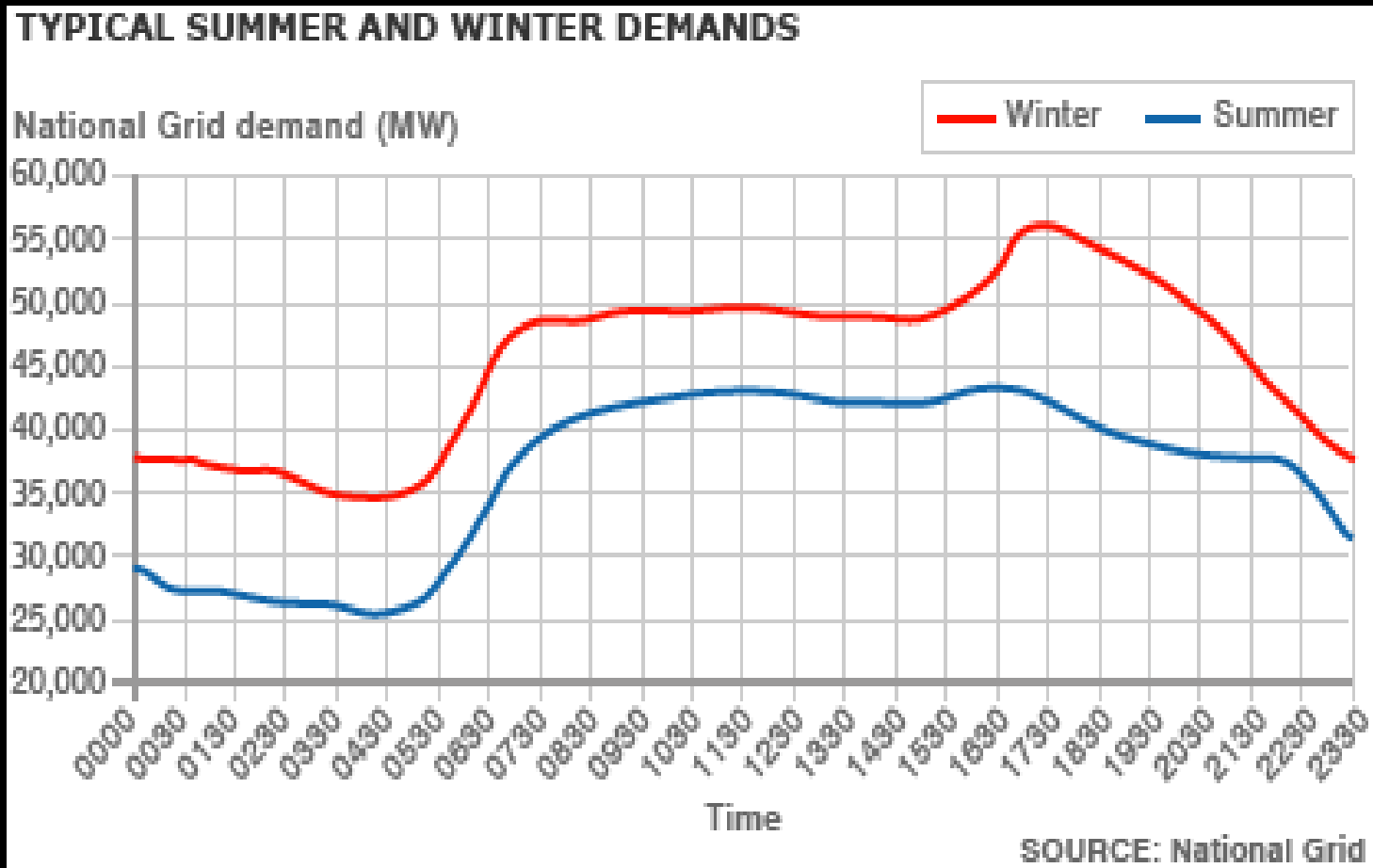
Power Grids 101

Records [\[edit \]](#)

