Foundations of Energy

Electricity Generation in the Snowy Scheme

Year level	7 & 8	Duration	6-8 x 45 minute lessons

Unit outline	Unit context
Students explore the Snowy Hydro scheme as the phenomenon to investigate energy. Students learn about energy, including how it is categorised into kinetic and potential energy, and its relationship to forces. Students play a game which is a representation of the Snowy Hydro system called “Power Peak” and use this game to draw comparisons between what occurs in the real-world phenomenon and how the Snowy Hydro scheme generates usable electricity for society in a sustainable manner.	*What should learners already know?* Students should be familiar with forces, electrical circuits and what is electricity. Students should also be familiar with what unit measurements are and how to convert between units with different decimal places.

Key Learning Area	Science

Integration & Connection with other Key Learning Areas

Science	Mathematics	The Arts	Design and Technologies		History
Geography	English	Health	Digital Technologies	Economics	Civics and Citizenship

Key resources

Resource name	Resource type	Link to access	Used for
Power Peak game	Game hosted by Arludo	To access the game without a class code use https://arludo.com/play/power-peak/register/	All lessons
What is energy quiz	Interactive quiz and lesson	https://learn.sandbox.arludo.com/pathway/slider/preview/5aab0c2d-bf32-4401-9f77-4221d1f9e59d	Concept 1. What is energy?
How does pumped hydro work?!	Youtube Short	https://www.youtube.com/shorts/Djbu73NtUf4	Concept 1. What is energy?
Balanced and unbalanced forces	YouTube video	https://www.youtube.com/watch?v=YyJSlclbd-s	Concept 2: Forces and energy
Conservation of Energy	YouTube video	https://www.youtube.com/watch?v=Um04eHOqGIM	Concept 3. Kinetic energy and potential energy
Work and Power in Physics	YouTube video	https://www.youtube.com/watch?v=ZqCMR7PjZRU	Concept 4. Energy units and energy generation

Key vocabulary

Energy, kinetic energy, potential energy, work, gravity, forces, unbalanced force, balanced force, net force, generate, electricity, power, Joules, Watts, watt-hours, kilowatt-hours, megawatt-hours, gigawatt-hours.
Correct abbreviations of electricity units: J, W, Wh, kWh, MWh and GWh respectively

Key Learning Area curriculum content and achievement standards	
Achievement standards	**Curriculum content descriptions**
Year 7 Understanding	
Investigate forces acting on objects, describe them as balanced or unbalanced, and how they affect the objects.	AC9S7U04 investigate and represent balanced and unbalanced forces, including gravitational force, acting on objects, and relate changes in an object's motion to its mass and the magnitude and direction of forces acting on it
Year 8 Understanding	
Identify energy as kinetic or potential and investigate how energy transfers and transformations in the Snowy Hydro system leads to electricity generation.	AC9S8U05 classify different types of energy as kinetic or potential and investigate energy transfer and transformations in simple systems
Year 7 & 8 Science Inquiry	
Students investigate testable questions and create predictions and explanations based on the game to apply to the Snowy Hydro scheme in real world context.	AC9S7I01 & AC9S8I01 develop investigable questions, reasoned predictions and hypotheses to explore scientific models, identify patterns and test relationships
Students create annotated diagrams to describe relationships between objects, forces and kinetic and potential energy.	AC9S7I04 & AC9S8I04 select and construct appropriate representations, including tables, graphs, models and mathematical relationships, to organise and process data and information
Students represent their learnings in language appropriate written explanations for specific purposes and audiences.	AC9S7I08 & AC9S8I08 write and create texts to communicate ideas, findings and arguments for specific purposes and audiences, including selection of appropriate language and text features, using digital tools as appropriate
Year 7 & 8 Science as a Human Endeavour	
Students examine how the Snowy Hydro scheme impacts society and the environment from a sustainability, social and ethical lens.	AC9S7H02 & AC9S8H02 investigate how cultural perspectives and world views influence the development of scientific knowledge
	AC9S7H03 & AC9S8H03 examine how proposed scientific responses to contemporary issues may impact on society and explore ethical, environmental, social and economic considerations

