

HYPERLOOP

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Project Details: Middle schoolers explored real-world transportation issues through creative projects that encouraged research, problem-solving, and teamwork. This presentation gave them the chance to practice public speaking and share their innovative ideas. Join us as they showcase what they've learned about new Hyperloop technology.

May 23, 2025

**Special thank you to
Federal Railroad
Administration!**



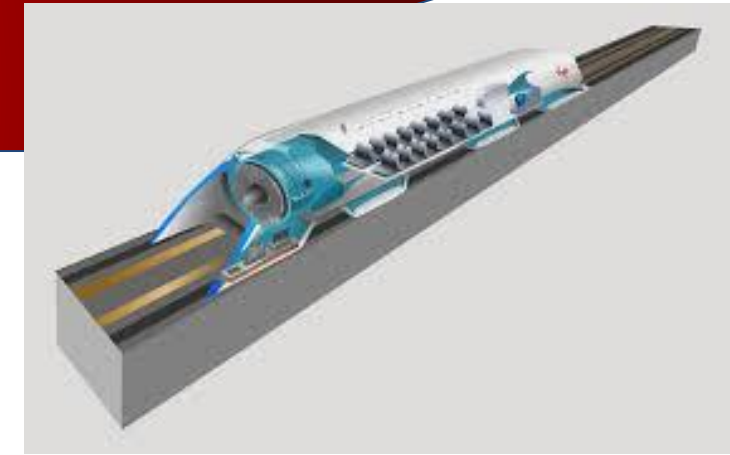
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What is Hyperloop?

- It is an ultra high-speed, ground-level, solar-powered cargo and mass transportation system
- Hyperloop is a magnetic levitation (maglev) train system that uses one set of magnets to repel cars so that they hover above a track and another set of magnets to propel them forward over the track.
- The track in hyperloop technology is a low-pressure tube with built-in vacuums that remove nearly all air from the tube.



Pros and Cons of Hyperloop



Pros

- The technology aims to propel passenger or cargo pods at speeds of around 700 mph
- The hyperloop offers low-energy long-distance travel, running on electricity and solar energy. This creates lower carbon emissions and quieter travel.
- The hyperloop is less vulnerable to bad weather such as rain, snow, wind, and earthquakes. There's no risk of train tracks buckling due to the heat in summer as with high-speed rail.

Cons

- The price of a hyperloop will be very expensive because of maintenance, price of land, and construction.
- The steel tube prevents wireless signals from reaching the pod. Further, due to the high speeds, pods often switch between communication cells, increasing the chance of handover failure, and temporary communication loss.
- Evacuating a hyperloop is difficult as the tubes are designed to have a limited number of exits



How Does a Hyperloop Work?

- ❑ A hyperloop uses one set of magnets to repel cars so that they hover above a track and another set of magnets to propel them forward over the track.
- ❑ Depressurized tunnels create a near-vacuum environment where almost all of the air has been sucked out. This creates an environment where extremely high speeds are possible because there's minimal aerodynamic drag or wind resistance.
- ❑ Magnetic levitation (maglev) causes each pod to hover. This removed the ground friction of wheels or tires that occurs in other modes of ground transportation.



How can Hyperloop Help Us?

- It is a sustainable, convenient and extremely high-speed way of travel which can significantly reduce time in travel so we can get places faster.
- They can also hold way more passengers for more efficient travel
- It emits way less carbon emissions than regular trains, so it can be used more than other competing trains.
- It will be a fully automated system, so no human error will occur when driving.



Sources

What is Hyperloop: <https://www.britannica.com/technology/Hyperloop>

Pros and Cons of Hyperloop: <https://thenextweb.com/news/find-out-the-benefits-and-challenges-of-hyperloop-technology>

How does a Hyperloop Work:

<https://www.groundworks.com/resources/how-does-the-hyperloop-work/>

How can Hyperloop help us:

<https://tumhyperloop.com/about-hyperloop/>

