



# Title: Hybrid Life Cycle Assessment on Bio-Fuel and Electric Powered Automobiles

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## Motivation

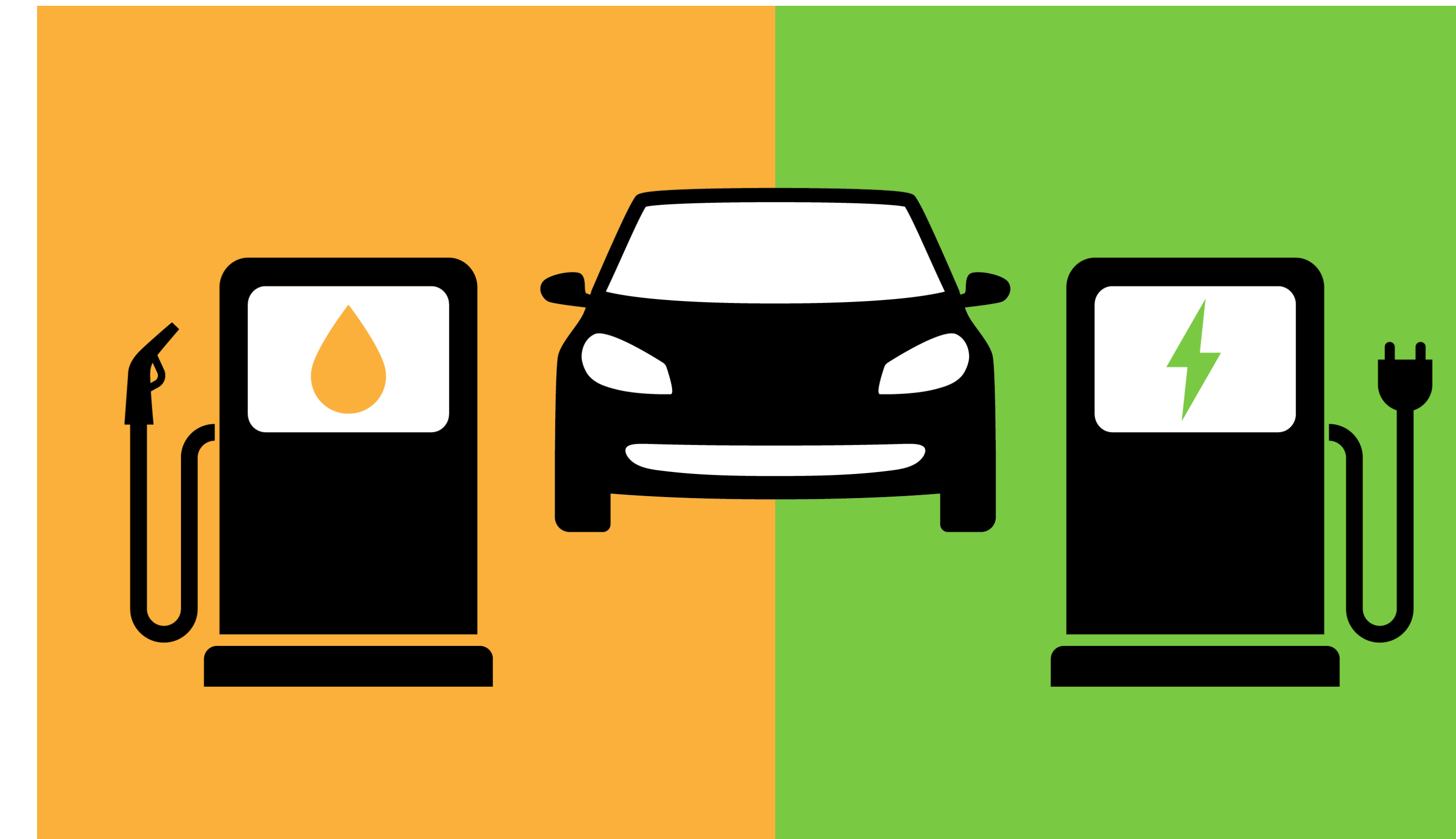
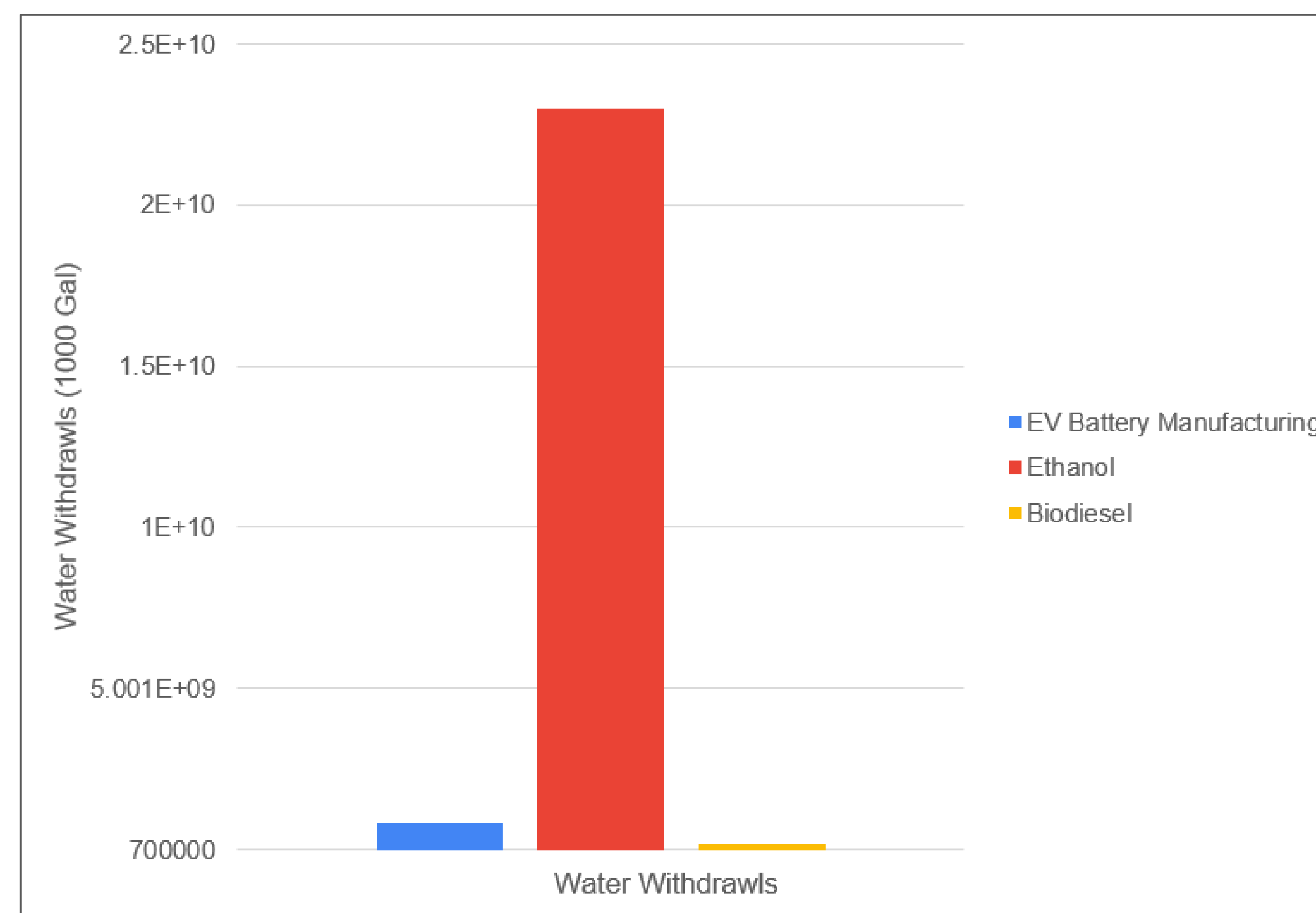
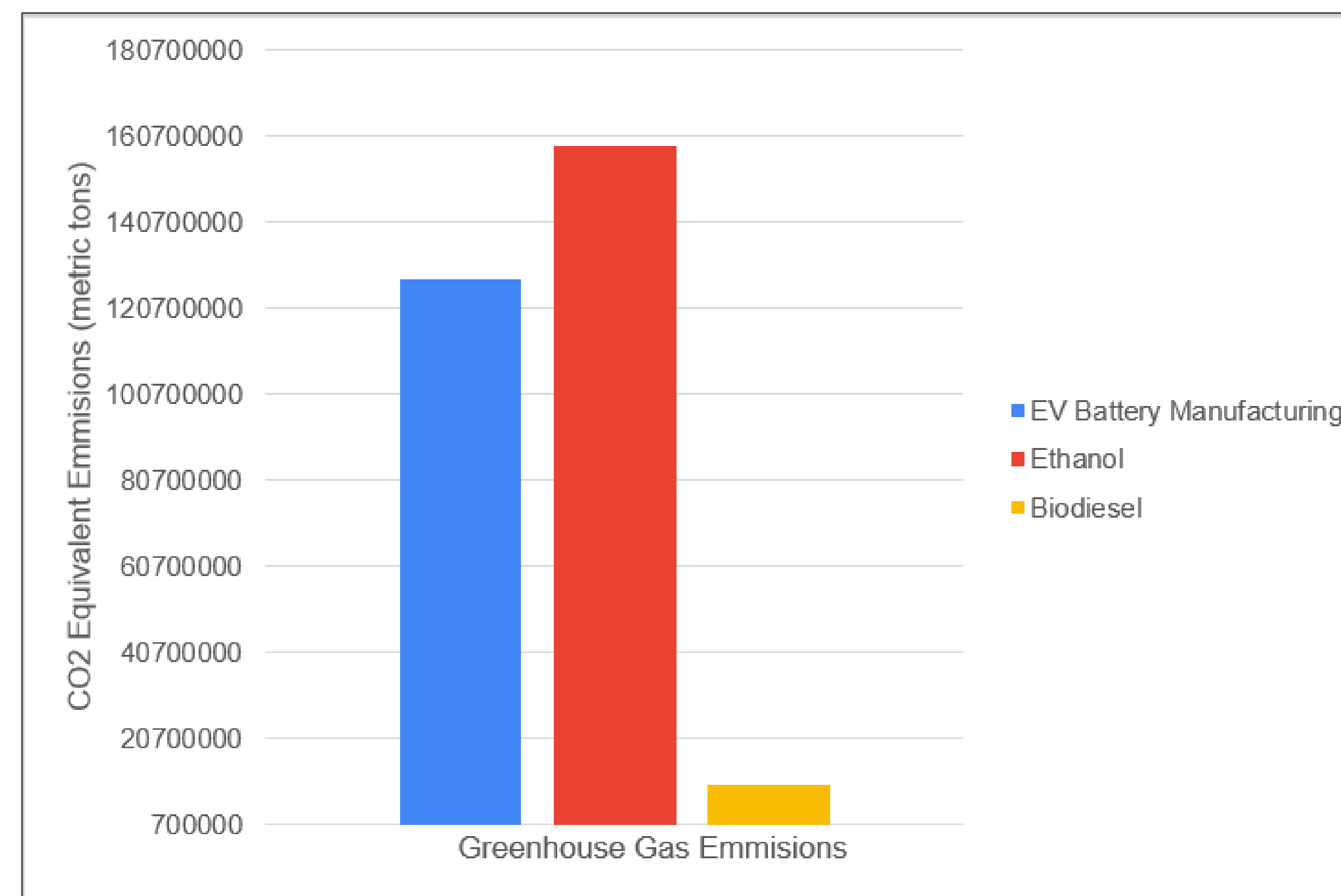
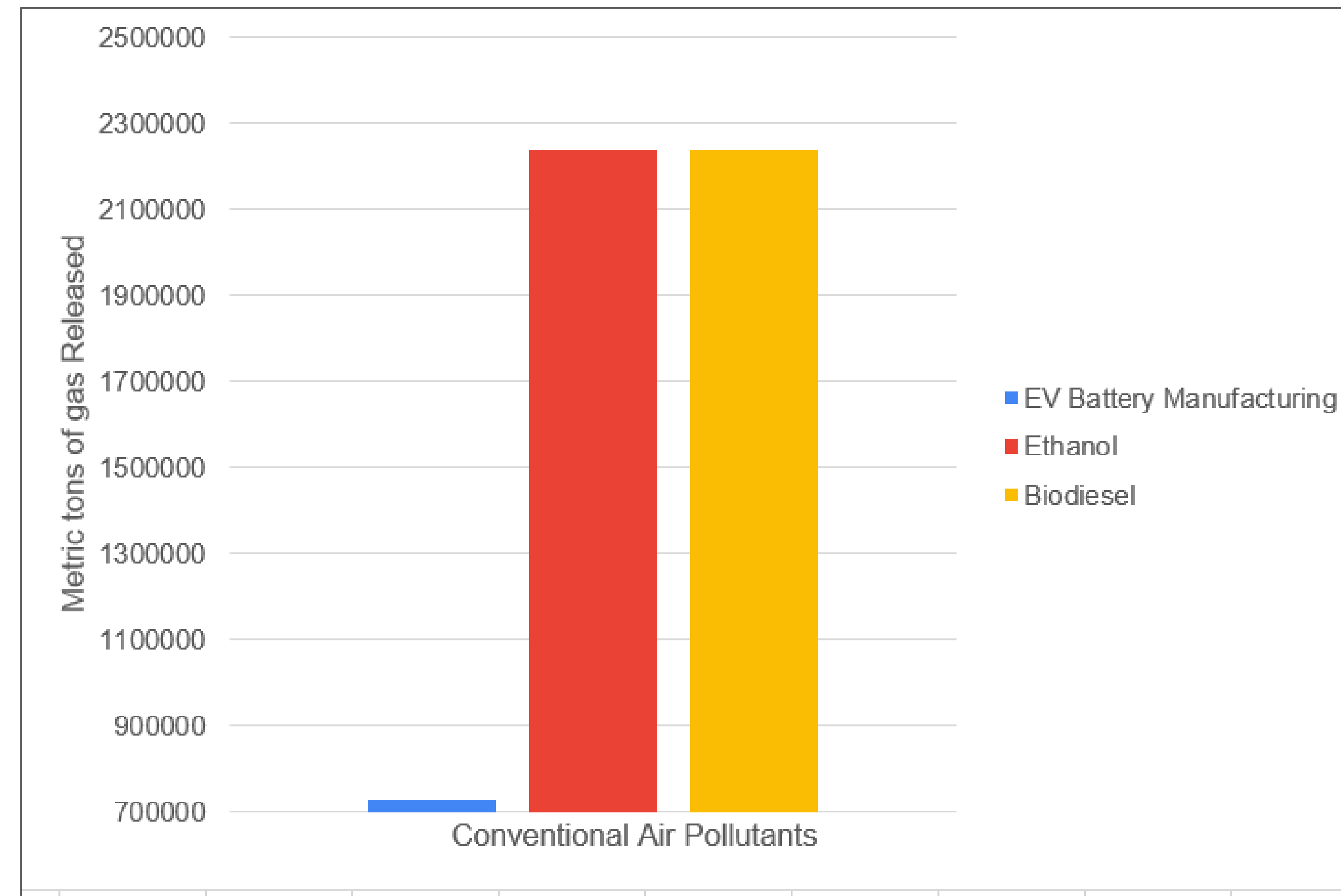
- Compressed Natural Gas Accounts for .2% of fuel used for cars
- 14.381 million gallons of ethanol were consumed
- 1.896 million gallons of biodiesel were consumed
