# About me:

I am James Call, a senior software engineering student at Brigham Young University – Idaho. I am a bit of an oddity in that I prefer the concrete elements of the Frontend, handling APIs and JavaScript code over design and HTML. I have been a gamer all my life, starting out with Pokémon Blue on the Gameboy, and I remember avidly following IGN’s articles on Halo 3, long, long ago.

Now I am kind of terrible at expressing myself so I hope that my report on Hisui’s new power plant and the project that is attached to this will do. It was a labor of love and Panik, because I only found out about this internship yesterday April 29 at about 3 PM MDT and I am not sure when today is the submission deadline. So, this is the result of every free hour that I have had in the past 24 hours, and many that weren’t free, but I made free in order to complete as much as I can. Which was pretty much all of the requirements, even if some are a bit buggy.

Can I just say that I loved your challenge? The powerplant question is a great way to test our ability to break down problems and find data that we need to fulfill a project requirement. And, the project is very applicable allowing me to pull together many of the things that I have previously learned while making me work with an entirely new part of code, videos. It was good enough that even if I do not get chosen, I can still use it to show off what I can accomplish in 24 hours.

So, thanks! It was a ton of Fun.

# Hisui's New Power Plant:

Either one Voltorb and a supply of batteries or a minimum of 48, and a recommendation of 144.

Before we proceed, we are missing some critical information.

What we do not know but need to know is…

1. how much energy does Jubilife Village need?
2. how much energy can a Voltorb produce?

## How much energy does Jubilife Village use?

First, we need to know the population of Jubilife village. https://bulbapedia.bulbagarden.net/wiki/Jubilife\_City gives us a total of 124 people living inside the city

Second, we need to know how much energy each person uses per year. Assuming that a person in Jubilife can be roughly approximated to the nearest Earth nation, Japan, [Statista](https://www.statista.com/statistics/597901/household-consumption-of-electricity-per-capita-in-japan/#:~:text=In%202016%2C%20household%20consumption%20of,about%202%2C108%20kilowatts%20per%20hour) gives us a 16-year average of 2253.1875 kWh per person per year.

2253.1875 \* 124 people = 279,395.25 kWh/year

365 days \* 24 hours = 8,760 hours

279,395.25 kwh / 8,760 hours = 31.89443 kw needs to be generated per hour.

## How much energy does a Voltorb produce?

Now, data on Voltorbs and Voltorb energy production are a bit thin on the ground. It might have something to do with them liking to explode, and researchers liking to remain un-exploded. As Professor Laventon has determined that Voltorbs are the best candidate to power the village, we can assume that they are at least as effective as an electric Pokémon that we do have data on, Pikachu.

Professor Chen at Generation Atomic has calculated this [data](https://www.generationatomic.org/a-preliminary-assessment-of-pikachu-as-a-renewable-energy-source/#:~:text=One%20pikachu%20cell%20can%20generate,to%20a%20single%20wind%20turbine.) about Pikachus (Pikachi?). That is that a Pikachu can produce a Thunderbolt (which Voltorb can also learn) with an average of 10 kW over a 5-second burst and can be used 15 times before needing to recover at a Pokémon Center

Assuming that it takes an hour for a Pikachu to use all its attacks to be restored at a Pokémon center a Pikachu can produce 150 kw/h or almost five times the average demand.

## In Conclusion

With a sufficient supply of energy storage, 1 Pikachu or Voltorb would be able to power Jubilife village by working less than 6 hours per day.

Absent a sufficient supply of energy storage, we would need…

3600 seconds in an hour / 5 seconds of thunderbolt = 760 thunderbolts need

760 thunderbolts/ 15 uses per Voltorb = a minimum of 48 Voltorbs need to provide the (excessive) power for one hour

The power produced per second would be well in excess of the needed, allowing operations to be significantly expanded. However, I would recommend that we catch 3 times the minimum amounts to prevent downtime if any issues arise, such as Voltorbs exploding their handlers and to prevent meddling kids accusing us of abusing the Voltorbs and destroying the operation.

Of course, there are other issues associated with housing between 48-144 Voltorbs in captivity…