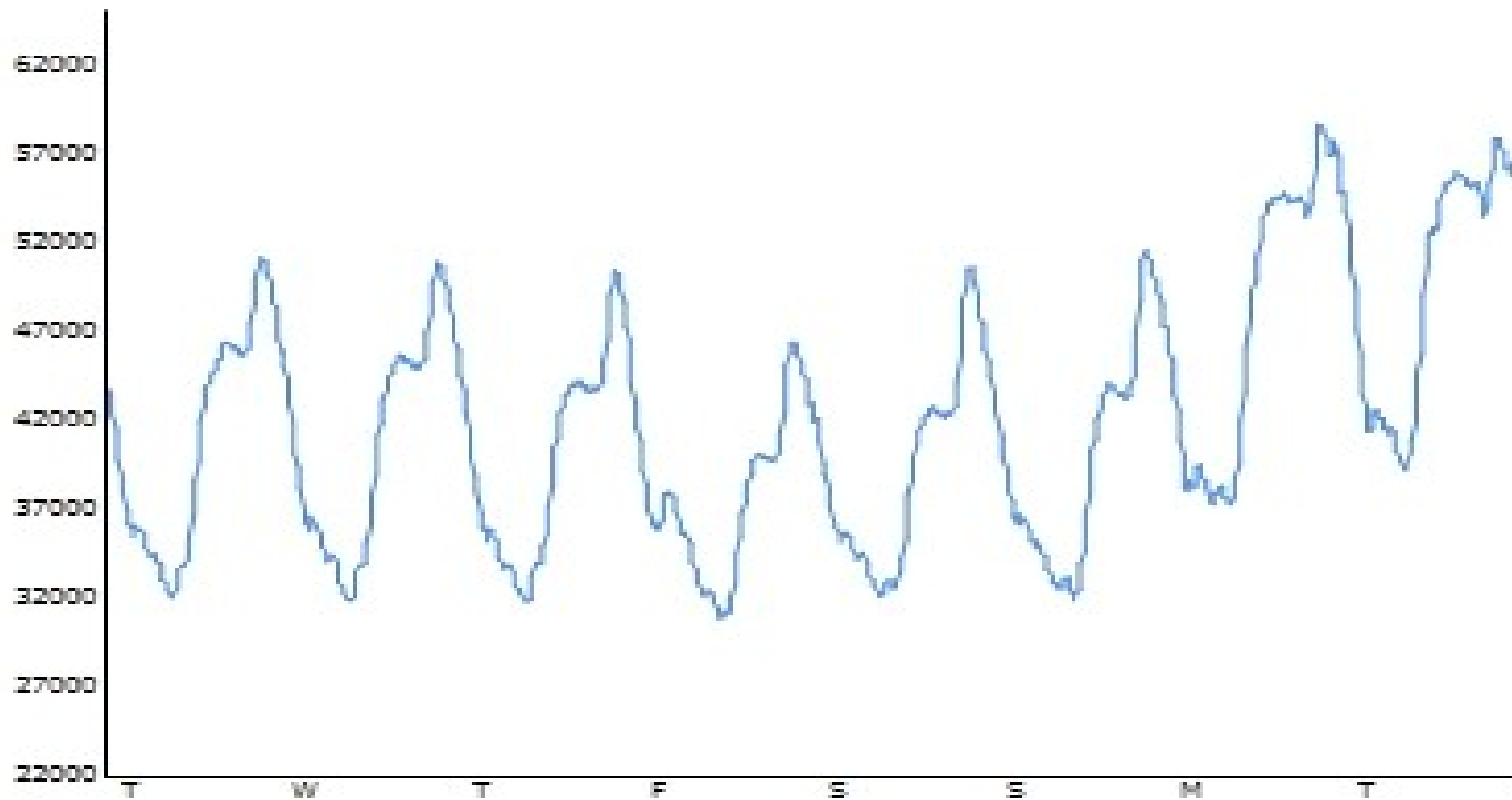
The largest TV pickups recorded in the UK are:

Pickup demand	Date	Programme
2800 MW	4 July 1990	England v West Germany FIFA World Cup semi-final penalty shootout^[1]
2600 MW	22 January 1984	The Thorn Birds^[1]
2570 MW	21 June 2002	England v Brazil FIFA World Cup quarter-final^[1]
2400 MW	29 April 2011	Wedding of Prince William and Catherine Middleton^[9]
2290 MW	5 April 2001	EastEnders^[1]

