

# Battery electric cars will be more popular than hydrogen fuel cell electric vehicles (FCEVs) because of energy efficiency

for passenger vehicles in the foreseeable future



Hongtao Hao, April. 11, 2023



# Battery electric cars v.s. FCEVs

- Battery electric cars: lithium-ion battery

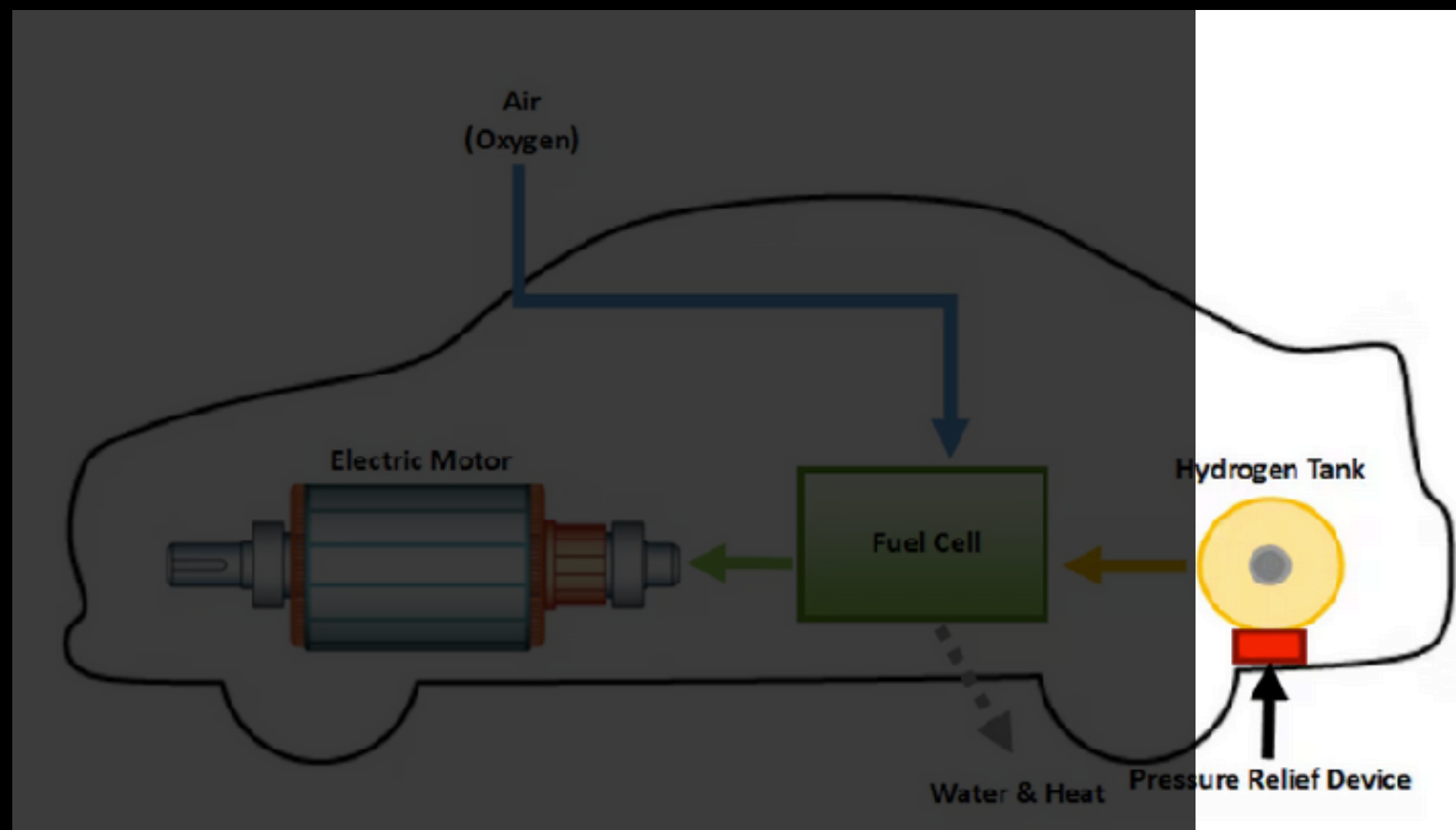


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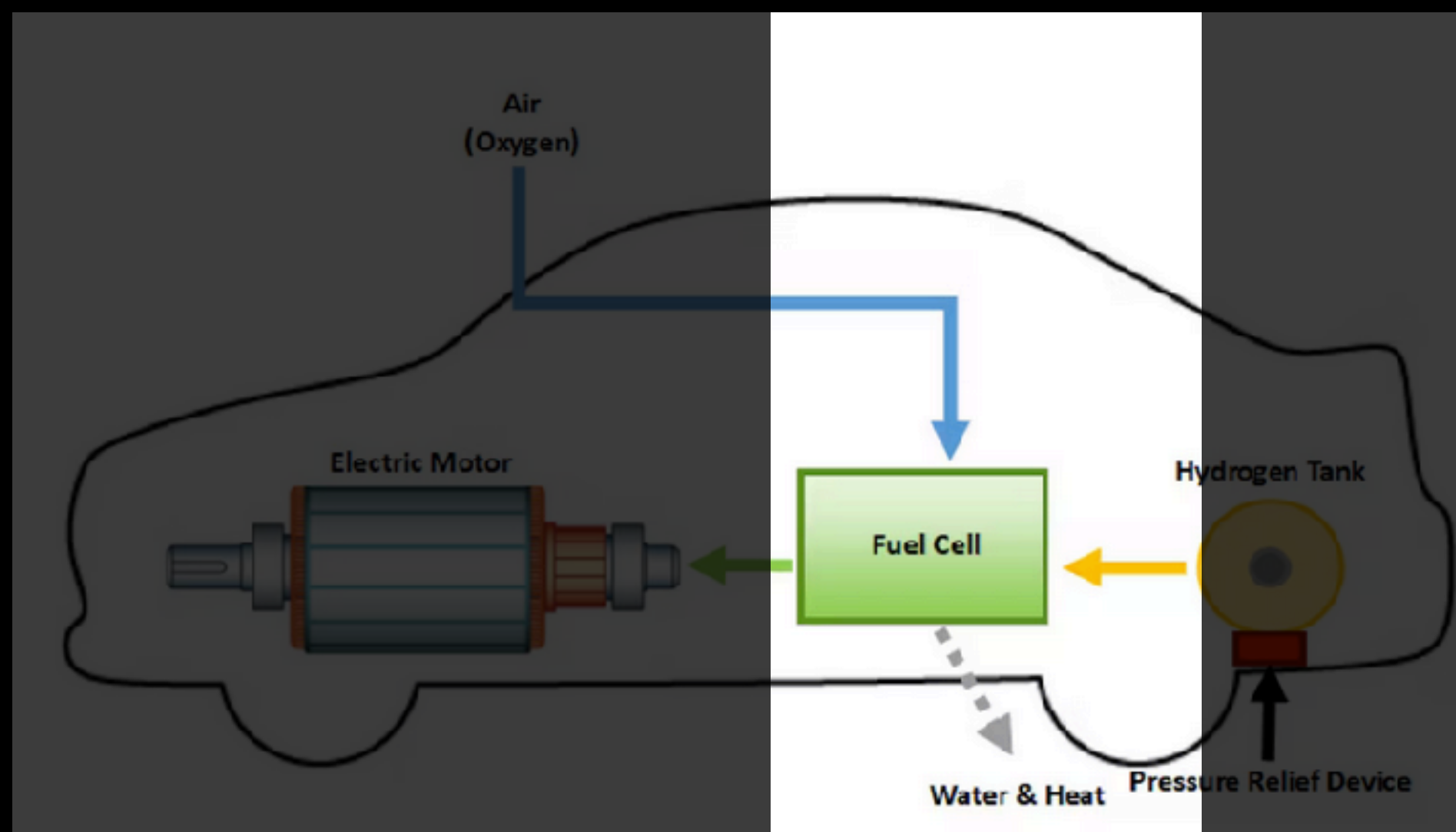
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  - Hydrogen stored in high pressure in car's tank



