

Title: _____ - **Logbook**

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DATE	ACTION	RESOURCES USED	OTHER NOTES
September 20, 2023	Created Logbook, and all Google Docs.	Google docs	Science fair = April 13-14.
September 27, 2023	Looked at an emissions table, and learned that electric cars produce emissions when receiving electricity to charge their battery from the electrical grid.	Market Snapshot: How much CO 2 do electric vehicles, hybrids and gasoline vehicles emit?	Tesla model X = 4th most emissions in Alberta (2018) according to The Canada Energy Regulator.

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October 4, 2023	Looked at the Greet webpage, learned about The Greet Model.	https://greet.anl.gov/	Greet stands for Greenhouse gases, Regulated Emissions, and Energy us in Technologies.
October 6, 2023	Learned about the Greet models energy systems and energy Infrastructure.	https://greet.anl.gov/	Greet model uses all factors, the fuel cycle, vehicle cycle, and pump to wheels diagram.
October 11, 2023	Finished discovering about the Greet model.	https://greet.anl.gov/publication-greet-2023-summary	Greet Model was created using government and federal agencies.

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October 27, 2023	Worked on research proposal.	N/A	N/A
November 5, 2023	Learned about electric high speed trains, and how they work.	https://shorturl.at/izDU0	N/A
November 10, 2023	Learned about the electric vehicle technology that is used in order to power the car.	https://books.google.ca/books?hl=en&lr=&id=FwXcCmT1OQUC&oi=fnd&pg=PR13&dq=electric+vehicle+technology&ots=q2TKbPn6qB&sig=H1qfI7i1Cqj4hFDvkw6VkwLEzZ8&redir_esc=y#v=onepage&q=electric%20vehicle%20technology&f=false	N/A
Friday, November 17, 2023	Finished Research proposal.	N/A	N/A

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Friday November 24, 2023	Learned about the cycle of vehicles and their disposal.	https://greet.anl.gov/	Government website.
Sunday November 26, 2023	Finished learning about the cycle and fuel cycle of vehicles in North America.	https://greet.anl.gov/	N/A
Wednesday December 6, 2023	Gathered information using the Greet model.	https://greet.anl.gov/	N/A
Friday December 8, 2023	Worked on Written project.	https://greet.anl.gov/	N/A
Wednesday December 13, 2023	Learned about electric car mileage and gasoline car mileage.	https://shorturl.at/zABF2	N/A

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Tuesday December 19 2023	Looked at the report on everyday fuel.	https://driving.ca/car-culture/travel/gas-trip-calculator-how-much-do-you-spend-every-day-on-fuel	N/A
Tuesday December 26 2023	Studied the electric car battery (The Lithium-ion battery), and how it works.	https://shorturl.at/czIJY	Lithium-ion batteries have a special liquid inside them called Lithium salt.
December 31, 2023	Reported research and stored it on a written document.	Science fair Written Document Raphi and Siddarth	N/A
December 31, 2023	Learned about the Lithium ion battery used for electrical vehicles.	https://rmi.org/ev-batteries-101-the-basics/	Lithium ion batteries have higher energy density than gasoline powered.
January 1, 2024	Compared Lithium ion batteries to classic gasoline Lead-acid batteries.	How Do Gasoline Cars Work?	Gasoline vehicles use internal combustion engines.

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January 1, 2024	Learned about internal combustion engines.	Internal Combustion Engine Basics Department of Energy	Combustion means burning, or to be burning
January 2, 2024	Documented energy efficiency, batteries, and reported it on written project, and opened an emissions chart.	Internal Combustion Engine Basics Department of Energy	N/A
January 2, 2024	Documented and learned about advanced engine fuels and ways to make them have minimal emissions.	Advanced Engine and Fuels Technologies Department of Energy	N/A
January 3, 2024	Looked at EV's and their energy production and emissions.	CER – Provincial and Territorial Energy Profiles – Canada	N/A