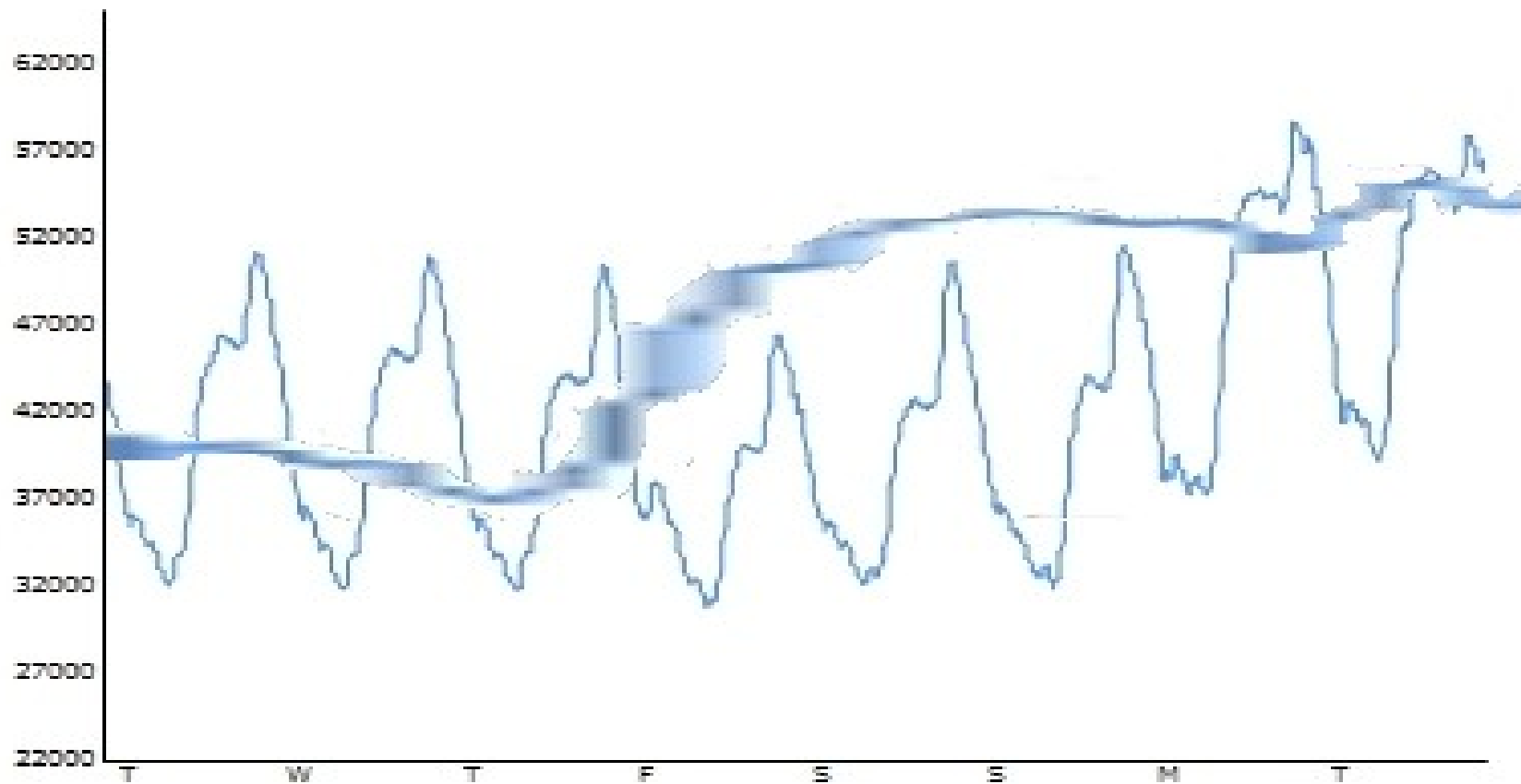
Daily demand



