



Energy Audit

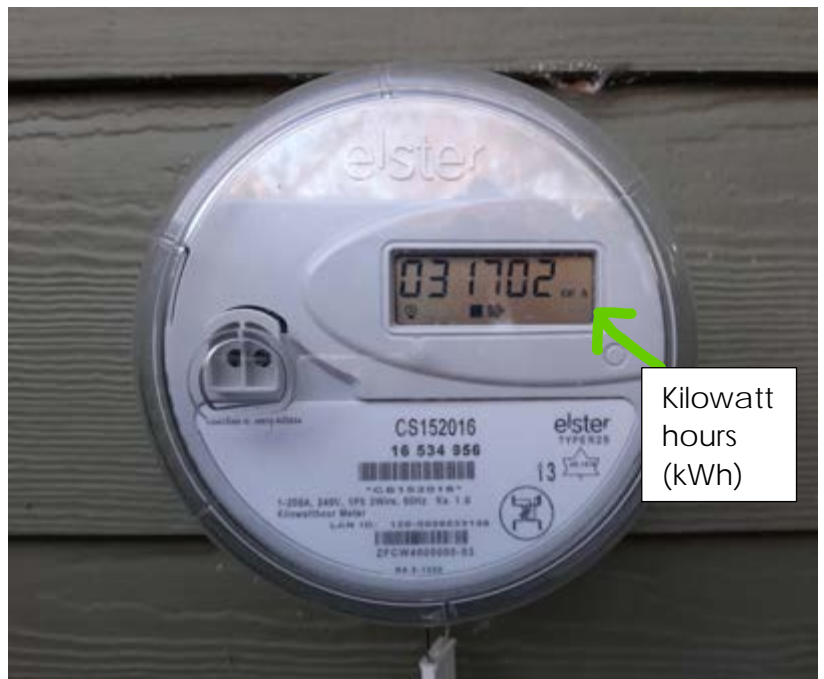
Read the meter, make a change (electrical meter)

Use electrical meter readings to give you information about how much electricity you are using. Use the meter readings to:

- determine the amount of electrical energy you are using
- guide changes to the way you use electricity
- determine the amount of electrical energy you have saved.

There are a couple of different kinds of electrical meters. This is a **digital** meter.

- Find the meter: look outside your house. This one is attached to the outside wall of the house. It will most likely be on the back or the side of the house.
- The meter shown is a SMART meter, which means that it is Wi-Fi connected to Saskatoon Light and Power. They can tell how much electrical energy the house is using without coming to the house. (Some digital meters are not SMART and you or a SaskPower employee, needs to see and record the reading on the meter.)
- It cycles through different information.
- Read the screen that shows a number followed by kWh (see the green arrow).
- **Record the date on the chart (page 2).**
- **Record the meter reading on the chart.**





ELECTRICAL Digital Meter Readings		
	Date	Reading (kWh)
example	Dec 18, 2019	31702
Reading 1		
Reading 2, one week later		
Make a change		
Reading 3, one week later		
Pre-audit electrical energy Reading 2: _____ - Reading 1: _____ = _____ kWh used		
Post-audit electrical energy Reading 3: _____ - Reading 2: _____ = _____ kWh used		
Electrical energy savings Pre-audit kWh: _____ - Post-audit kWh: _____ = _____ kWh saved		



This is a **dial** meter.

- Find the meter: look outside your house. This one is attached to the outside wall of the house. It will most likely be on the back or side of the house.
- This is not a SMART meter. You, or a SaskPower employee, needs to see and record the reading on the meter.
- **Record the date on the chart (page 4).**
- **Record the meter reading on the chart working from left to right.**
- **If the dial is between two numbers, use the lower number.**

Using data from the charts

Use the readings to help you track electrical energy use and electrical energy reduction.

Readings 1 and 2 allow you to see how much electrical energy has been used over a one-week period.

- Subtract reading 1 from reading 2 to find the electrical energy used, for one week, in kilowatt hours (kWh). This is the pre-audit. It gives you the electrical energy used before the change.

Make a change. Use less electrical energy for one week. Here are a few ways to do that:

- Turn out lights and turn off devices when they aren't being used.
- Use fewer devices or use them for less time.
- *Optional:* Record the ways you used less electricity in the chart on page 5.

Take the 3rd reading.