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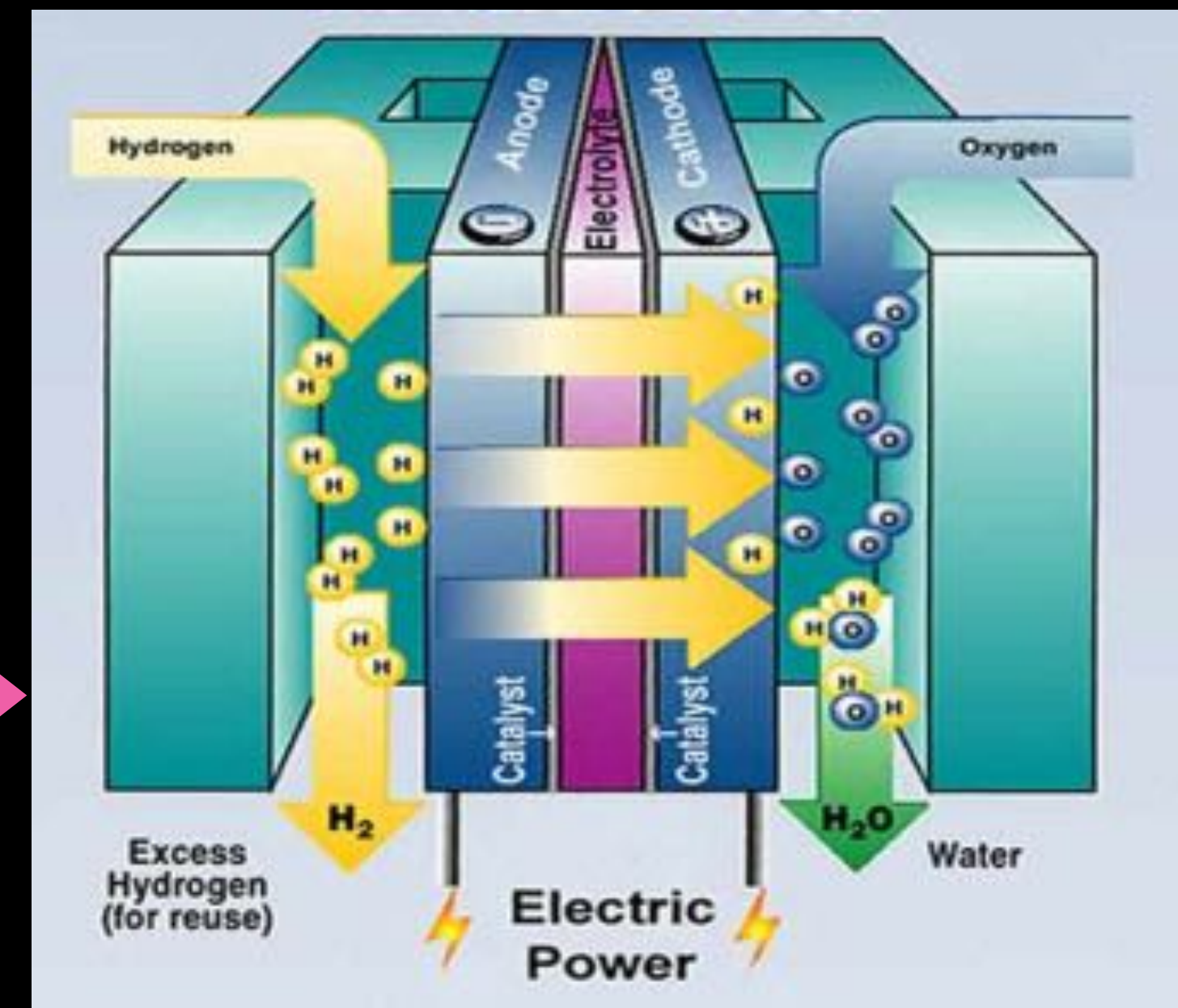
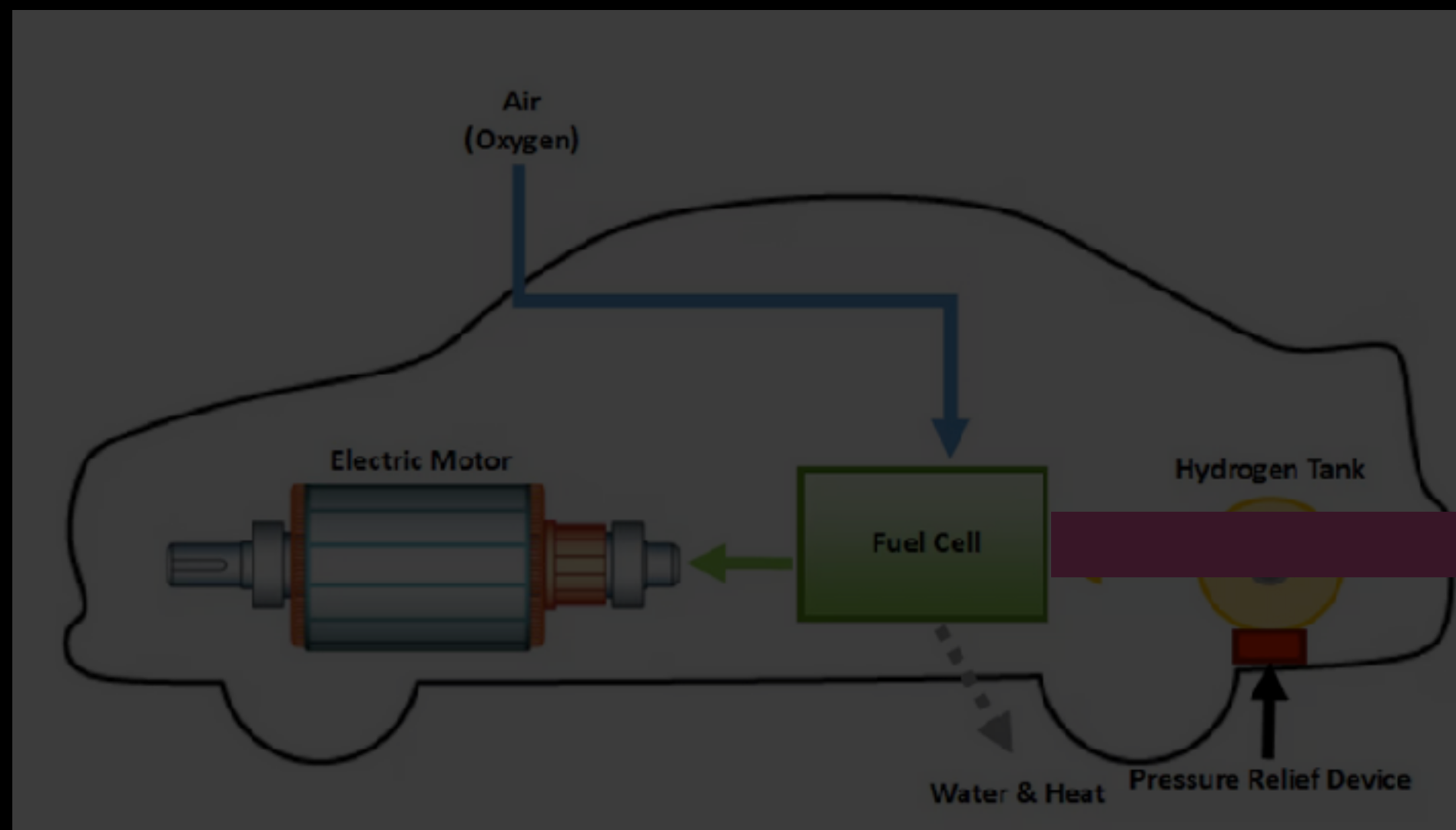
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  - Released into "fuel cell"





