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SEATTLE CITY LIGHT

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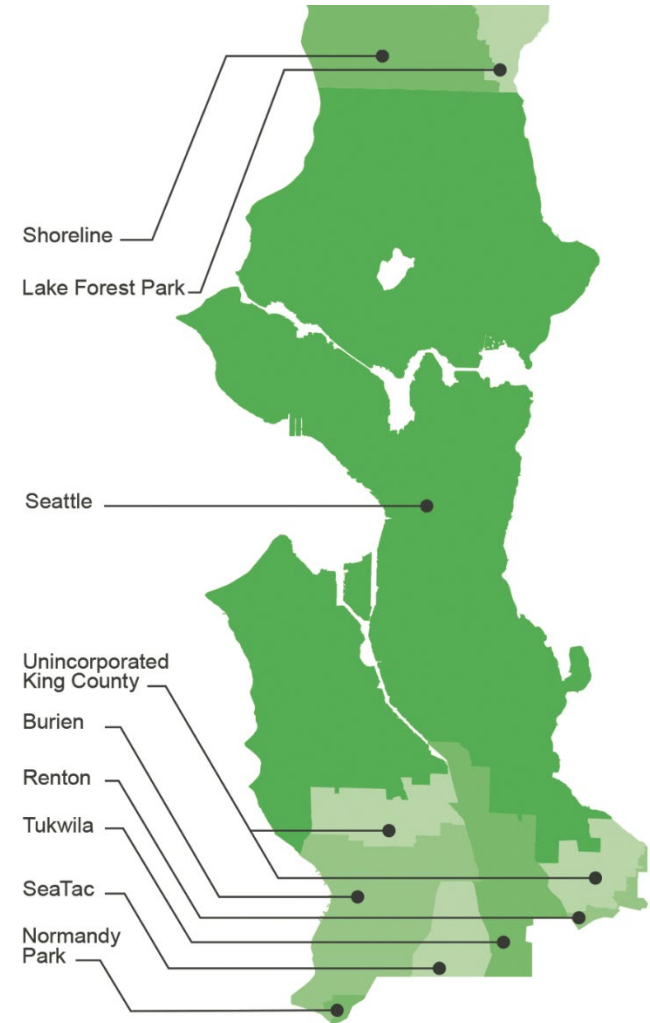
Our Mission

Seattle City Light is dedicated to delivering customers affordable, reliable and environmentally responsible electricity services.



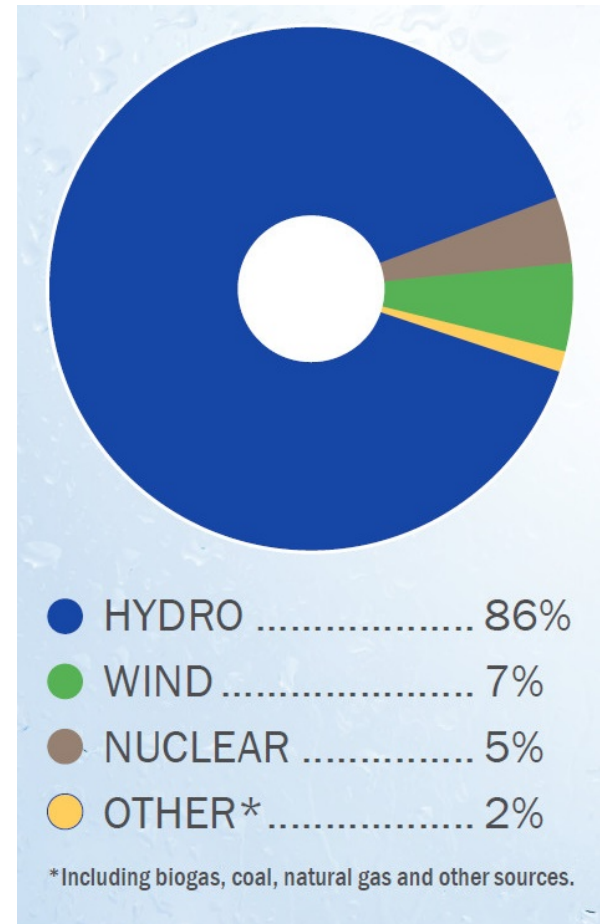
City Light Quick Facts

- **Service area population:** 882,385
- **Generation:** 7 dams
- **Substations:** 16
- **Employees:** 1,770



