**

**VIDEO LIST**

**Electricity & Energy**

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# Nat 4/5 Physics

# Electricity & Energy

# Resources List

## ORDER of the WORK

I will be out of school for several periods in the coing weeks due to exam board work and I want you to have a good understanding of what you need to be completing

| Webaddress & Video Clips | WHO | Assess |
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| TWIG clip introduces electricity supply across the world: | <https://www.twigonglow.com/films/factpack-global-electricity-supply-1547/> |  |
| STEM central clip introducing electricity supply in Scotland: | <http://www.educationscotland.gov.uk/video/r/video_tcm4659783.asp?strReferringChannel=stemcentral&strReferringPageID=tcm:4-657833-64> |  |
| Class clip about small scale generation by a school: | <http://www.bbc.co.uk/learningzone/clips/recycling-organic-waste-into-electricity/5889.html> |  |
| There are various videos introducing renewables on the class clips website: | <http://www.bbc.co.uk/learningzone/clips/renewable-energy-sources/474.html> |  |
|  | <http://www.bbc.co.uk/learningzone/clips/wave-power-hydroelectricity-and-wind-farms/475.html> |  |
| Difficulties in transportation of wind turbine blades: | http://www.ltscotland.org.uk/stemcentral/careers/engineeringjobs/chrisharris.asp |  |
| Engineering jobs in the off shore wind industry: | http://www.ltscotland.org.uk/stemcentral/careers/engineeringjobs/mattbrowellhook.asp |  |
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| PhET animations of link between changing electric field and electric current: | http://phet.colorado.edu/en/simulation/faraday |  |
|  | http://phet.colorado.edu/en/simulation/generator |  |
| The class clips website has the following clips about wind power: | http://www.bbc.co.uk/learningzone/clips/britain-is-world-leader-in-offshore-wind-power/5961.html |  |
|  | http://www.bbc.co.uk/learningzone/clips/domestic-wind-turbines-may-use-more-power-than-they-generate/5960.html |  |
|  | <http://www.bbc.co.uk/learningzone/clips/wind-farms-pt-1-3/1461.html> |  |
|  | <http://www.bbc.co.uk/learningzone/clips/wind-farms-pt-2-3/1462.html> |  |
|  | <http://www.bbc.co.uk/learningzone/clips/wind-farms-pt-3-3/1463.html> |  |
|  | http://www.bbc.co.uk/learningzone/clips/wind-turbine-blades-collapse/5959.html |  |
| * Class clips of ac vs dc:
* http://www.bbc.co.uk/learningzone/clips/a-short-history-of-direct-and-alternating-current/1870.html
 | * http://www.bbc.co.uk/learningzone/clips/direct-current-vs-alternating-current/4557.html
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| * Class clip of danger of touching high voltage lines:
 | * http://www.bbc.co.uk/learningzone/clips/the-dangers-of-electricity/1871.html
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| * PhET animation to show difference between ac and dc:
 | <http://phet.colorado.edu/en/simulation/circuit-construction-kit-ac-virtual-lab> |  |
| * TWIG clip of the history of ac and dc
 | <https://www.twigonglow.com/films/war-of-the-currents-1544/> |  |
| * Class clips video on Pylons and Cables:
 | <http://www.bbc.co.uk/learningzone/clips/how-is-electricity-brought-to-our-homes/2413.html> |  |
| * Class clip of electricity transmission system:
 | <http://www.bbc.co.uk/learningzone/clips/electricity-generation-and-transmission/4559.html> |  |
| * Engineering job in hydro:
* http://www.ltscotland.org.uk/stemcentral/careers/engineeringjobs/simonmckean.asp
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| * Class clip of energy efficiency in a leisure centre:
* http://www.bbc.co.uk/learningzone/clips/energy-efficiency-in-a-leisure-centre/269.html
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| 1. **Class clips solar panels in Zambia:**
2. **http://www.bbc.co.uk/learningzone/clips/electricity-in-rural-zambia-solar-panels/2412.html**
3. **Class clips on solar panel installation:**
4. **http://www.bbc.co.uk/learningzone/clips/pope-installs-solar-panels/5952.html**
5. **There is a science in school article about silicon collar cells:**
6. **http://www.scienceinschool.org/2012/issue23/solar**