- Subtract reading 2 from reading 3 to find the electrical energy used, for one week, in kilowatt hours (kWh). This is the post-audit. It gives you the electrical energy reduced by the change.

How much did you reduce electrical energy use?



ELECTRICAL Dial Meter Readings							
	Date	Dial readings					Reading (kWh)
		ten thousands	thousands	hundreds	tens	ones	
example	Dec 18, 2019	5	4	7	9	6	54796
Reading 1							
Reading 2, one week later							
Make a change							
Reading 3, one week later							
Pre-audit electrical energy							
Reading 2: _____ – Reading 1: _____ = _____ kWh used							
Post-audit electrical energy							
Reading 3: _____ – Reading 2: _____ = _____ kWh used							
Electrical energy savings							
Pre-audit kWh: _____ – Post-audit kWh: _____ = _____ kWh saved							



Day/date	How I reduced electricity use	Student:
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Sunday		



Water Audit

Read the meter, make a change (water meter)

Use water meter readings to give you information about how much water you are using. Use the meter readings to:

- determine the amount of water you are using
- guide changes to the way you use water
- determine the amount of water you have saved.

There are a couple of different kinds of water meters. This is a **digital** meter.

- Find the meter: look inside your house. This one is in the basement. The meter will be near the front of your house and may be in a closet or storage room.
- This one is a SMART meter, which means that it is Wi-Fi connected to the City of Saskatoon. They can tell how much water the house is using without coming into the house.
- **Record the date on the chart (page 7).**
- **Record the meter reading.**



For this meter the water is measured in cubic meters (m^3). Check whether yours is measured in m^3 or ft^3 .

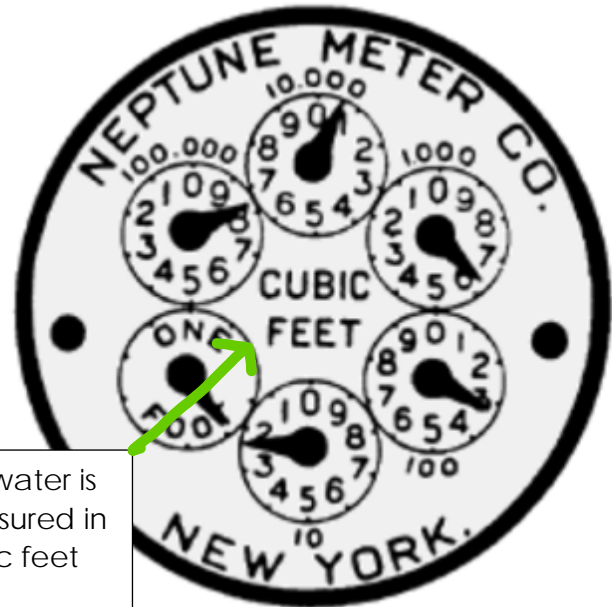


WATER Digital Meter Readings		
	Date	Reading (m ³)
example	Dec 18, 2019	557221
Reading 1		
Reading 2, one week later		
Make a change		
Reading 3, one week later		
Pre-audit water use		
Reading 2: _____ – Reading 1: _____ = _____ m ³ used		
Post-audit water use		
Reading 3: _____ – Reading 2: _____ = _____ m ³ used		
Water savings		
Pre-audit water use: _____ – Post-audit water use: _____ = _____ m ³ saved		



This is a **dial** meter.

- Find the meter: look inside your house. The meter will be near the front of your house and may be in a closet or storage room. (This is a close up of the dials on one that is in the basement.)
- This is a not a SMART meter. You, or a City of Saskatoon employee needs to see and record the reading on the meter.
- **Record the date on the chart (page 9).**
- **Record the meter reading on the chart.**
- **Look at the number written next to each dial. That is the place value of that dial. Be sure to record it in the right column.**
- **If the dial is between two numbers, use the lower number.**



The water is measured in cubic feet (ft³)

Using data from the charts

Use the readings to help track water use and water reduction.

Readings 1 and 2 allow you to see how much water has been used over a one-week period.

- Subtract reading 1 from reading 2 to find the water used, for one week, in cubic meters (m³) or cubic feet (ft³), depending on the meter. This gives you the water used before the change.