Greenest Aspirations

- **Carbon neutral** since 2005
- Generate 100% **clean, green, carbon-free hydropower**
- 42 years of **energy conservation** programs
- **Wildlife** protection and habitat restoration





**SHRINKING
BIGFOOT**

Shrinking Bigfoot

- Program has been running since 2008
- Focus on **climate change**, reducing **carbon footprint**, **energy conservation**, **renewable energy**, and **electrical safety**
- Ensure diversity and inclusion through outreach to underrepresented schools, providing take-home materials in six languages, and activities to address different learning styles and language comprehension

Program Contacts Since Inception				
Program Component	Presentation #	Teacher #	Student #	Total Teacher and Student Contact #
Assembly 2008-2014	231	1,400	33,788	35,188
Workshops 2008-2018	1,215	731	30,466	31,197
Teacher Trainings 2008-2015	11	217	n/a	217
Science Nights 2015-2017	3	n/a	n/a	600
PROGRAM TOTALS SINCE INCEPTION	1,460 programs	2,348 teacher contacts	64,254 student contacts	67,202 total contacts

Shrinking Bigfoot Components

- School-wide assemblies (grades 3-6)
- Classroom workshops (grades 1-8)
- Teacher trainings and toolkit library
- Science night outreach booth
- In-class and take-home materials
- Evaluations



Updating the Program

- Time for a refresh and update in 2018
- What is key City Light messaging, as aligned with our mission, vision and values?
- What is a theme and visual identity that is on brand?
- How does it tie into new science curriculum standards?



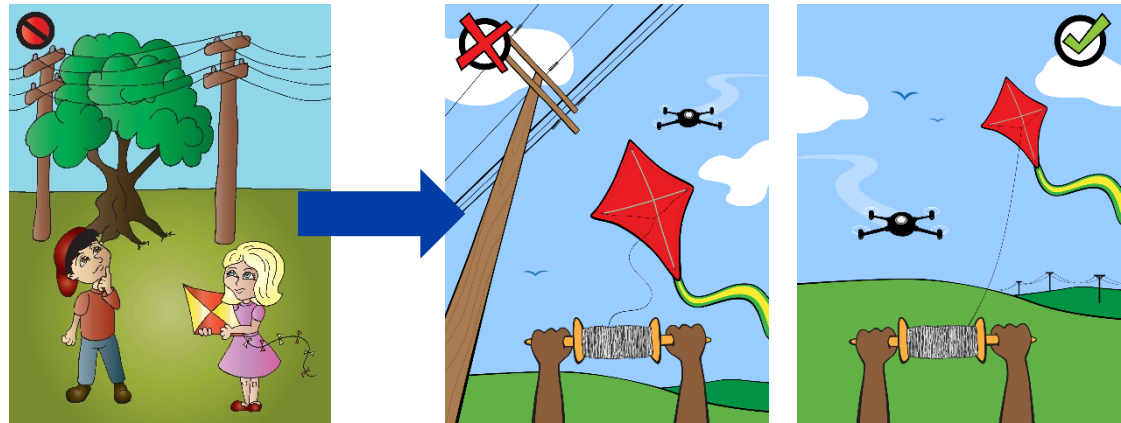


Energy Heroes!