7. **Storage of electricity using a capacitor. Demonstration of release of energy with flash lamp from higher. Re-capping what electricity is in terms of electron flow and hat game model of current to show similar speed in series circuit and electrons not coming from the supply. Introduction of why direction towards positive and introduce concept of charge with properties of repel/attract. Effects of charge – watch glasses, van de Graff, etc. Animations to show low speed of drift velocity. (Keep demos of seeds and teltron tubes for higher.)**
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| * PhET animations of electric fields:
* http://phet.colorado.edu/en/simulation/charges-and-fields
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| * Class clips introduction to batteries:
* http://www.bbc.co.uk/learningzone/clips/batteries-and-their-uses/2194.html
* PhET battery voltage animation:
* http://phet.colorado.edu/en/simulation/battery-voltage
* Class clips showing distinction between current and voltage:
* http://www.bbc.co.uk/learningzone/clips/current-and-voltage-in-a-circuit/10671.html
* http://www.bbc.co.uk/learningzone/clips/voltage-and-current/2.html
* Class clip on hydrogen fuels cells:
* http://www.bbc.co.uk/learningzone/clips/hydrogen-fuel-cells/6011.html
* There is a science in school article about producing electricity from yeast:
* http://www.scienceinschool.org/2010/issue14/fuelcell
* Possible HW: Environmental and social issues associated with mining for materials to produce batteries or cells.
* Possible HW: Issues associated with disposal and/or recycling of batteries.
* Potential Nat 4/5 assessment task 2:
* “Many electrical devices can be charged manually. Research the way these devices are charged and evaluate how these affect society.”
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| * Class clip explaining they difference between heat and temperature:
* http://www.bbc.co.uk/learningzone/clips/differences-between-heat-and-temperature/236.html
* Class clips relating to energy transfer by conduction, convection and radiation:
* http://www.bbc.co.uk/learningzone/clips/conduction-convection-and-radiation/10591.html
* http://www.bbc.co.uk/learningzone/clips/conduction-convection-and-radiation/10589.html
* TWIG clip recapping conduction, convection and radiation:
* https://www.twigonglow.com/films/heat-transport-1524/
* Video clip on solar towers:
* http://www.guardian.co.uk/science/video/2011/feb/11/spain-solar-towers
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| * What is the physical difference between different appliances? Why do some draw a larger current than others even when run off the same mains voltage? Introduce concept of resistance. Calculation of resistance for various appliances by first calculating current from P=IV. V=IR calculations from chemchord.
* Class clip introducing concept of resistance:
* http://www.bbc.co.uk/learningzone/clips/resistance-in-a-circuit/4.html
* TWIG clip introducing resistance:
* https://www.twigonglow.com/films/resistance-1556/
* Class clip of sue of resistance in archaeology:
* http://www.bbc.co.uk/learningzone/clips/measuring-electrical-resistance/270.html
* PhET animations related to resistance:
* http://phet.colorado.edu/en/simulation/battery-resistor-circuit
* http://phet.colorado.edu/en/simulation/ohms-law
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| Clips & Videos |  |  |
| * Energy Foresight
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| * Class clips relating to insulation:
* http://www.bbc.co.uk/learningzone/clips/convection-and-insulation/10590.html
* http://www.bbc.co.uk/learningzone/clips/grants-to-improve-home-insulation/5987.html
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| * Class clips video of diesel generator:
* http://www.bbc.co.uk/learningzone/clips/electricity-produced-by-generators/2411.html
* TWIG clip about the importance of steam:
* https://www.twigonglow.com/films/steam-power-1519/
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#### KEY

#### T = Teacher required to help

#### P = Pupil working on their own

#### G = Groupwork

#### O1 = outcome 1, a practical experiment and write up

#### 2.2/2.3 A written piece of work covering some application of Physics related to a key area and its effect on Society

#### AVU= the Value Added Unit that forms a unit for your course award.