Make a change. Use less water for one week. Here are a few ways to do that:

- Take shorter showers or turn off the tap while you are brushing your teeth.
- Check for leaking toilets and taps and fix them.
- *Optional:* Record the ways you used less water in the chart on page 10.

Take the 3rd reading.

- Subtract reading 2 from reading 3 to find the water used, for one week, in cubic meters (m³) or cubic feet (ft³) depending on the meter.

How much did you reduce water use?



WATER Dial Meter Readings									
	Date	Dial readings							Reading (ft ³)
		1,000,000	100,000	10,000	1000	100	10	one	
example	Dec 18, 2019	NA	8	0	6	3	2	0	806320
Reading 1								0	
Reading 2, one week later								0	
Make a change									
Reading 3, one week later								0	
Pre-audit water use									
Reading 2: _____ - Reading 1: _____ = _____ ft³ used									
Post-audit water use									
Reading 3: _____ - Reading 2: _____ = _____ m³ used									
Water savings									
Pre-audit water use: _____ - Post-audit water use: _____ = _____ m³ saved									



Day/date	How I reduced water use	Student:
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Sunday		



Curriculum Connections

Grade 4 Mathematics N4.1 Demonstrate an understanding of whole numbers to 10 000 (pictorially, physically, orally, in writing, and symbolically) by: representing, describing, comparing two numbers, ordering three or more numbers. **N4.2** Demonstrate an understanding of addition of whole numbers with answers to 10 000 and their corresponding subtractions (limited to 3 and 4-digit numerals) by: using personal strategies for adding and subtracting, estimating sums and differences, solving problems involving addition and subtraction. **P4.1** Demonstrate an understanding of patterns and relations by: identifying and describing patterns and relations in a chart, table or diagram, reproducing patterns and relations in a chart, table, or diagram using manipulatives, creating charts, tables, or diagrams to represent patterns and relations, solving problems involving patterns and relations. **SS4.1** Demonstrate an understanding of time by: reading and recording time using digital and analog clocks (including 24 hour clocks), reading and recording calendar dates in a variety of formats.

Grade 5 Mathematics N5.1 Represent, compare, and describe whole numbers to 1 000 000 within the contexts of place value and the base ten system, and quantity. **P5.1** Represent, analyse, and apply patterns using mathematical language and notation. **SP5.1** Differentiate between first-hand and second-hand data.

Social Studies RW5.1 Explain the importance of sustainable management of the environment to Canada's future.

Grade 6 Mathematics P6.1 Extend understanding of patterns and relationships in tables of values and graphs. **SP6.1** Extend understanding of data analysis to include: line graphs, graphs of discrete data, data collection through questionnaires, experiments, databases, and electronic media, interpolation and extrapolation. **SP6.2** Demonstrate understanding of probability by: determining sample space, differentiating between experimental and theoretical probability, determining the theoretical probability, determining the experimental probability, comparing experimental and theoretical probabilities.

Social Studies RW6.2 Contribute to initiating and guiding change in local and global communities regarding environmental, social, and economic sustainability.

Grade 7 Mathematics N7.2 Expand and demonstrate understanding of the addition, subtraction, multiplication, and division of decimals to greater numbers of decimal places, and the order of operations. **P7.1** Demonstrate an understanding of the relationships between oral and written patterns, graphs and linear relations. **SP7.3** Demonstrate an understanding of theoretical and experimental probabilities for two independent events where the combined sample space has 36 or fewer elements.

RW7.3 Assess the ecological stewardship of economies of Canada and the circumpolar and Pacific Rim countries.

Grade 8 Health Education USC8.6 Examine and assess the concept of sustainability from many perspectives, and develop an understanding of its implications for the well-being of self, others, and the environment. **AP8.10** Design, implement, and evaluate three seven-day action plans that establish multiple supports for responsible health action related to family roles and responsibilities, non-curable infections/diseases, violence and abuse, body image, sustainability, and sexual health.

Mathematics SP8.1 Analyze the modes of displaying data and the reasonableness of conclusions. **SP8.2** Demonstrate understanding of the probability of independent events concretely, pictorially, orally, and symbolically.

Science WS8.1 Analyze the impact of natural and human-induced changes to the characteristics and distribution of water in local, regional, and national ecosystems.

Social Studies RW8.3 Critique the approaches of Canada and Canadians to environmental stewardship and sustainability.