General Capabilities	
General Capabilities	**How will students develop or demonstrate the targeted General Capability?**
Critical and Creative Thinking	
Inquiring **Develop questions -** This sub-element supports students to narrow or expand the focus of their thinking and explore ideas and concepts critically and creatively. When they develop different kinds of questions, students can further their inquiry. They can find more information about a topic and form a better understanding of how something works or why something is the way it is.	• **develop questions to investigate complex issues and topics** ○ Students will develop questions to investigate the topic of energy, including how kinetic and potential energy are related, by playing the Power Peak game. • **questions developed assist in forming an understanding of why phenomena or issues arise** ○ Answers to students' questions will help them unpack the phenomena of how Snowy Hydro scheme is able to generate electricity through harness the power of kinetic and potential energy of water.
Generating **Create possibilities -** This sub-element supports students to explore and combine ideas to create innovative solutions, and adapt and present ideas in new ways, as they engage with learning area content. **Consider alternatives -** This sub-element supports students to examine different and creative ways to approach tasks and make recommendations on preferred options and actions. **Put ideas into action -** This sub-element supports students to experiment with ideas, modify and adapt approaches, and evaluate options and actions in a range of situations.	• **create possibilities by adapting, combining or elaborating on new and known ideas, and proposing a range of different or creative combinations** ○ Students investigate how the Power Peak game is a representation of the Snowy Hydro scheme and approach playing the game each time a new way to combine ideas they have learnt and adapt approaches to reach the goals outlined in the game.
Analysing **Interpret concepts and problems -** This sub-element supports students to interpret concepts, ideas, theories and problems, and deconstruct them into their component parts, to gain a deeper understanding of the	• **identify the relevant aspects of a concept or problem, recognising gaps or missing elements necessary for understanding by using approaches and strategies suitable for the context**

context or situation. **Draw conclusions and provide reasons -** This sub-element supports students to reach a conclusion or make a choice for action by connecting to learning area knowledge and understanding. The act of justifying a conclusion also requires the provision of a reason or the development of an argument in support of the conclusion or action. **Evaluate actions and outcomes -** This sub-element supports students to consider the choices made when they solve problems or attempt learning area tasks and evaluate solutions and outcomes to help plan for future action.	○ Students draw comparisons between representations of kinetic and potential energy, systems and processes in the Power Peak game and the Snowy Hydro Scheme. ○ Students explore the effects of actions in the game and draw conclusions as to how this affects the outcomes of the energy generation. ○ Students plan and evaluate approaches to the game in order to generate the energy required for each round, connected to the aims of the Snowy Hydro scheme.
Reflecting **Think about thinking (metacognition)** - This sub-element supports students to identify, describe and evaluate the thinking and learning strategies that they use to complete activities. They reflect on the ways that their thinking, and the approaches they take, may be influenced by external contributions or viewpoints. **Transfer knowledge** - This sub-element supports students to make connections between their current knowledge and skills and new contexts where they can adapt and use what they already know and can do. Both critical and creative thinking are involved, and new contexts can include other learning areas of the curriculum.	• **reflect on the thinking and processes used when completing activities or drawing conclusions** ○ Students reflect on their learning and approaches to the game, by applying their learning to the game and the Snowy Hydro scheme phenomenon. • **invite alternative perspectives and feedback, and consider reasonable criticism to adjust thinking and approaches** ○ Students reflect on their approaches to learning new concepts and revisit the game and phenomenon to adjust thinking and approaches.
Literacy	
Writing **Creating texts** - This sub-element describes how a student becomes increasingly proficient at creating texts for a range of purposes and audiences across learning areas. Students' writing moves from representing basic concepts and simple ideas to conveying abstract concepts and complex ideas, in line with the demands of the learning areas. Creating texts is a holistic sub-element which is supported by the other sub-elements under this element.	**Crafting ideas** • **creates informative texts that describe, explain and document (e.g. describe an artwork, document the materials and explain why it was created)** • **selects structural elements to comprehensively and accurately represent the information (e.g. a fact sheet includes an opening statement, labelled diagrams and text boxes)** • **orients the reader to the topic or concept using a definition or**

Grammar - This sub-element describes how a student becomes increasingly proficient at creating coherent and cohesive, grammatically accurate written texts. Students develop control over grammar at the whole text, sentence and word group level.

Punctuation -This sub-element describes how a student becomes increasingly proficient at using correct punctuation to ensure clarity and ease of reading in the texts they create. As students write more complex and technical texts, they will use increasingly complex punctuation to support meaning.

Spelling - This sub-element describes how a student becomes increasingly proficient in selecting and arranging letters to form accurately spelt words, to ensure written texts are clear and easily understood. Students develop increasing skill and knowledge in using spelling as a tool to understand and create meaning in texts. At higher levels of the progression, students monitor their own spelling and explain how spelling affects meaning.