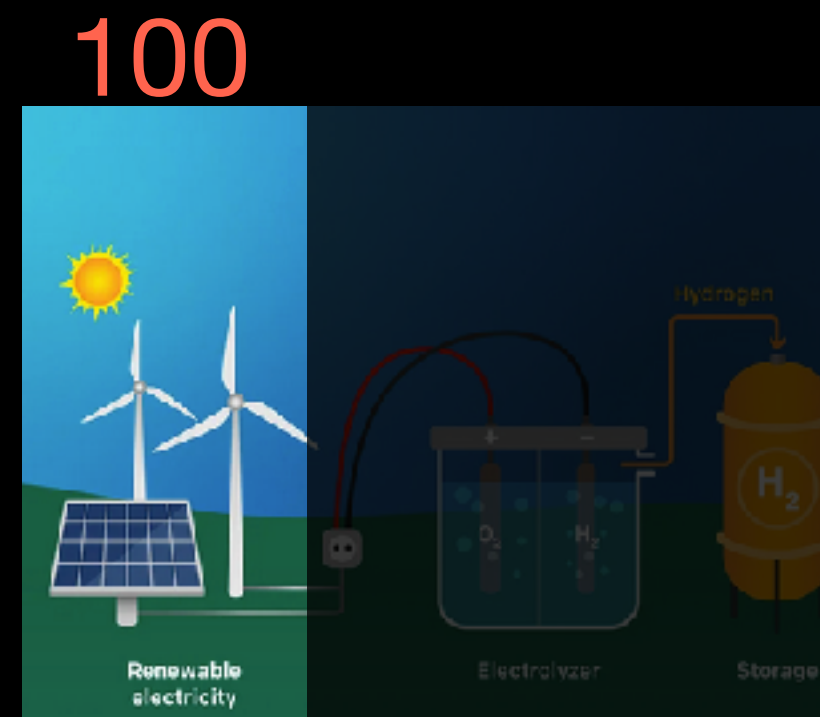
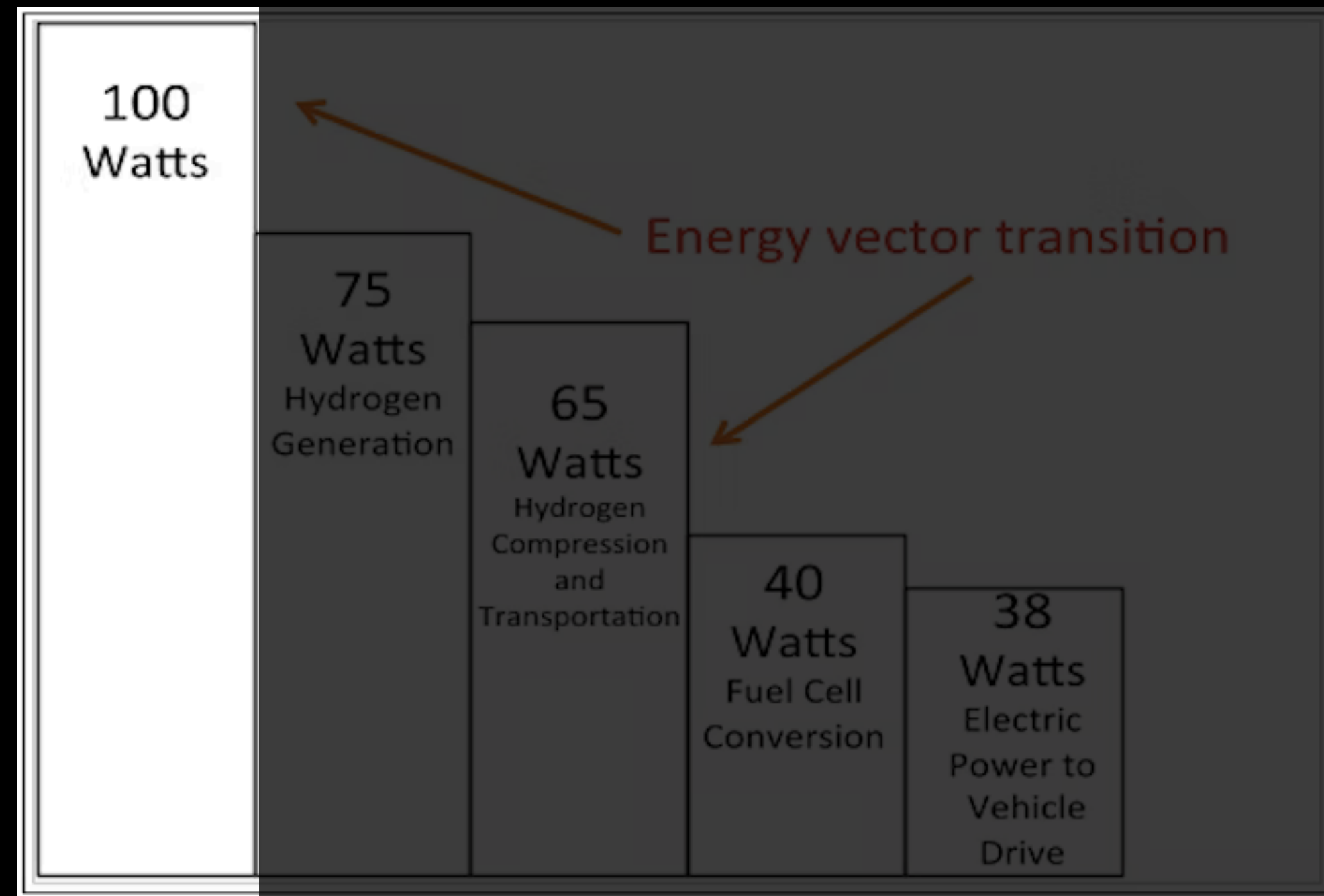
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- Hydrogen fuel cell electric vehicles (FCEVs):
  - Hydrogen stored in high pressure in car's tank
  - Released into "fuel cell"
  - An anode (-) and cathode (+) split hydrogen molecules into protons (-> water) and electrons (-> electricity)