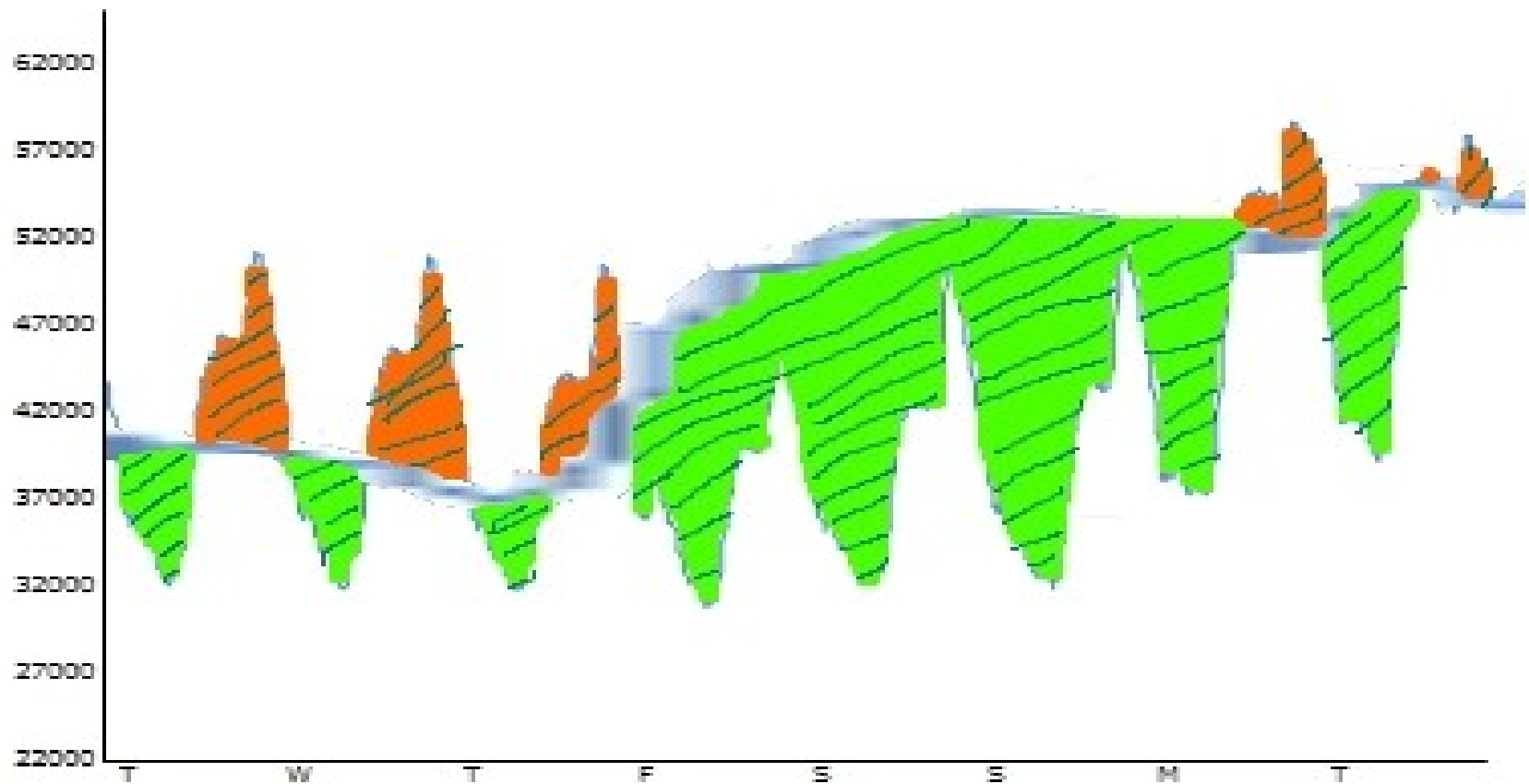
Weekly demand



Weekly supply



Storage?