Handwriting and keyboarding - This sub-element describes how a student uses handwriting and keyboarding skills with increasing speed, accuracy and fluency, to compose and edit texts. It describes how a student develops a fluent, legible handwriting style, beginning with unjoined letters and transitioning to joined handwriting.

classification
- **develops ideas with details and examples**
- **uses ideas derived from research**
- **uses written and visual supporting evidence**
  - Students describe, explain and summarise their learning using written responses and diagrams. Students develop their ideas using examples from the phenomenon and supporting evidence, such as the game or independent investigation or research.

Text forms and features
- **uses cohesive devices to link concepts across texts (e.g. uses lexical cohesion such as word associations and synonyms)**
- **uses cohesive devices to express cause and effect (e.g. uses text connectives such as "therefore", "subsequently")**
- **includes salient visual and audio features to expand on written information (e.g. creates graphs and other technical diagrams from authentic data)**
- **uses language to compare (e.g. "alternatively", "whereas")**
- **uses formatting appropriately to reference and label graphics**
  - Students link concepts and describe cause and effect through explaining the phenomena of kinetic and potential energy contributing to the electricity generation in the Snowy Hydro scheme. Students label graphics by annotating diagrams.

Vocabulary
- **uses a range of learnt, technical and discipline-specific terms (e.g. "adapt", "survive")**
- **uses more sophisticated words to express cause and effect (e.g. "therefore", "subsequently")**
  - Student use technical and discipline-specific terms (eg. kinetic energy, potential energy, etc) to explain phenomena.

Numeracy

Number sense and algebra Number and place value - This sub-element describes how a student becomes increasingly able to recognise, read, represent, order and interpret numbers within our place value number system, expressed in different ways. It outlines key understandings needed to process, communicate and interpret quantitative information in a variety of contexts. **Interpreting fractions** - This sub-element emphasises the development of fraction sense, which is foundational to learning how to reason proportionally. Students become increasingly able to recognise the part-whole description of a fraction, but also recognise and use fractions as numbers, measures, operators, ratios and as a division. **Proportional thinking** - This sub-element addresses the proportional relationships between quantities. The ability to reason proportionally requires students to think multiplicatively and work with percentages, rates and ratios and proportions. **Number patterns and algebraic thinking** - This sub-element describes how a student becomes increasingly able to identify and describe repeating and growing patterns in the environment and other everyday contexts. Students develop the capacity to generalise as they learn to recognise, represent, describe and use patterns for prediction and decision making.	Sub elements of numeracy are complex. Please refer to the figures for each sub-element from the Numeracy - Understand this general capability website for relevant levels at each year level. Also useful is the F-10 Curriculum for Numeracy page which is also linked in each element in the left hand column. **Applying proportion** ● **uses common fractions and decimals for proportional increase or decrease of a given amount** ○ Students explore the relationship between work undertaken and energy generated, and navigate these measurements in Joules and Watt-hours, and their related units.
Measurement and geometry **Understanding units of measurement** - This sub-element describes how students becomes increasingly able to identify attributes that can be measured and the units by which they are measured. They initially use direct comparison to recognise and understand what it means to have more or less of a particular attribute, and progress to using informal, and then metric and other formal units.	**Converting units** ● **converts between metric units of measurement of the same attribute (e.g. converts centimetres into millimetres by multiplying by \(10\); uses the consistent naming of metric prefixes to convert between adjacent units)** ● **describes and uses the relationship between metric units of measurement and the base-\(10\) place value system to accurately measure and record measurements using decimals** ○ Students measure energy generated in the game and describe and manipulate this amount by converting to different units (eg. Wh, kWh, MWh, GWh etc) **Measuring how things change over time**

Measuring time - This sub-element describes how a student becomes increasingly aware of reading and describing the passage of time and how elapsed time or duration can be measured. They learn to apply units and conventions associated with measuring and recording the sequencing and duration of time.	• **investigates, describes and interprets data collected over time (e.g. uses a travel graph to describe a journey; interprets data collected over a period of time using a graphical representation and makes a prediction for the future behaviour of the data)** ○ Students examine changes in energy generation throughout the game and interpret the data collected over a series of rounds.