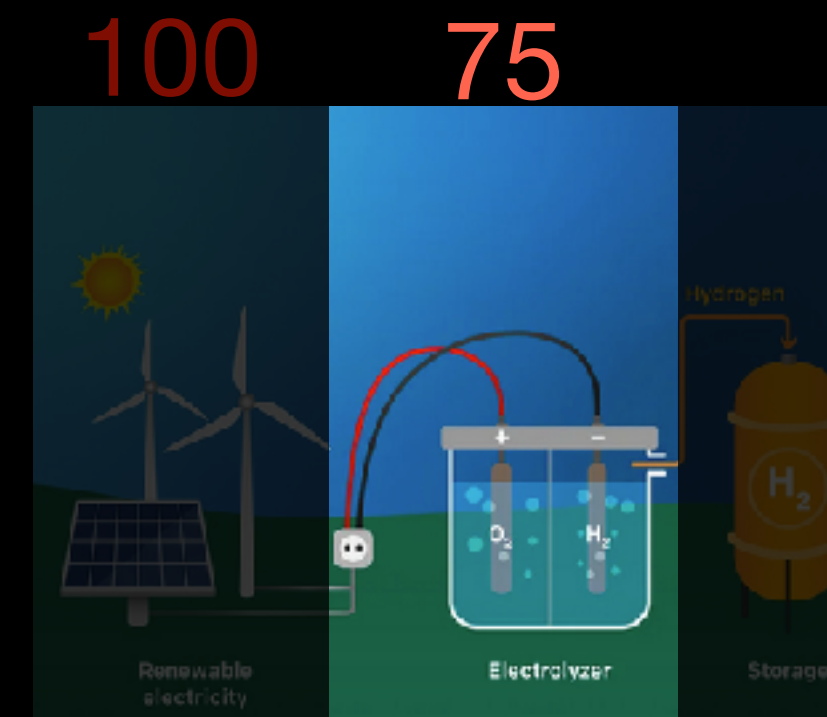
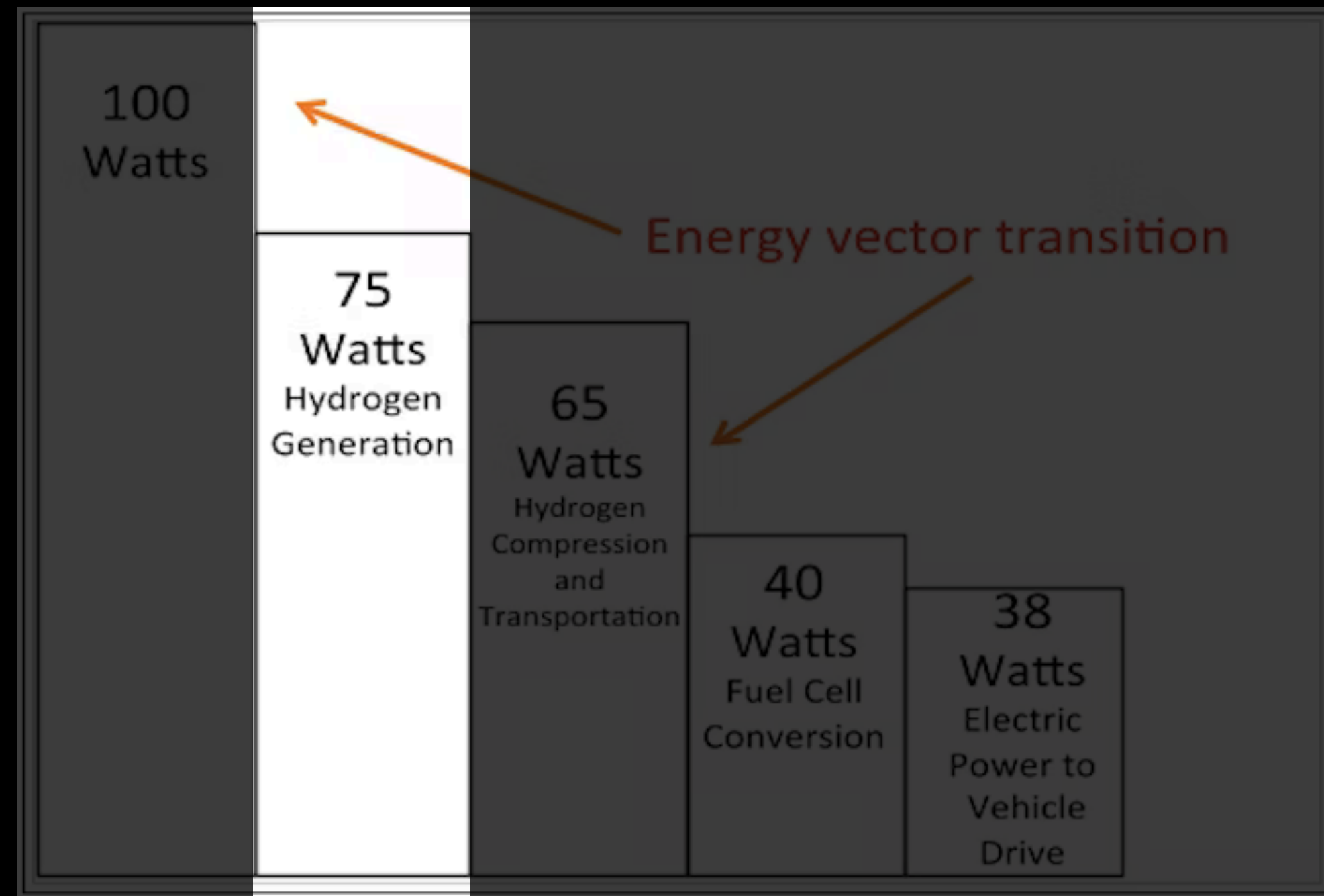
**Hydrogen less energy efficient**

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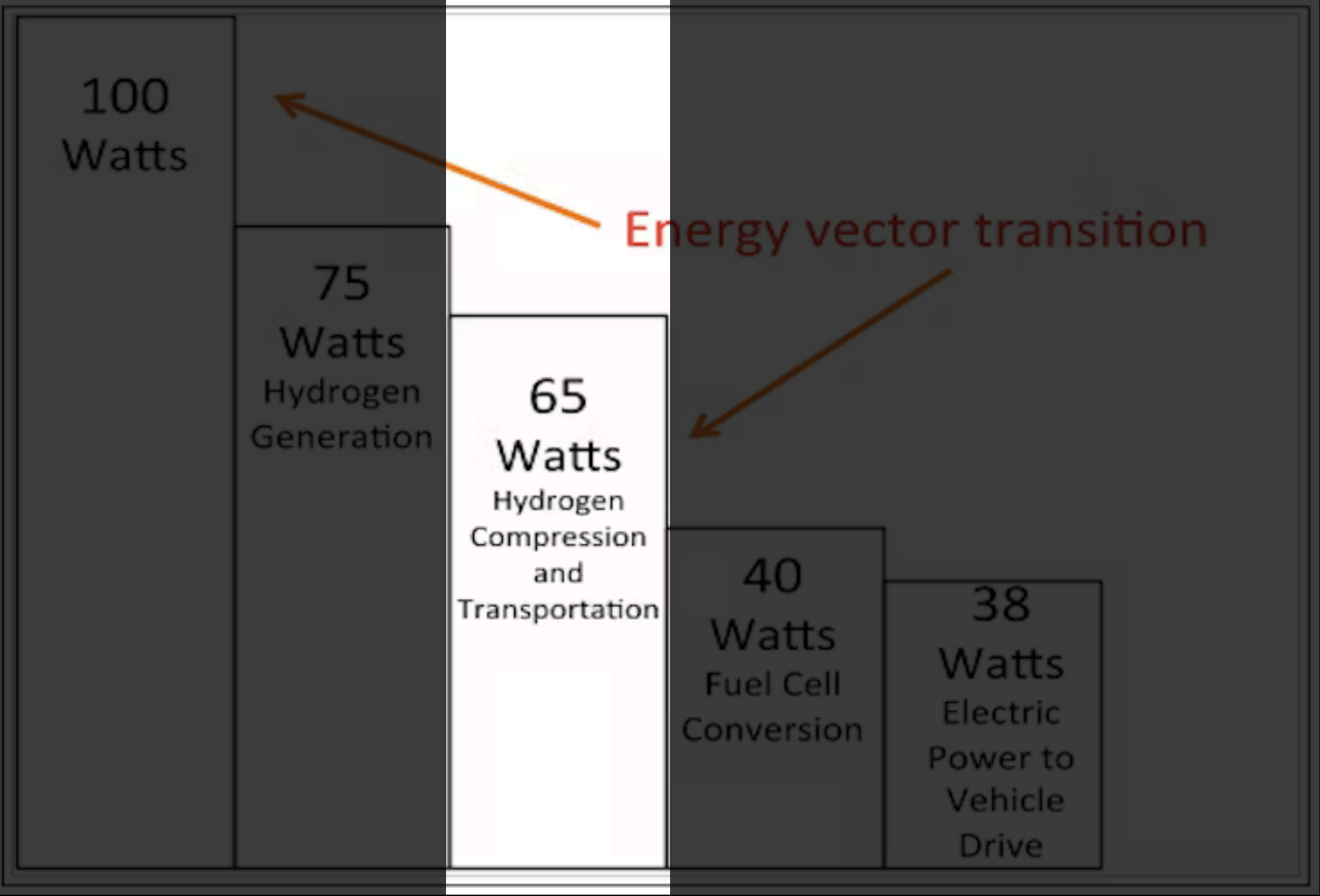