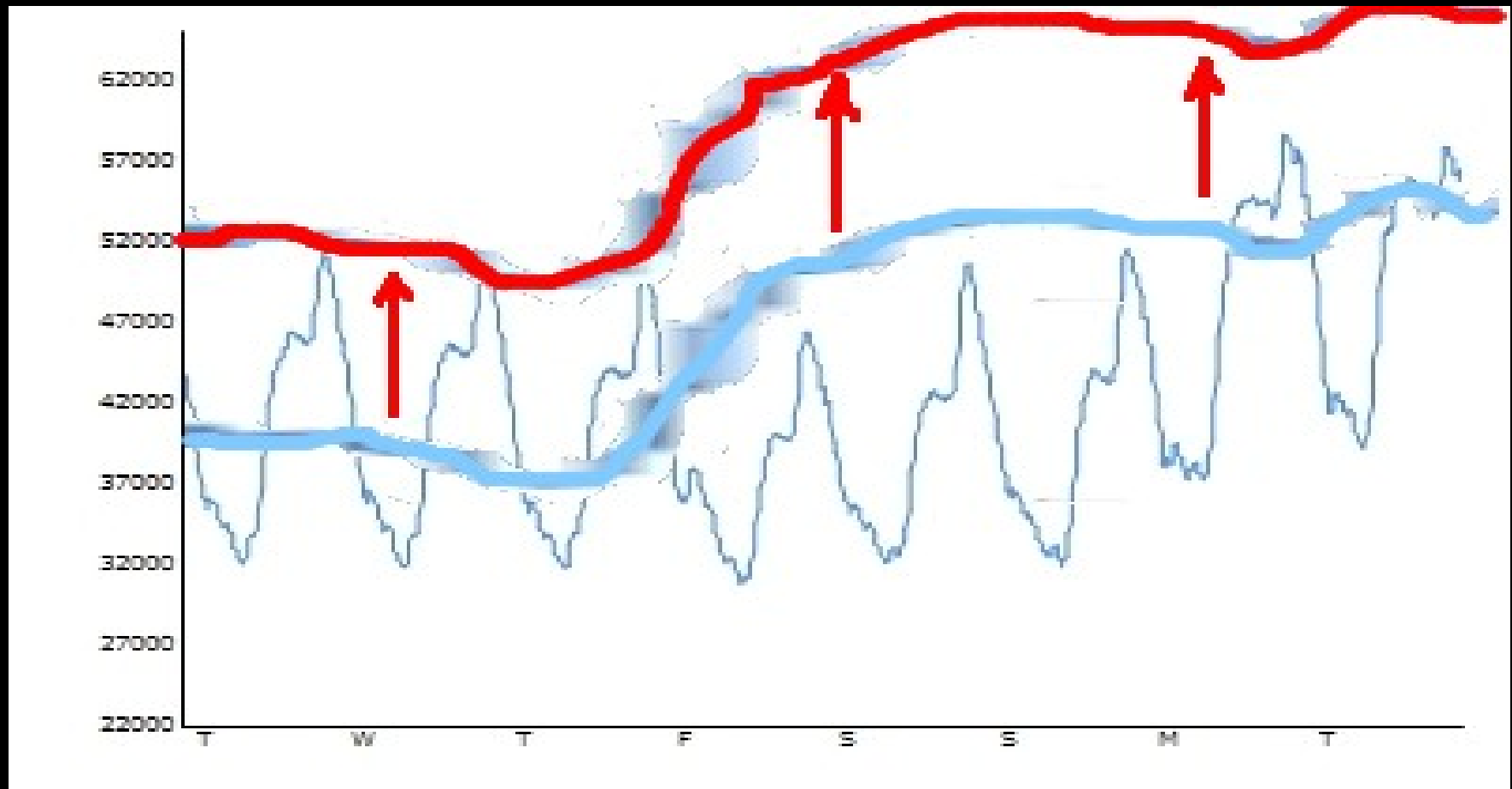
Squeaky pop

Part 4