Cross Curriculum Priorities

Cross Curriculum Priorities	How will students develop or demonstrate the targeted Cross Curriculum Priority?
Sustainability	
Systems: SS1: All life forms, including human life, are connected through Earth's systems (geosphere, biosphere, hydrosphere and atmosphere) on which they depend for their wellbeing and survival. SS2: Sustainable patterns of living require the responsible use of resources, maintenance of clean air, water and soils, and preservation or restoration of healthy environments.	AC9S7H03 & AC9S8H03 • **examine how proposed scientific responses to contemporary issues may impact on society and explore ethical, environmental, social and economic considerations** ○ Student explore how the responsible use of water and management of environmental systems such as the water cycle and surrounding environment of the Snowy Hydro scheme can lead to sustainable use of systems for energy generation.
World Views SW1:World views that recognise the interdependence of Earth's systems, and value diversity, equity and social justice, are essential for achieving sustainability. SW2: World views are formed by experiences at personal, local, national and global levels, and are linked to individual, community, business and political actions for sustainability.	AC9S7H02 & AC9S8H02 • **investigate how cultural perspectives and world views influence the development of scientific knowledge** ○ Students consider how the societal, environmental and economic factors drive the development of an energy generation scheme like Snowy Hydro.
Design: SD1: Sustainably designed products, environments and services aim to minimise the impact on or restore the quality and diversity of environmental, social and economic systems.	AC9S7H03 & AC9S8H03 • **examine how proposed scientific responses to contemporary issues may impact on society and explore ethical, environmental, social and economic considerations**

SD2: Creative and innovative design is integral to the identification of new ways of sustainable living. SD3: Sustainable design requires an awareness of place, past practices, research and technological developments, and balanced judgements based on projected environmental, social and economic impacts.	○ Student explore how the Snowy Hydro scheme helps to solve a problem of energy generation and its requirement for society, and considers environmental, social and economic factors in its design and application.
Futures SF1: Sustainable futures are achieved through informed individual, community, business and political action that values local, national and global equity and fairness across generations into the future. SF2: Sustainable futures require individuals to seek information, identify solutions, reflect on and evaluate past actions, and collaborate with and influence others as they work towards a desired change.	AC9S7I08 & AC9S8I08 ● **write and create texts to communicate ideas, findings and arguments for specific purposes and audiences, including selection of appropriate language and text features, using digital tools as appropriate** ○ Student reflect on the sustainable use of resources and protection of the environment in Snowy Hydro scheme will allow for continued energy generation to meet demands of society into the future.

Teaching and Learning Plan

Concept 1. What is energy?			
Learning Intention	State what energy is and distinguish between potential and kinetic energy.		
Success criteria	I can define what energy is. I can define potential and kinetic energy. I can identify examples of potential and kinetic energy in the Snowy Hydro-electric Scheme.		
Texts/resources	**Learning sequence and Teaching Strategies**	**Differentiation opportunities**	**Assessment**
What is energy quiz https://learn.sandbox.arludo.com/pathway/slider/preview/5aab0c2d-bf32-4401-9f77-4221d1f9e59d ***How does pumped hydro work?!* YouTube Short** https://www.youtube.com/shorts/Djbu73NtUf4 **Power Peak Game** https://arludo.com/play/power-peak/register/	**Explicit teaching:** Define that energy is the ability of something to do "work" eg. light up, produce heat, move etc **Activity:** Students use the interactive lesson to select the correct definitions of energy. **Explicit teaching:** Shows examples of potential energy being stored in nature (eg. photos of wood, oil and gas production, wind, ocean waves, solar energy/sunlight, rivers). **Discussion:** Students identify the type of energy that is produced/stored from each of these examples (eg. wood produces heat and light when burned, oil and gas can power things, wind can make things move, ocean waves can make things move, solar energy/sunlight can heat things up, running water in rivers makes things move). **Video: *How does pumped hydro work?! Short*** Introduce the Snowy Hydro scheme and ask students as they watch the videos how many examples of energy they observed. **Game**: Play Power Peak games to begin exploring the concepts of potential and kinetic energy.	**Opportunities to simplify:** Understanding the definition of "work": Ask students to stand up and not move. Question students whether they are using energy to stand still (answer: their body is using energy to live, but to stand still they are not using additional energy ie. they are not performing "work"). Then ask students to move (eg. jog on spot, dance, lean gently against one another). Question students whether they are now using energy (answer: yes). Ask students if they felt like they were performing "work" (answer: yes). Relate this concept of "work" to the idea that energy is the ability to perform "work", in this case movement. **Opportunities to extend:** Further break down energy into sub-categories of kinetic (eg. movement, heat, light, sound, electrical) and potential energy (eg. gravitational, chemical, elastic, nuclear) by providing examples and asking students to explain how they relative back to their overall category of kinetic (movement) or potential (stored) energy.	Students define energy and draw three objects in their classroom/household that use energy in different ways. Students describe how that object uses energy, relating it back to the definition of the ability to do "work".