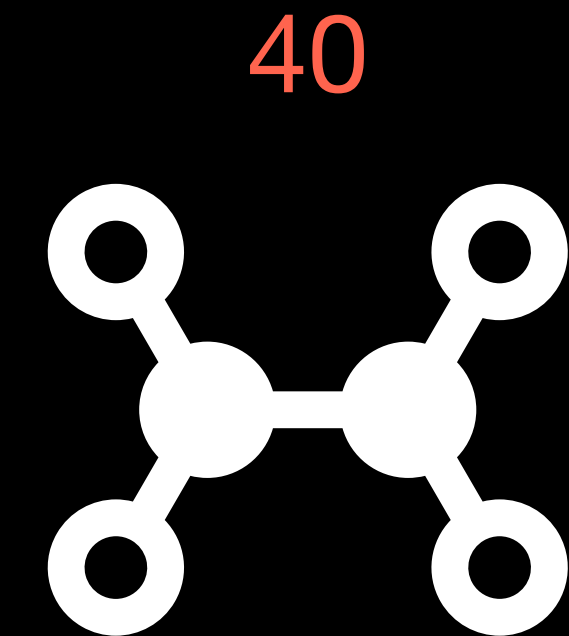
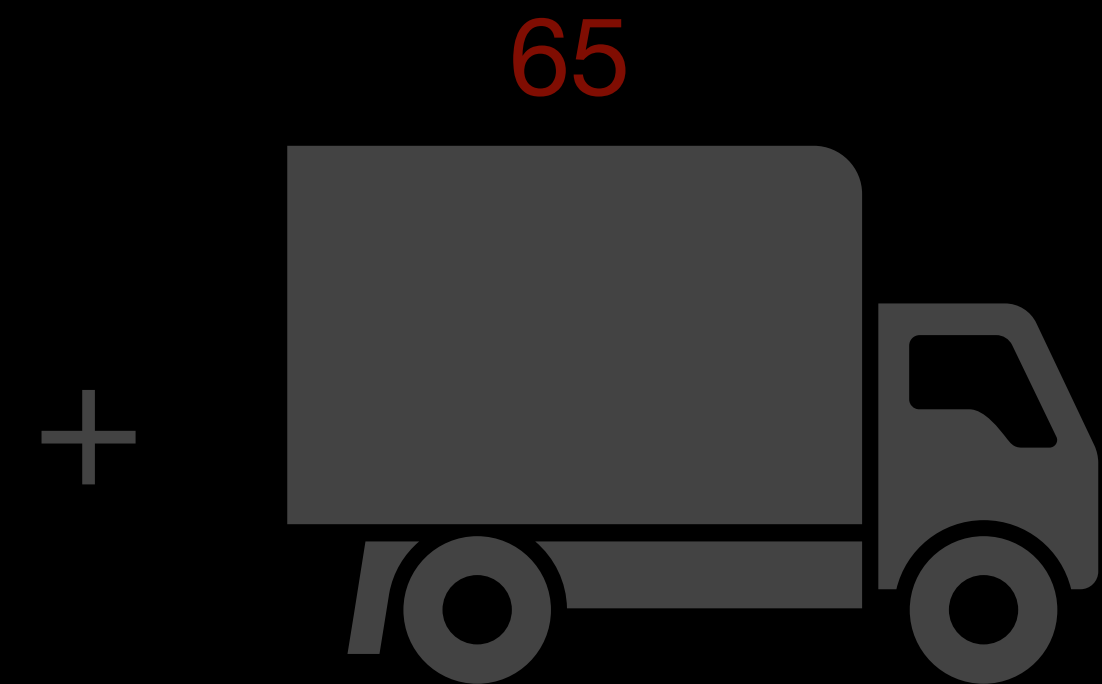
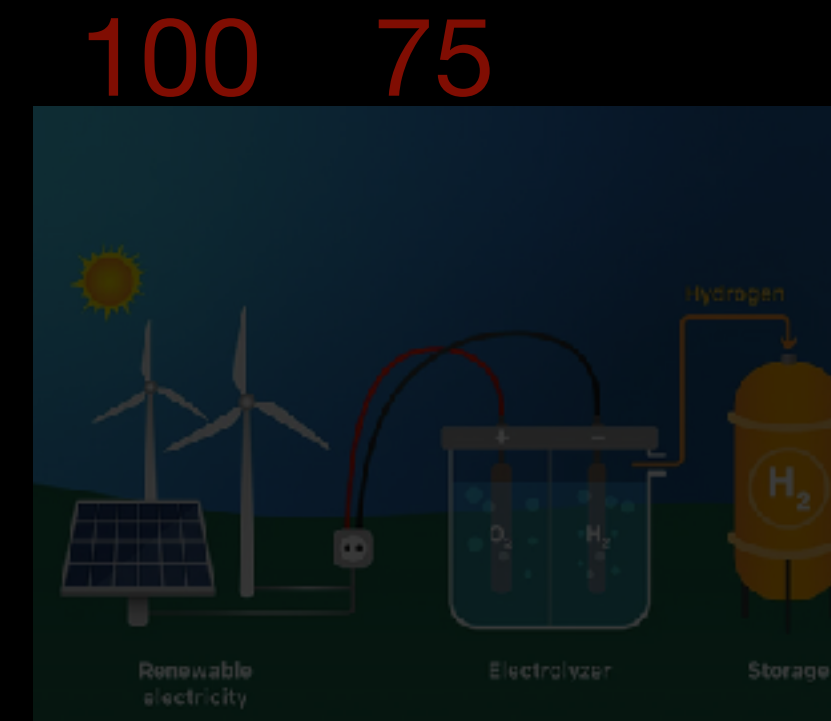
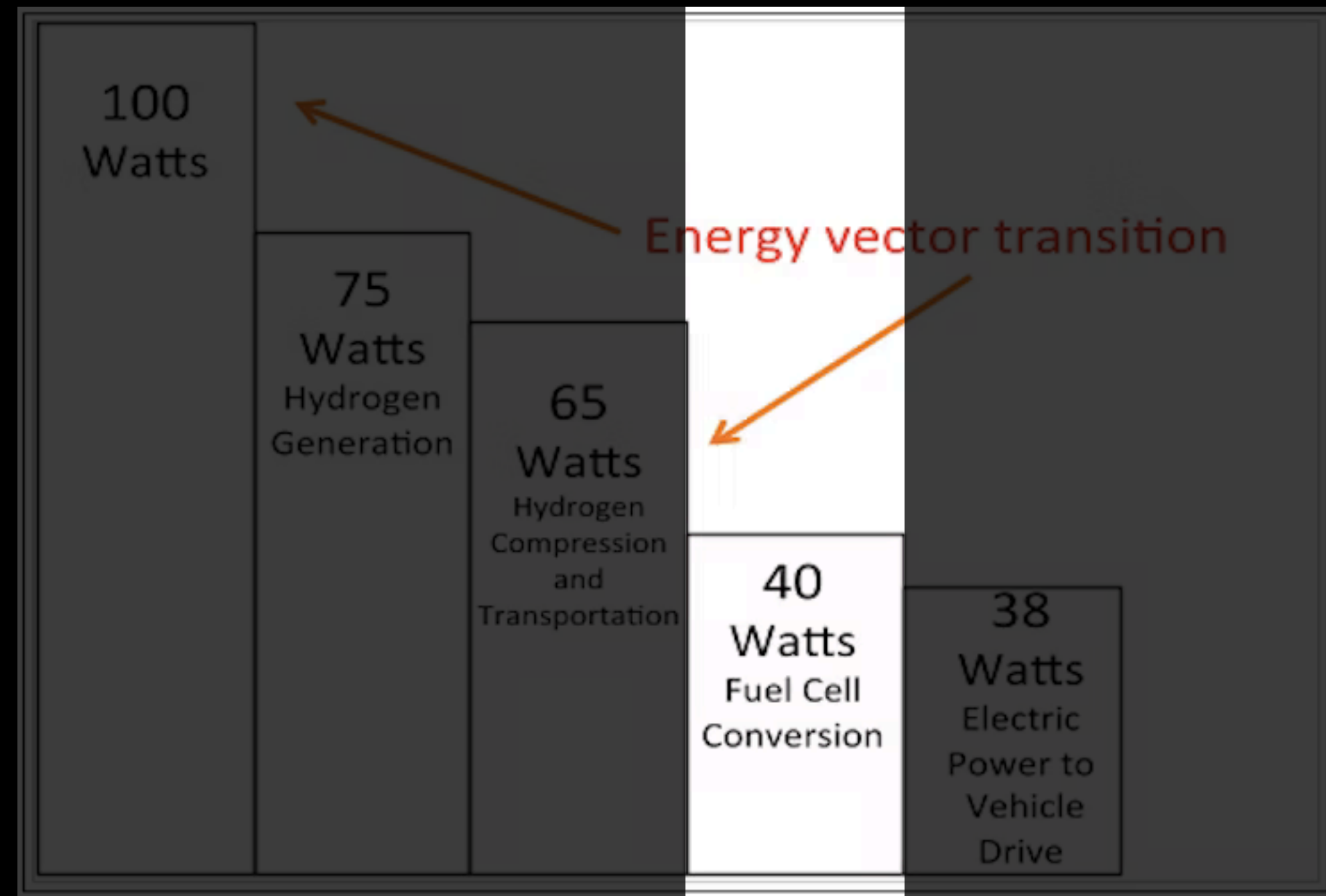