- Electric powered cars are expected to reach 8.2% by 2020 of cars on the roads.
- Electric Vehicles are more polluting to produce than fossil fuel cars.
- 80% of the energy in an electric vehicle battery is transferred to powering the car. While only 15% goes to powering a gasoline powered car.

## Methodology

- Hybrid Life Cycle Assessment
- Found resources and inputs involved with each type of fuel
- EIO simulation was run using online tool in order to determine the effect of product on varying parameters (carbon emissions, etc.)
- Efficiencies are compared to understand the most energy use of each fuel

## Social Aspects

- Alternative fuels can reduce the amount of pollution given off by ICE vehicle
- Will give access to affordable and clean energy to those who can not get it now



## Results

### Fuel Efficiencies

- Compressed Natural Gas: 19 MPGe
- Corn Ethanol: 15-27% less MPG compared to pure gasoline vehicles
- Biodiesel: 2-10% less efficient compared to pure diesel vehicles

### Battery Efficiencies

- 60 kWh battery- 208 miles
- 85 kWh battery- 265 miles
- Battery life Span- 200,000 miles
  - 17 years
  - 12,000 miles per year

## Additional Information

- EV and alternative fuel both are viable options
- EV will have more potential because of the higher energy conversion
- EV can also continue to develop, while plant fuels can only have so much energy stored in them

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