Concept 2. Forces and energy			
Learning intention	State what a balanced and unbalanced force is and explain how balanced and unbalanced forces act on an object.		
Success criteria	I can identify a balanced or unbalanced force. I can describe how a balanced or an unbalanced force affects an object using a free body diagram. I can demonstrate why a balanced or unbalanced force has this effect on an object.		
Texts/resources	**Learning sequence and Teaching Strategies**	**Differentiation opportunities**	**Assessment**
Balanced and Unbalanced forces **video** https://www.youtube.com/watch?v=YyJSlclbd-s **Power Peak Game** https://arludo.com/play/power-peak/register/	**Activity:** Students use a variety of objects (eg. balls, ramps, plastic cups, string, elastic bands, etc) to build a simple Rube Goldberg machine/ball run. **Discussion:** Ask students to identify in which of the parts of their machine/ball run were forces being exerted on the ball/objects. (eg. A force is applied to a ball to push it down the ramp.) **Explicit teaching:** Define that a "balanced force" is where there forces acting on an object are equal in magnitude and opposite in direction, resulting in net zero force. Define that an "unbalanced force" is when a force acting on an object is greater than zero, which means unequal, opposing forces. Introduce the unit to calculate net force, being Newtons (N). **Video: *Balanced and unbalanced forces*** Show students the video for support in understanding balanced and unbalanced forces and how to annotate this in a free body diagram diagram. **Activity**: Ask students to reconsider their Rube Goldberg machine/ball run and describe where it had balanced or unbalanced forces acting on objects. (eg. unbalanced forces occur when the ball is pushed	**Opportunities to simplify:** Remind students of the definition of a force and allow for exploration of forces in a simple activity using objects that can exert forces on one another (eg. ball and ramp). Ask students to interact with these objects and identify how the forces are acting on them (eg. pushing the ball down the ramp causes it to change speed and direction, stopping it causes it to change speed and direction, pressing or bouncing the ball causes it to change shape) **Opportunities to extend:** Students have complete calculations of net force in simple body diagrams and situations. Eg. A tug of war occurs where the right side pulls with a net force of 100 N and the left side pulls with 80 N. Solve the resultant force and direction. Answer: Right 20 N.)	Students draw a diagram of their Rube Goldberg machine/ball run and annotate the parts where balanced or unbalanced forces occur. They then explain what effect the balanced forces had on the system and compare it to the unbalanced forces.

	down the ramp because it changes motion. Balanced forces occur when the cup catches the ball because the object was at rest.) Students create diagrams of one example of each. **Game**: Students play the Power Peak game and identify where balanced and unbalanced forces are occurring (eg. Balanced force - when the wombat is on the chairlift, there is a balanced force between the wombat and the base of the chair, hence why the wombat is sitting still on it. Unbalanced force - when the wombat slides down the hill, the force of gravity pulling the wombat down the hill is greater than the force of the hill pushing up against the wombat, hence why the wombat moves down the hill). **Summarise learning:** Students draw one example of a balanced and one example of an unbalanced force from the game and demonstrate why this has an effect on the wombat.		