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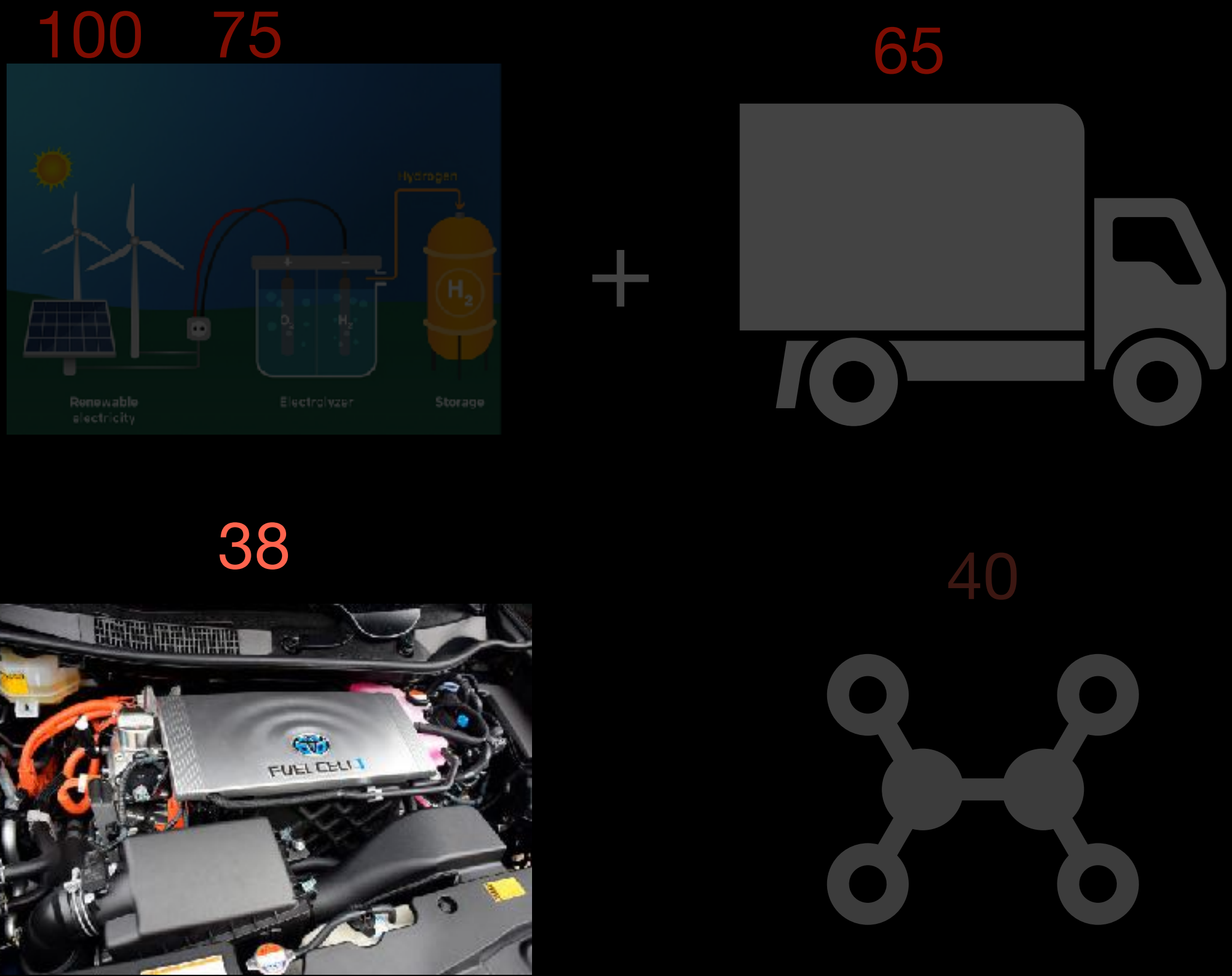
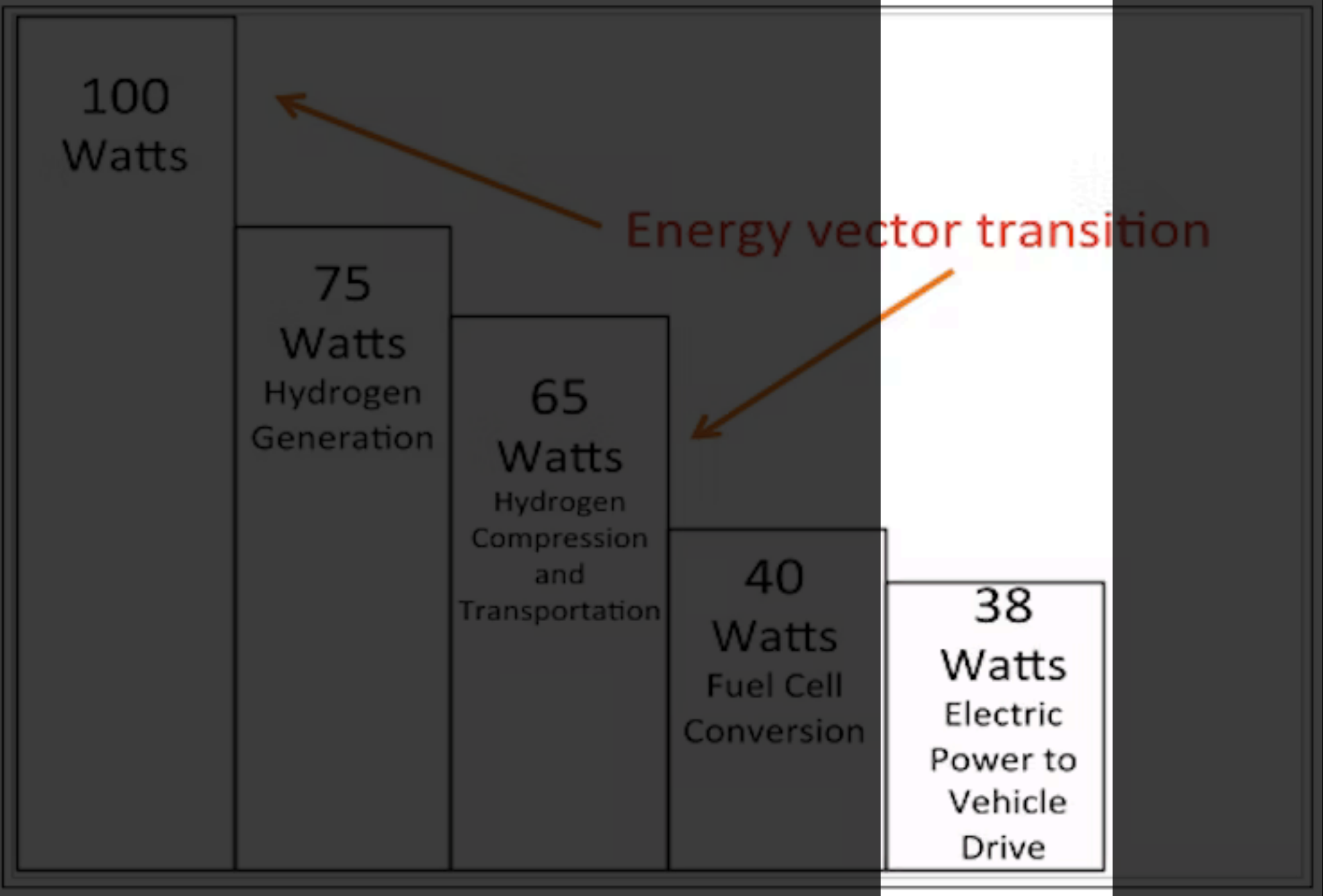