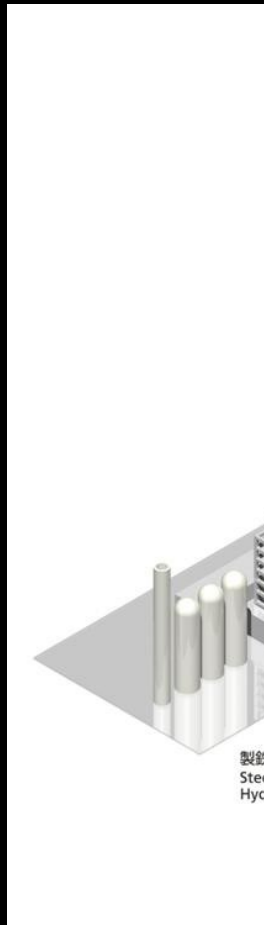
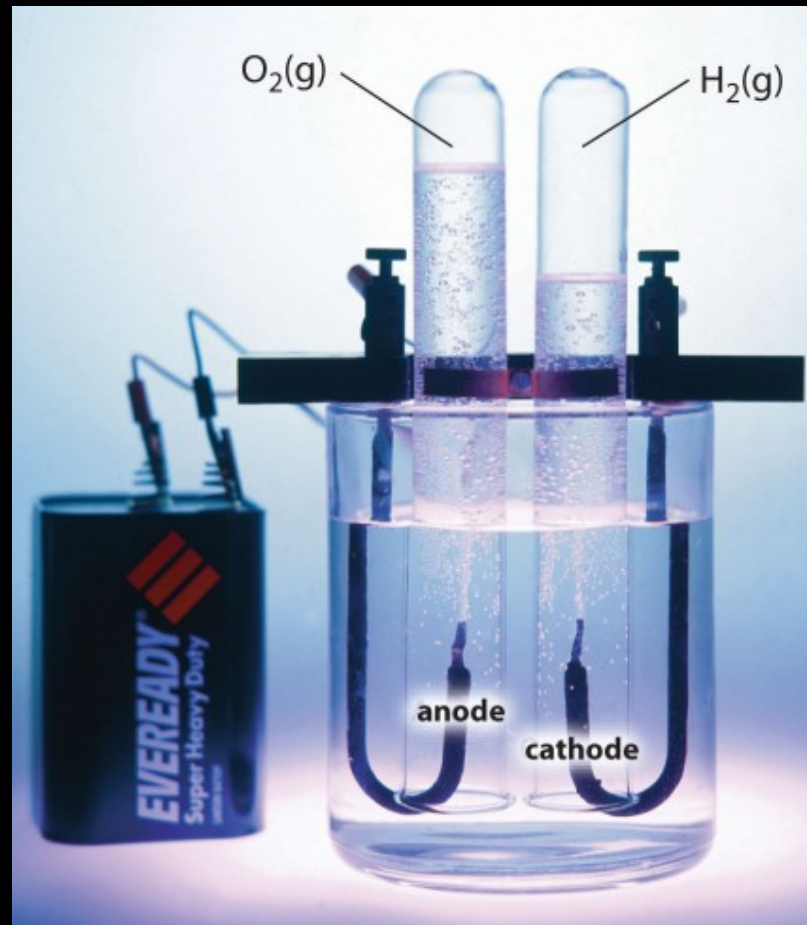
Squeaky pop