Electrical Safety (Grades 1-2)

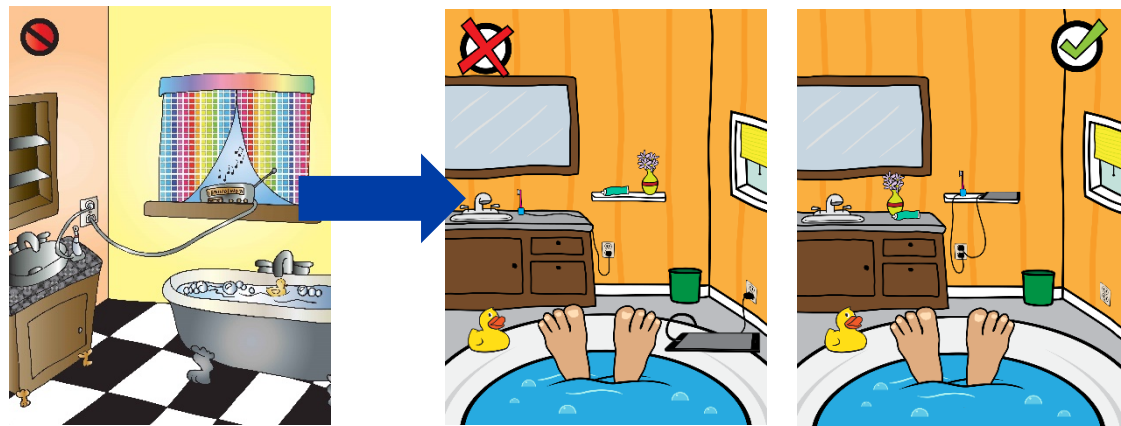
- A detective arrives to enlist help from the class to solve cases for the Energy Heroes

"Puzzled About Power Lines"



- Updated artwork in case portfolio to keep with visual brand and new technology

"Worried About Water Near Electricity"



Renewables & Energy Heroes (Grades 3-4)

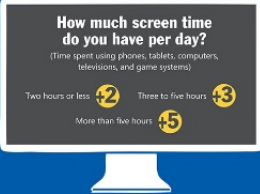
- Learn about different sources of energy and discover how City Light generates renewable electricity for its communities
- Learn how to be an energy hero by conserving energy

ESTIMATE YOUR ENERGY FOOTPRINT!

ELECTRONICS

When you are done using a computer, do you:

- Shut it off **+1**
- Put it in "sleep" mode **+2**
- Leave it on **+3**



How much screen time do you have per day?
(Time spent using phones, tablets, computers, televisions, and game systems)


Two hours or less **+2** Three to five hours **+3**
More than five hours **+5**

When finished charging electronics, do you:

- Unplug the charger **+1**
- Leave charger in the outlet **+2**

When doing laundry, do you use:

- cold water **+1**
- warm water **+2**
- hot water **+4**



WATER

How long is your typical shower?

5-10 minutes **+2** 11-15 minutes **+3** More than 15 minutes **+5**

INSTRUCTIONS
1 Read the questions and use your worksheet to keep track of your score as you go.
2 Be sure to answer the questions on both boards.
3 When you are done, add up your total score and answer the questions on the worksheet.

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ESTIMATE YOUR ENERGY FOOTPRINT!


HOME HEATING & COOLING

When you feel cold at home, what is the first thing you do?

- Put on warmer layers **+1**
- Turn up the heat **+5**

When you feel hot at home, what is the first thing you do?

- Open windows **+1**
- Use a fan to cool off **+3**
- Turn on the air conditioning **+5**



Does your family turn the heat down at night while people are sleeping?


- Most of the time **+1**
- Sometimes **+2**
- Hardly ever **+3**

How often do you turn the lights out when leaving a room?

- Always **+1**
- Sometimes **+2**
- Hardly ever **+3**

How often do you run full loads in appliances like washing machines, clothes dryers, and dishwashers?