# Hydrogen less energy efficient



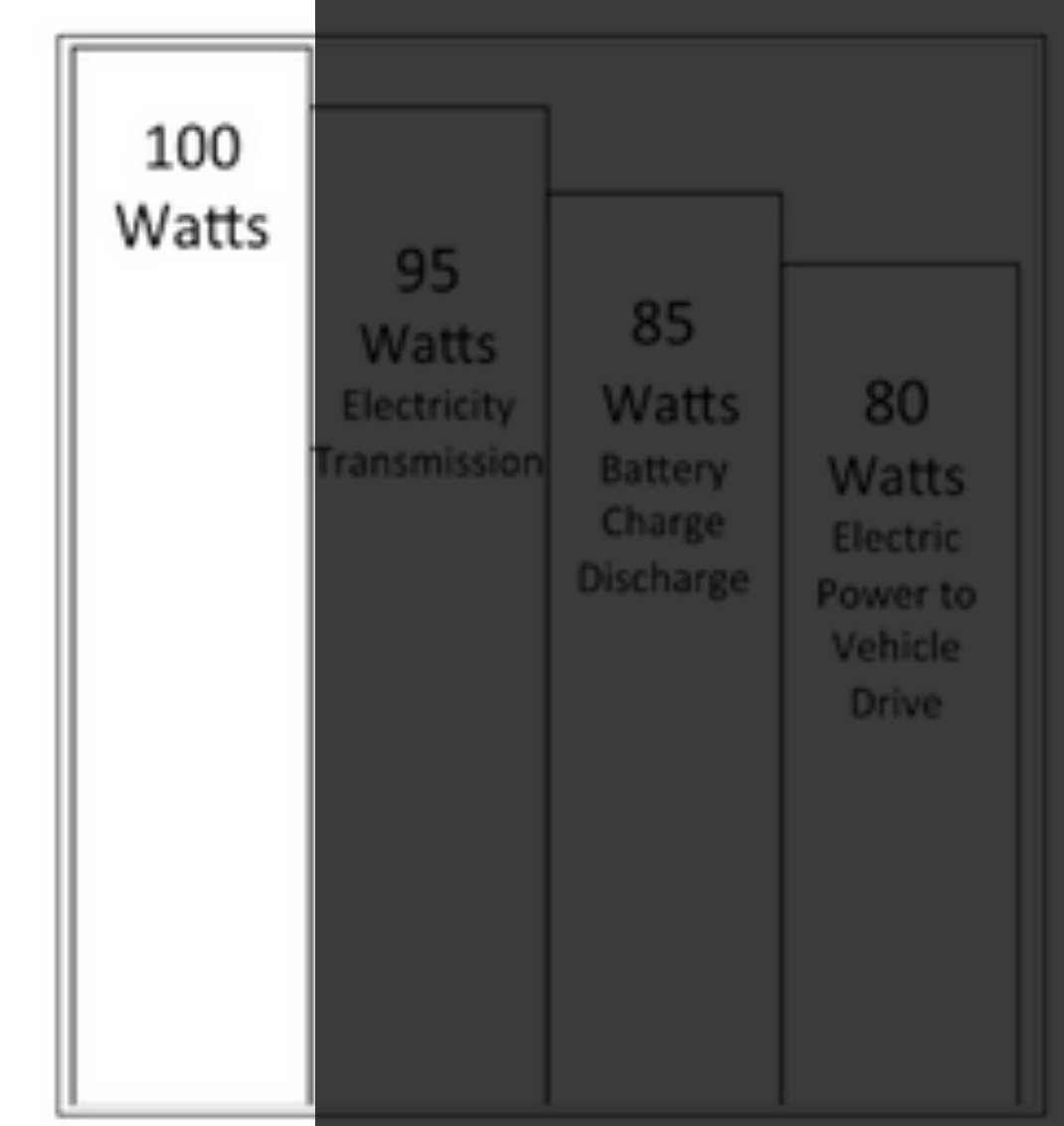


# Hydrogen less energy efficient



# Batteries more efficient

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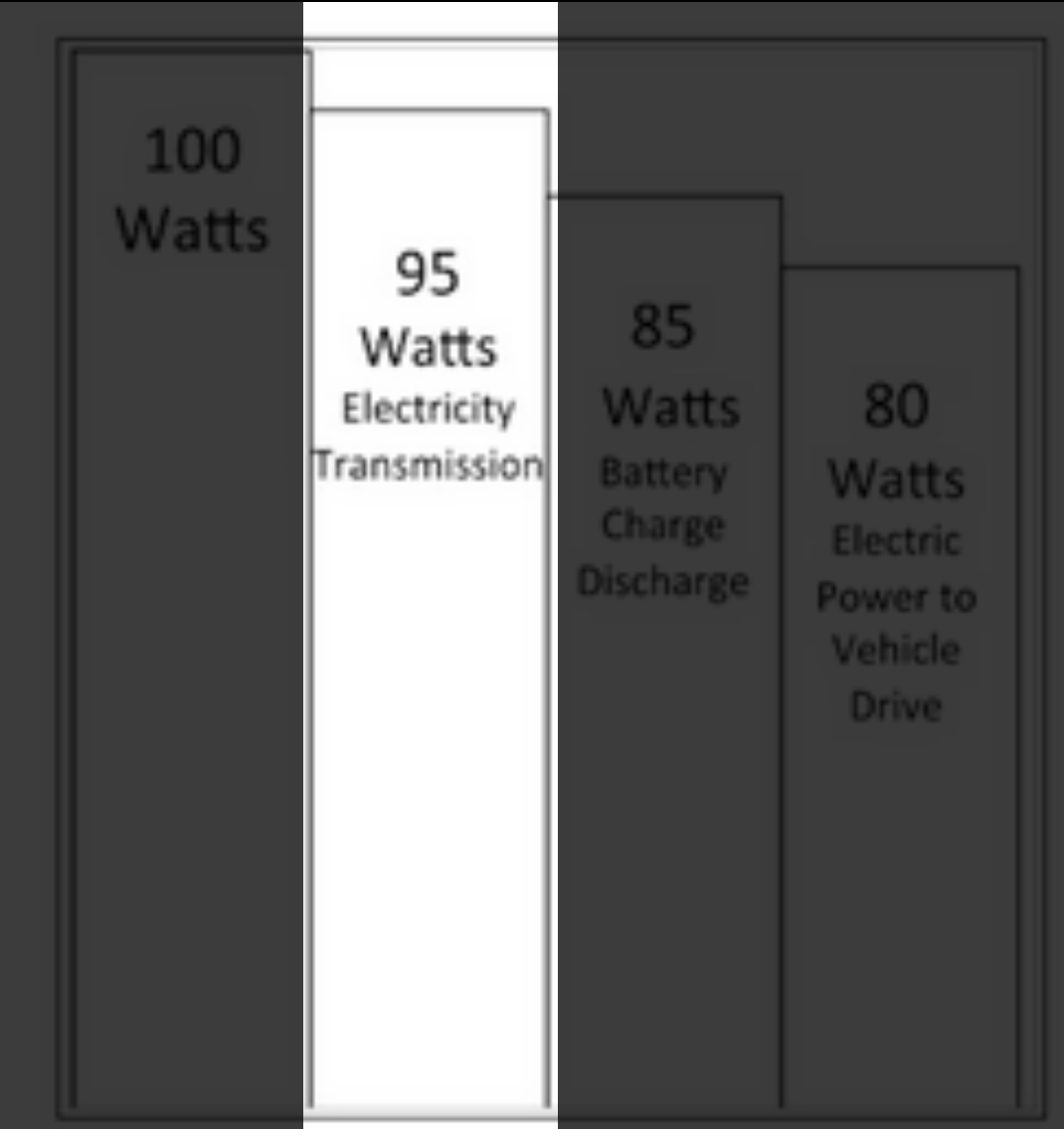