Concept 3. Kinetic energy and potential energy			
Learning intention	Explain that energy cannot be created or destroyed and that energy can be transformed. Compare all energy by measuring the energy in Joules or Watt-hours.		
Success criteria	I can state the Law of Conservation of energy. I can describe how energy cannot be created or destroyed, it can only be transformed. I can explain how energy transformations occur using kinetic and gravitational potential energy examples.		
Texts/resources	**Learning sequence and Teaching Strategies**	**Differentiation opportunities**	**Assessment**
Power Peak Game https://arludo.com/play/power-peak/register/ ***Conservation of Energy* video** https://www.youtube.com/watch?v=Um04eHOqGIM	**Demonstration**: Use something electrical in your class to demonstrate the Law of Conversation of energy. Turn on a light bulb, laptop, fan etc and ask students if the object is creating the energy. Allow them to extrapolate by asking probing questions until they reach the conclusion that electricity is powering the object. Ask them if the object is creating the energy to work and what happens to the energy, is it destroyed once "used". **Explicit teaching:** Explain that energy cannot be created or destroyed, it is just transferred into different types of energy. Students should recall there are two main types of energy: kinetic and potential energy. **Video**: ***Conservation of Energy*** Students watch a video to further understand the idea of energy transformations and the Law of Conservation of energy. **Game**: Students play the Power Peak game and identify examples of kinetic and potential energy in the game. **Discussion**: Ask students what energy transformations they are observing in the game. Students should be able to summarise that the wombat uses	**Opportunities to simplify:** Remind students that the flow of energy is called electricity. Students can explore electricity in simple circuits including wired, switches and lightbulbs. Students should be able to identify that energy is making the system work and there are transformations of the electricity into another energy eg. light (kinetic) energy. **Opportunities to extend:** Ask students to identify the types of energy transformations in the "boost" the wombat collects in the game. Answer: solar is chemical energy → kinetic energy, wind is kinetic energy remaining kinetic energy, gas or diesel is chemical energy → kinetic energy).	Students find an appliance or lightbulb in their house and calculate how much energy is uses. If the information is given in Watts, they convert it to Joules and vice versa. Students then calculate how much energy it would need to power for different periods of time (eg. 1 hour, 1 day, 1 week etc)

	kinetic energy when moving down the hill. This kinetic energy occurs because gravitational potential energy from the slope transforms into kinetic energy of the wombat. The greater the slope, the faster the wombat moves, the more energy is generates. The wombat generates more energy by doing jumps and collecting “boosts”. The jump is representative of a transformation of gravitational potential energy to generate more kinetic energy. The higher the jump, the more energy it generates under the same principle. The boosts are representative of other energy transformations (see opportunities to extend).		

Concept 4. Energy units and energy generation			
Learning intention	Identify that energy can be measured in Joules or Watt-hours and recognise energy transformations and their resulting energy measure.		
Success criteria	I can describe the relationship between work and power. I can summarise that Joules and Watt-hours are measurements of energy. I can explain how energy transformations result in energy that can be measured in Watt-hours.		
Texts/resources	**Learning sequence and Teaching Strategies**	**Differentiation opportunities**	**Assessment**
***Work and Power in Physics* Video** https://www.youtube.com/watch?v=ZqCMR7PjZRU **Power Peak Game** https://arludo.com/play/power-peak/register/	**Revision:** Recall to students that energy is the ability for something to do work and that energy cannot be created or destroyed, it can only be transformed. The flow of energy in electrical charge is called electricity. Explain that though energy can't be created or destroyed, we use the terms "create" or "generate" to describe other energy being transformed into electricity. **Video: *Work and Power in Physics*** Watch the video to introduce students to the relationship between work and power. The video introduces how energy can be measured in Joules/second or Watts. **Explicit teaching:** Explain to students that Watts is a measure of energy used per second whereas Watt-hours is the measure of energy per hour. **Game**: Students plan how they will approach the game play to fulfill each round and record their process. They then play the game and apply their learning that the wombat generates more energy when it increases in speed and when it moves past a turbine. Students should take note how much energy they generate each round, the units and what they expend to get back up the mountain (representative electricity used, ie. the work to power things.) They then reflect on their game plan and evaluate the actions and outcomes to refine their approach.	**Opportunities to simplify:** Students can practice unit conversion exercises to better understand their leaderboard in the game by moving the decimal places to the left and right. Students should understand the relationship between units in the measure of Wh (Watt-hours) and kWh. (eg. How many KWh is 2345 Wh? Answer: 23.45 kWh). **Opportunities to extend:** Students who reach higher levels in the Power Peak game can convert Wh and kWh into MWh or GWh and understand the relationship between these units and the decimal place (eg. How many GWh is 8968.7 KWh? Answer: 8.9687 MWh).	Students find an appliance or lightbulb in their house/classroom and calculate how much energy it uses. If the information is given in Watts, they convert it to Joules and vice versa. Students then calculate how much energy it would need to power for different periods of time (eg. 1 hour, 1 day, 1 week etc)

	Reflection: Students write a reflection on how conserving and sustainably using the natural resources and protecting the environment surrounding the Snowy Hydro scheme will allow for sustainable energy generation into the future. Further research on sustainability measures in the project can support their responses.		