- Most of the time **+1**
- Sometimes **+2**
- Hardly ever **+3**



APPLIANCES

INSTRUCTIONS
1 Read the questions and use your worksheet to keep track of your score as you go.
2 Be sure to answer the questions on both boards.
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Hydropower Systems & Sustainability (Grade 8)

- Learn how their local utility generates and provides electricity, what clean and renewable energy is, and why conservation is a key action for sustainability
- Aligns with *Amplify* middle school science curriculum

What is HYDROPOWER?

Hydropower is electrical energy generated by the movement of flowing water. Seattle City Light owns and operates six different active hydropower facilities, including the Skagit Hydroelectric Project near North Cascades National Park.

Fast Facts

- Our three Skagit dams generate 2.2 million megawatt hours per year, supplying 20% of Seattle's electricity.
- Over 1/3 of Puget Sound Chinook salmon spawn in the Skagit River. City Light efforts to protect salmon include purchasing 3,800 acres of fish habitat for protection, collecting data and maintaining minimum water flows.
- City Light's Skagit River Hydroelectric Project was the first large hydropower project in the U.S. certified as a Low Impact Hydropower Project by the Low Impact Hydropower Institute.

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Hydropower SYSTEM PARTS

While each system is unique, most hydropower systems have similar parts. This board shows an overview of Seattle City Light's Ross Dam hydropower system on the Skagit River.

When a **DAM (A)** is built on a river it controls the flow of moving water.

As water flows into the dam, it forms a **RESERVOIR (B)** where water is stored as potential energy. A **SPILLWAY (C)** allows excess water to keep flowing downstream.

Two long concrete power tunnels move water from Ross Lake to the **POWERHOUSE (D)** below the dam.

Inside the powerhouse, the moving water flows through the **TURBINES** and causes them to spin, converting the water's energy into mechanical energy. Once the water passes over the turbines, it returns to the river.

Each turbine connects to a **GENERATOR**, which is a large machine that spins magnets next to wires to generate electricity.

Electrical energy is transmitted through **POWER LINES** that connect into the **ELECTRICAL GRID**. The grid is a large, interconnected system of electrical generating stations, transmission lines, and consumers found throughout the entire United States. This interconnected system allows different utilities to buy and sell power to one another based on supply and demand.

THE NATION'S GREENEST UTILITY

HYDROPOWER Provides Most of Seattle's Electricity

Seattle City Light Power Mix (2018)

HYDRO	86%
WIND	7%
NUCLEAR	5%
OTHER*	2%

U.S. Electricity Generation by Energy Source (2018)

NATURAL GAS	35.1%
COAL	22.4%
NUCLEAR	19.3%
WIND	7%
HYDRO	6.6%
OTHER*	4.6%

Other Electrical Energy Sources

FOSSIL FUELS
Most utilities in the U.S. generate electricity by burning fossil fuels such as coal or natural gas.

WIND
Wind turbines work in a similar way to hydropower, and wind provides a small portion of Seattle's electricity.

SOLAR
Solar panels transform the sun's energy into electrical energy.

NUCLEAR ENERGY
Involves mining for uranium and harnessing the energy found within atoms to create heat and steam.

Benefits of Hydropower

Clean, Green and Carbon Free
Avoids air pollution and greenhouse gas emissions.

Renewable and Reliable
Sustainable power source readily available to meet energy needs.

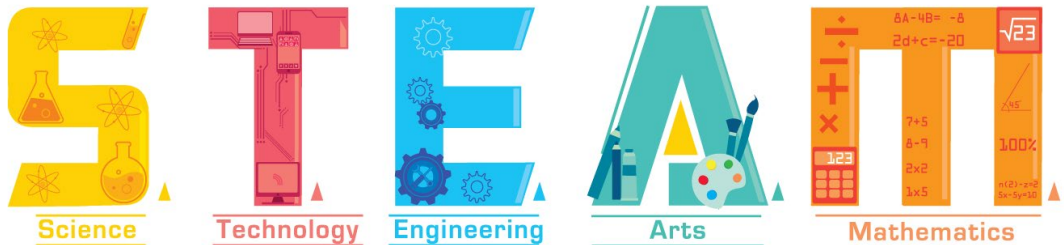
Affordable
Globally, hydropower is the lowest-cost source of electricity.