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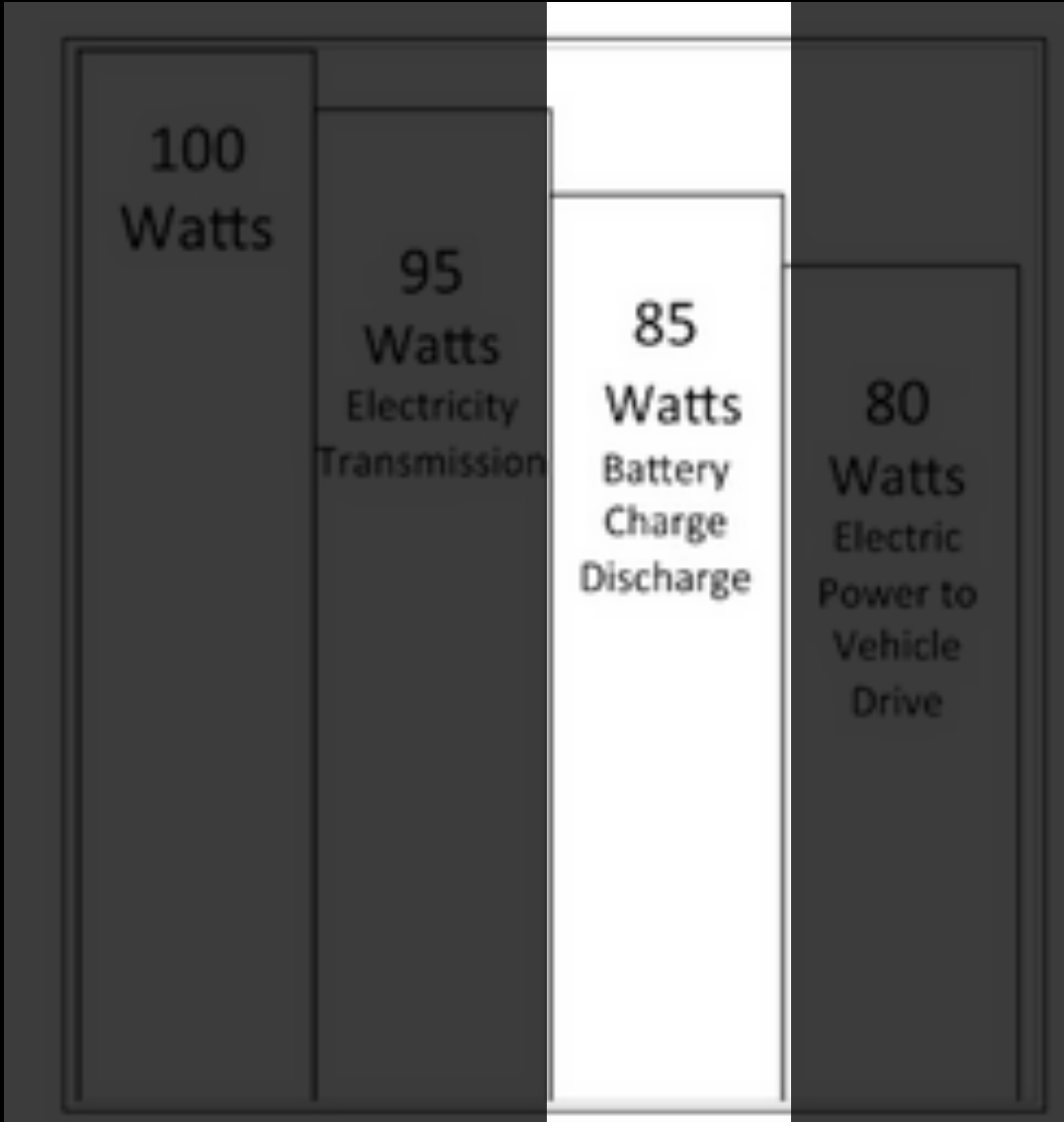


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# Batteries more efficient



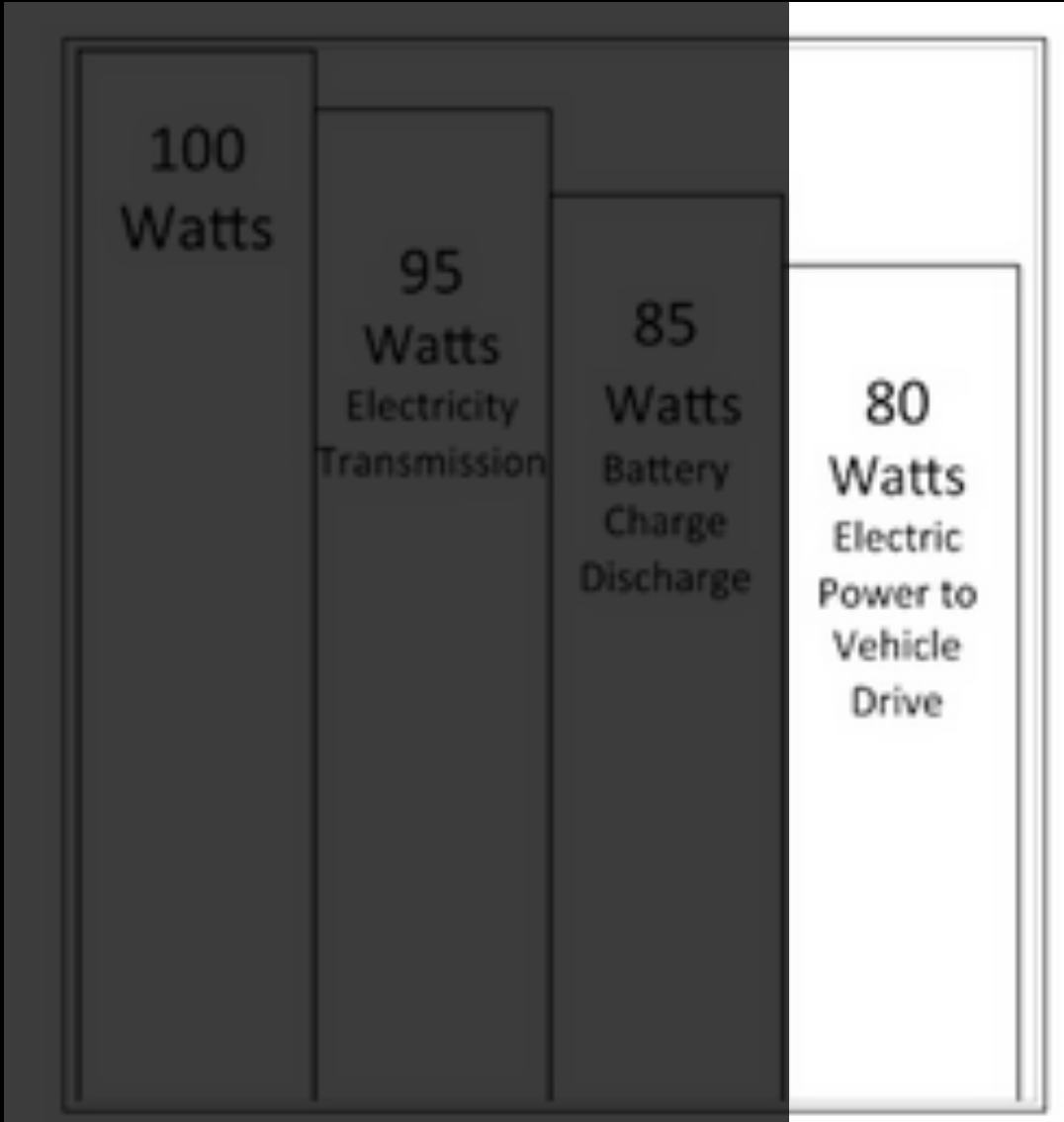
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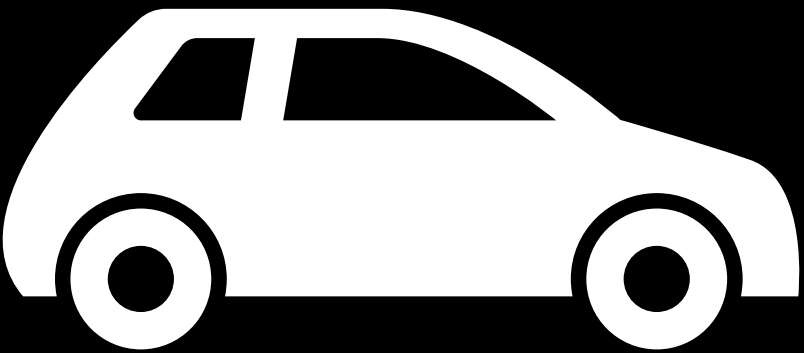
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# References

- 1st image: <https://www.freep.com/story/money/cars/general-motors/2020/07/31/gm-fast-charging-stations-electric-vehicles/5553468002/>
- 2nd image: <https://www.cnbc.com/2021/12/06/elon-musk-has-strong-views-on-hydrogen-and-not-everyone-agrees.html>
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