crewdle

How Crewdle calculates its impact (and yours) on the environment

At **Crewdle**, our mission is to reduce the environmental impact of our digital world.

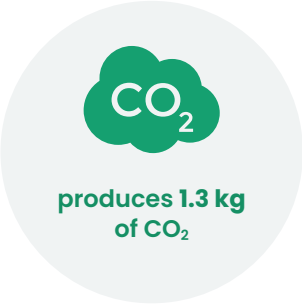
We decided to first tackle this challenge for video conferencing. During our journey, we found that we have an impact on two key factors:

- carbon emissions
- water usage

While assessing our impact on the environment, we discovered a study from Purdue University[1] that calculated the impact of one participant in a video conference for one hour. According to this study, one hour of video conferencing produces emissions in the range of 150 g to 1 kg of carbon dioxide, while consuming between 2 L to 12 L of freshwater.

However, in searching for data regarding the carbon footprint of video conferencing and cloud computing in general, we found that the data was not readily available and companies were not very transparent about their carbon footprint. At this point, we decided to approach the problem from another angle: energy consumption.

One hour of video conferencing



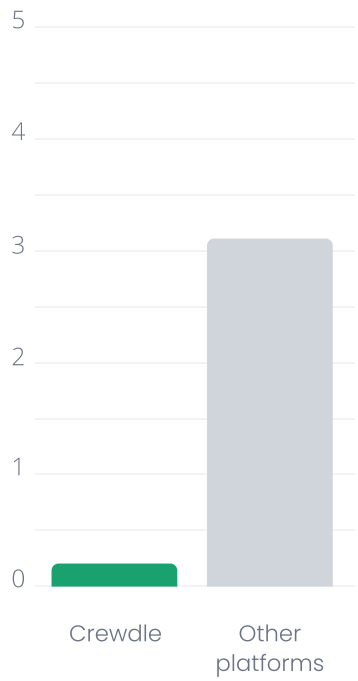
Energy consumption

From a Stanford University [2] publication, we found that Carnegie Mellon University concluded that the energy cost of processing and transferring 1 GB of data was 7 kWh, whereas the American Council for Energy-Efficient Economy (ACEEE) concluded the energy consumption to be lower, at 3.1 kWh – 1 GB of data is roughly equivalent to the data produced by one participant during one hour of video conferencing.

In comparison, Crewdle uses about 0.2 kWh for the same hour of video conferencing, 0.15 kWh for data transport, and 0.05 kWh for the local processing, for savings of between 2.9 kWh and 6.8 kWh.

Now that we know the energy consumption of one hour of video conferencing, we can translate it into carbon emissions. Of course, the carbon footprint of electricity production widely varies from region to region, depending on the source of energy used to generate electricity

kWh of energy per hour per participant

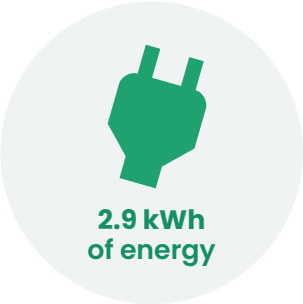


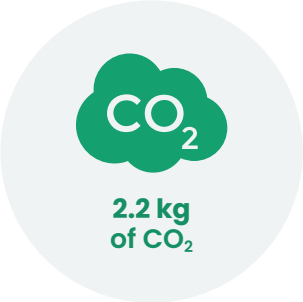
Carbon emissions

According to the United States Environmental Protection Agency (EPA)[3], a reduction of 1 kWh of energy is equivalent to a reduction of 709 g of carbon emissions, and the consumption of 1 kWh of energy is equivalent to 433 g of carbon emissions. As such, our solution helps to save between 2.1 kg and 4.8 kg of carbon dioxide per participant per hour of video conferencing while emitting only 0.09 kg of carbon emissions during that same hour. In addition, based on its peer-to-peer technology (AKA no servers), our solution does not use any water, which would otherwise be used to cool down servers in data centers.

Based on the lower end values of the above studies, and the carbon credits we buy to offset our own emissions, Crewdle helps save 2.9 kWh of energy consumption, 2.2 kg of carbon dioxide, and 2 L of freshwater in our impact reduction calculation for one participant conducting one hour of video conferencing.

Crewdle helps save





In summary

To conclude, 1,000 hours of video conferencing on Crewdle is equivalent to removing one car from our roads for one year, or the energy consumption of an entire household for 6 months, or the water needed for 33 showers.

1,000 hours of video conferencing on **Crewdle** is equivalent to:

Removing one car from our roads for one year

The consumption of an entire household for 6 months

The water needed for 33 showers

References

[1] https://www.purdue.edu/newsroom/releases/2021/Q1/turn-off-that-camera-during-virtual-meetings,-environmental-study-says.html

[2] https://medium.com/stanford-magazine/carbon-and-the-cloud-d6f481b79dfe

[3] https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references