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January 4, 2024	Looked at emissions through webpage about how much emissions is emitted during manufacturing.	How much CO2 is emitted by manufacturing batteries? MIT Climate Portal	N/A
January 6, 2024	Learned about the level of emissions in each province, and looked at the models that they have.	Market Snapshot: How much CO 2 do electric vehicles, hybrids and gasoline vehicles emit?	N/A
January 14, 2024	Talked to Ms. Madison about citations, and editing our work.	<u>N/A</u>	N/A
January 17, 2024	Looked at how much emissions is generated through the generation of electric vehicles.	Market Snapshot: How much CO 2 do electric vehicles, hybrids and gasoline vehicles emit?	N/A

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January 19, 2024	Learned about spark ignited engines, and the four stroke cycle using a government website.	https://www.energy.gov/eere/vehicles/articles/internal-combustion-engine-basics	N/A
January 19, 2024	Learned about how electric motors generate electricity using using the lithium ion battery.	https://driveclean.ca.gov/battery-electric	N/A
January 20, 2024	Continued to learn about the energy consumption of an electric vehicle, electric car batteries, and the four stroke cycle.	https://driveclean.ca.gov/battery-electric	N/A
January 22, 2024	Learned and wrote about the car cycle and the energy cycle of an electric vehicle and gasoline vehicle.	Life-time side-by-side comparison: Electric vs. gasoline automobiles – Translational Ecology	N/A
January 22, 2024	Learned about the electrical grid, and how it works.	CER – Provincial and Territorial Energy Profiles – Alberta	26,000 kilometers of transmission lines in only Alberta.

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January 24, 2024	Worked on Research written document, as well as editing.	N/A	N/A
January 27, 2024	Documented and learned about greenhouse gas emissions.	Greenhouse Gas Emissions from a Typical Passenger Vehicle US EPA	Government website.
January 27, 2024	Learned about generation of electricity emissions.	Power Profiler US EPA	N/A
January 29, 2024	Looked at how much CO2 is emitted in terms of electric vehicles	Market Snapshot: How much CO 2 do electric vehicles, hybrids and gasoline vehicles emit?	N/A
January 30, 2024	Learned about overall emissions in Canada	Market Snapshot: How much CO 2 do electric vehicles, hybrids and gasoline vehicles emit?	Volvo Xc90 = most emissions in Alberta

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January 31, 2024	Learned about Canada's emissions	https://rb.gy/4wylsj	N/A
February 3, 2024	Continued citations, Learned more about internal combustion engines.	https://www.energy.gov/ere/vehicles/articles/internal-combustion-engine-basics	Going to find out more information on the car cycle and energy cycle of both electric vehicles and gasoline vehicles.
February 9, 2024	Documented the amount of carbon emissions made each year.	How much carbon dioxide does the United States and the World emit each year from energy sources?	N/A
February 12, 2024	Looked at rise of overall emissions in past years	https://ourworldindata.org/co2-emissions	35 million metric tons of CO2 every year.
February 13, 2024	Finished Written document and rough draft of scientific papers.	Google docs	Finished acknowledgments.

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February 16, 2024	Continued on citations, with Siddarth and continued writing about Canada and their emissions.	https://rb.gy/gf7yea	N/A
February 26, 2024	Did citations as well as looked at New York Times for vehicle expenses.	https://www.nytimes.com/2023/02/10/business/electric-vehicles-price-cost.html	End of 2022 = 61000 dollars for a electric vehicle.
February 27, 2024	Looked at how much it takes to charge an electric vehicle and gasoline vehicle.	https://www.carnationcanada.com/blog/how-much-does-it-cost-charge-electric-car/	N/A
February 29, 2024	Finalized first draft of research papers.	N/A	N/A
March 2, 2024	Worked on finishing slideshow.	N/A	N/A

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March 4, 2024	Learned about transmission lines in Alberta, and how they work.	https://www.aeso.ca/grid/about-the-grid/#:~:text=Throughout%20Alberta%2C%2026%2C000%20km%20of,to%20over%20four%20million%20people.	26000 transmission lines in Alberta.
March 6, 2024	Finished rough draft of papers, and slideshow.	N/A	N/A
March 11, 2024	Edited CYSF platform.	N/A	N/A
March 12, 2024	Recorded presentation.	N/A	N/A
March 13, 2024	Completed and submitted CYSF platform.	N/A	N/A