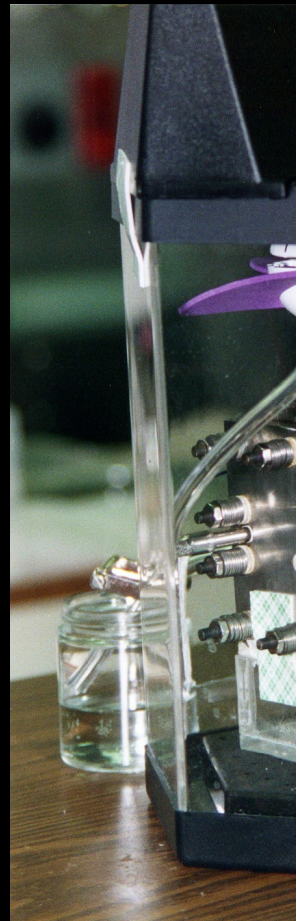
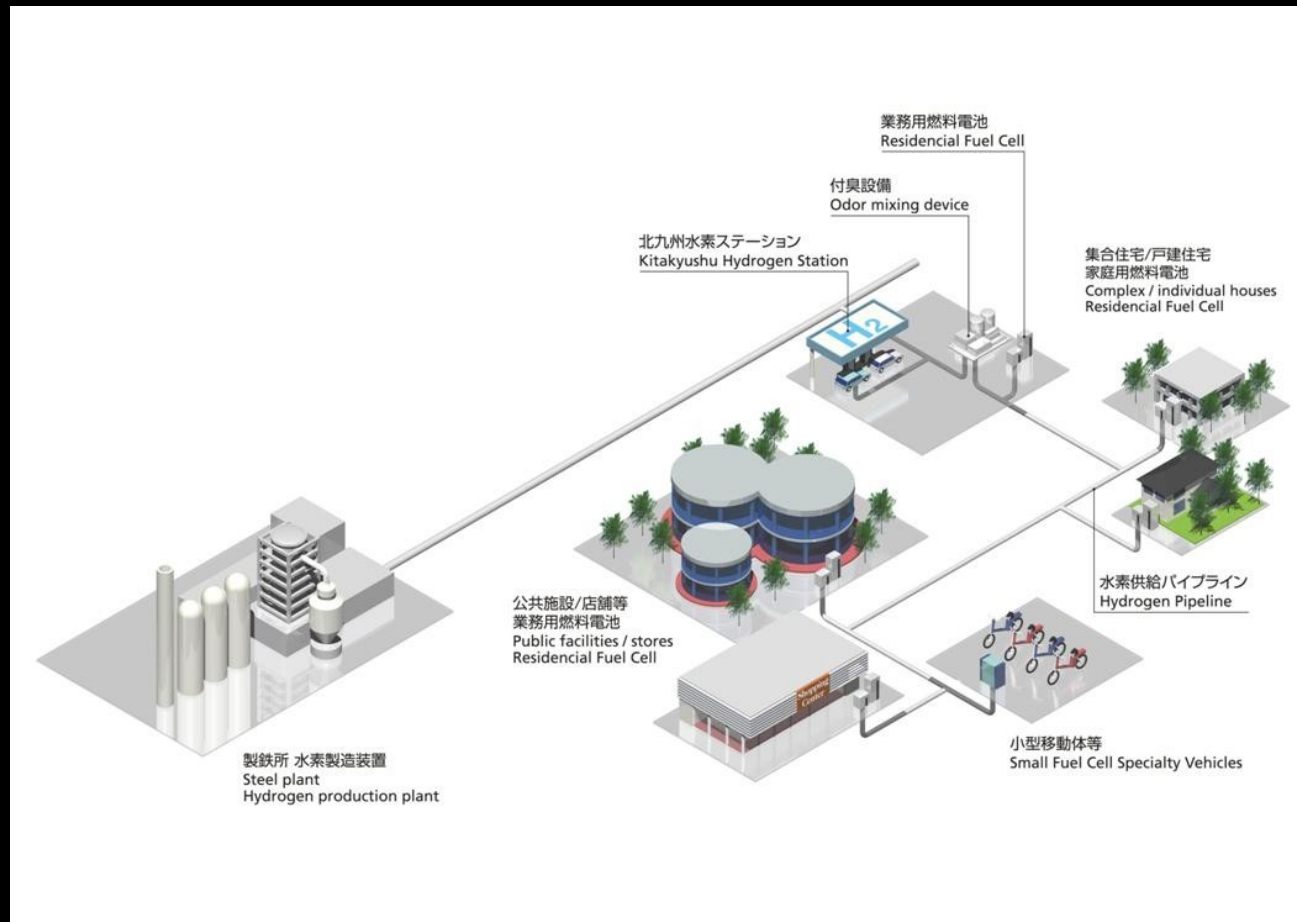
Step 1: Increase the renewables



