# I wonder how to power a brighter future?

Wonder Project

## Power Challenge

**The Wonder Project is Engineering New Zealand's not-for-profit, free programme for schools, designed to inspire young Kiwis with science, technology, engineering and maths (STEM).**

The Wonder Project is a series of project-based hands-on programmes that knit seamlessly into the New Zealand school curriculum. They're designed to spark wonder and awe in young Kiwis from Year 5–13 and get them excited about a future STEM career.

### Power Challenge

**Level 4 | Phase 3, Year 7–8**
**Term 2**

Power up! Ākonga design and build a wind turbine and work as a rōpū to light up a mini town using renewable energy. Along the way they discover the phenomenon of electricity and how it's generated, moved and used in Aotearoa.

Engineering New Zealand
Te Ao Rangahau

ENERGISED BY TRANSPOWER

SUPPORTED BY EECA Mercury OMEXOM

## Power Challenge

Operating in Term 2 each year, the Power Challenge provides scaffolded learning aligned to Level 4 or Phase 3 of the New Zealand school curriculum. The challenge takes around 12–16 hours to complete across 6–8 weeks, or longer if required. It's also possible to complete the challenge in a more condensed timeframe.

**Electricity**

**National power grid**

**Teamwork**

**Renewable energy**

**Engineering design process**

## What we offer schools

- Online training on core STEM principles
- Ākonga learning material and activities
- Detailed challenge guide
- Free power kit with all the challenge gear
- Where possible, support from a volunteer STEM professional
- Online hapori of kaiako and ambassadors
- Resources to assess ākonga on their challenge learning

## Our impact

Here's what participants said about the 2025 Power Challenge:

- 97% of kaiako increased their confidence in teaching STEM
- 100% of kaiako and 67% of ākonga said they would do it again
- 41% of ākonga were more interested in STEM jobs after the challenge
- 100% of kaiako said ākonga were engaged with the programme

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**wonderproject.nz**

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## Power Challenge modules

### Module 1

Prepare to power up, meet your Ambassador, and learn about the engineering design process, before exploring energy forms and transformations.

### Module 2

Discover the phenomenon of electricity and Aotearoa's national grid, and the difference between renewable and non-renewable energy.

### Module 3

Harness your creativity to imagine and plan your own wind turbine design by looking at how aerodynamics work in nature.

### Module 4

Bring your turbine design to life and analyse performance data to help improve the efficiency of your design.

### Module 5

Discover what blade design variables affect the performance of your turbine, and make improvements to your turbine blades.

### Module 6

Compete in your rōpū using your optimised turbines to light up all of the buildings in a mini town.

## Achievement objectives

Kaiako can also make wider curriculum links to other achievement objectives depending on ākonga level and individual learning programmes.

| Strand | Ākonga will | Curriculum level/phase | Year level |
|---|---|---|---|
| **Science:** Nature of science | Ask pātai, explore simple models, and carry out appropriate investigations to develop simple explanations around how energy is generated and used. | Level 4 | 7–9 |
| **Science:** Physical world | Explore different sources of energy, forms of energy and energy transformations including the transformation of different energy sources into electrical energy. | Level 4 | 7–9 |
| **Technology:** Technological knowledge | Use functional modelling to create a wind turbine prototype that converts wind energy into electrical energy and explore the relationship between aerodynamic features and energy efficiency through blade design. | Level 4 | 7–9 |
| **Mathematics and Statistics:** Geometry and measurement; statistics | Explore modelling with three dimensional geometric shapes and gather, analyse and draw conclusions from their wind turbine performance data. | Level 4<br>Phase 3 | 7–9 |

**Te reo Māori ākonga activities also available**

# **I wonder** how we get rangatahi excited about STEM?

**Engage your ākonga in the wonders of STEM by registering for one of our hands-on, project-based challenges.**

## Rocket Challenge

**Level 3 | Phase 2, Year 5–6 – Term 2**

Houston, we have lift off! Ākonga blast off into STEM by designing, building and launching a water rocket. They'll learn about Newton's laws, the engineering design process, and working as a rōpū.

## Power Challenge

**Level 4 | Phase 3, Year 7–8 – Term 2**

Power up! Ākonga design and build a wind turbine and work as a rōpū to light up their own mini town. Along the way they discover the amazing phenomenon of electricity and renewable energy.

## Ice Cream Challenge

**Level 3 | Phase 2, Year 5–6 – Term 3**

Let's chill! Ākonga experiment with flavour, texture, and techniques, using dairy or alternative ingredients to create their own sweet treat. They'll explore states of matter, food composition and nutrition and discover the science behind ice cream innovation.

## Water Challenge

**Level 4 | Phase 3, Year 7–8 – Term 3**

Ready, set, flow! Ākonga construct and test a mini model of Aotearoa New Zealand's wai network. They'll explore the journey of wai and how STEM is used to collect, clean, connect and care for one of Earth's most precious taonga.

**Showcase the immense possibilities of a future in STEM.**

## STEM Careers

**Year 7–13 – Year round**

The future is bright! Ākonga are inspired to keep taking STEM subjects, and given a taste of the real world with industry visits and motivating career talks from STEM professionals.

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