STEAM in Power Workshop

Why a New Program?

- Interest in exposing middle and high school students to career paths at City Light
- Focus on STEM, with a decision to include the Arts
- Engage with community partners to reach young women and students of color in the communities we serve
- Tie into our recruiting efforts for high school and college internships



Workshop Highlights

- Hosted 25 young women from SPIN Girls
- Tour of Lighting Design Lab
- Snap Circuit Activities
- Meet and Greet with 16 women working in STEAM fields at City Light



STEAM in Power Workshop

SATURDAY, DECEMBER 8, 2018 | 9:00 AM - 12:00 PM
Lighting Design Lab, 2915 4th Ave. S, Seattle, WA 98134

TODAY'S WORKSHOP

9:00 AM	Welcome and Introductions Safety Moment
9:10 AM	Tour of Lighting Design Lab Lighting Display Room • Mock-Up Studio • Classroom Lighting
9:30 AM	Presentation Powering Seattle • Hydropower Demo • Our Changing Industry • Electricity 101
10:00 AM	Snap Circuits Workshop Basic Circuit • Hand Noise • Windmill • Solar Charger • Windy Lights • Hybrid Car
11:00 AM	Meet and Greet Activity
11:50 AM	Final Thoughts and Conclusion

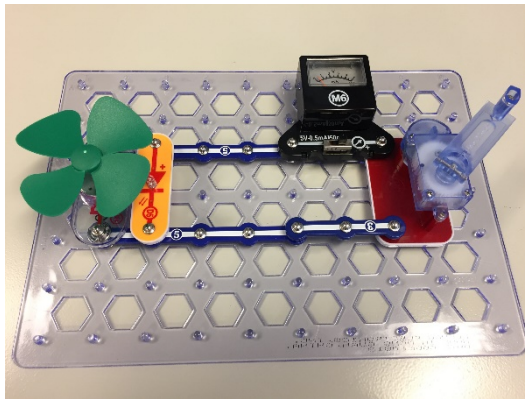
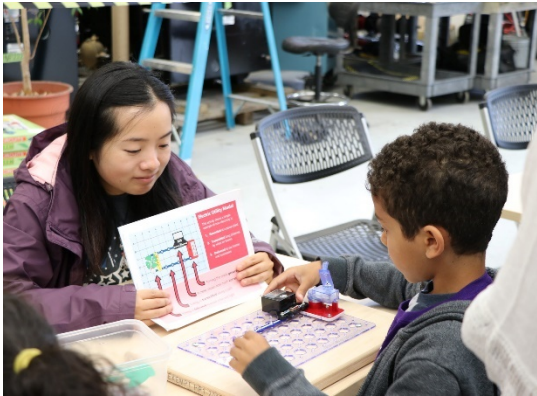
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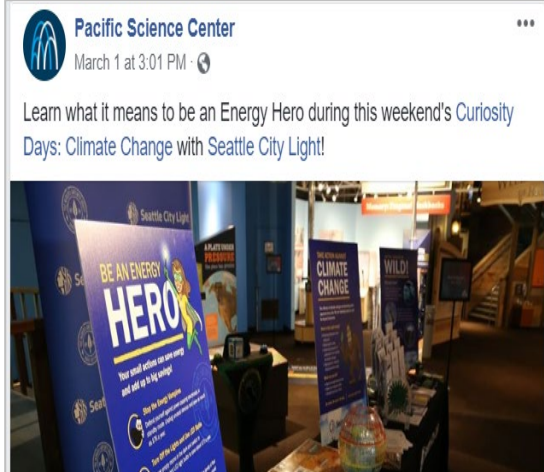


Other Events

Snap Circuit Activity Family Day Employee Event



Curiosity Days Pacific Science Center





Thank you!