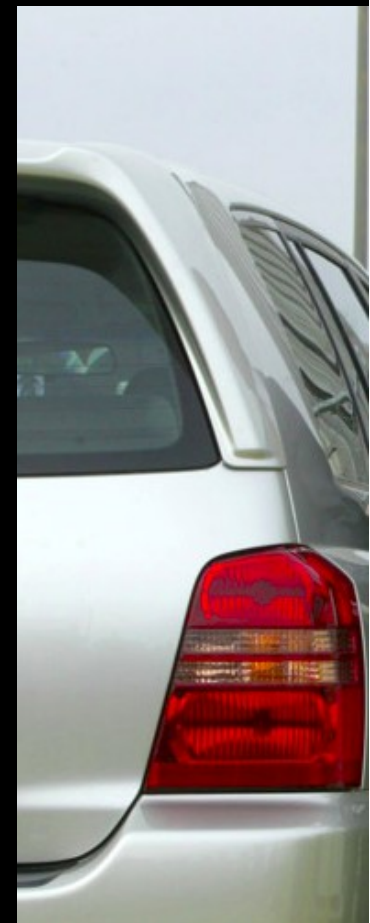
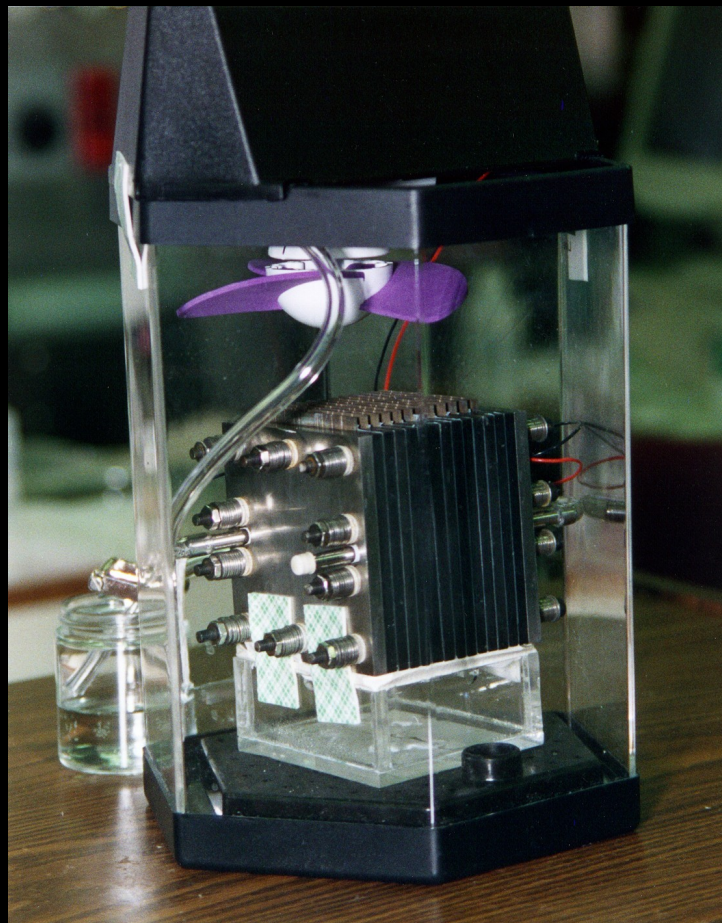
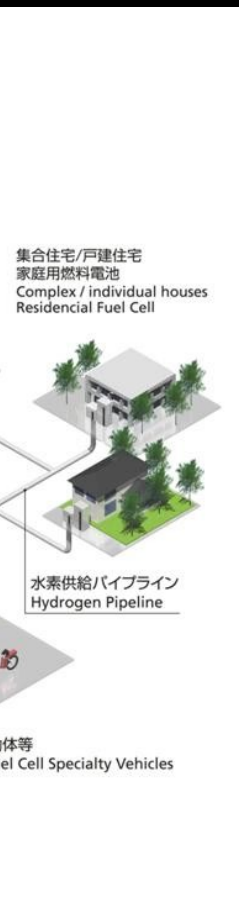
Step 2: Controllable bubbles



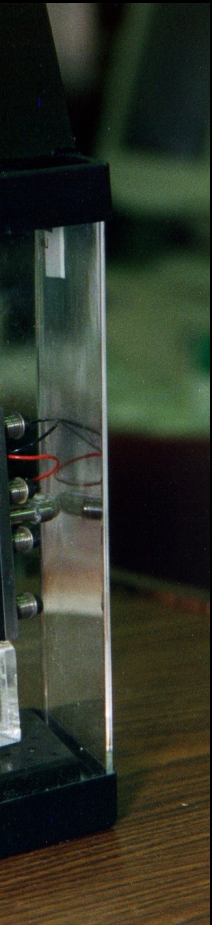
Step 3: Avoid explosions



Step 4: Make water



Step 5: Have a good time



Problems

Part 5

Problems

Using hydrogen

Storing hydrogen

Using hydrogen

Fuel cells:

- really expensive
- short lifetimes

Solutions:

- wait for improvements
- convert old engines

Storing hydrogen

Gas tanks:

- requires high pressure
- embrittlement

Solutions:

- better tank materials?
- chemical storage?
- no solutions yet

Thanks for listening

Questions?