

Skyler Booth  
Technology Innovation  
Travis Brown  
March 21<sup>st</sup>, 2017

# Understanding Needs & Addressing Them through Technological Innovation

## Problem Space

- The problem space I decided to work with is environmental management, concerning global warming, and I think there is a need within our transportation and how much it harms the environment.

## Predispositions

- I believe the need exists because of many research studies that have been published in recent years regarding how automobile emissions are the leading factor in global warming. I also believe that this hasn't been addressed before because the original automobile engine was ran on gasoline, why change something if it isn't broke?

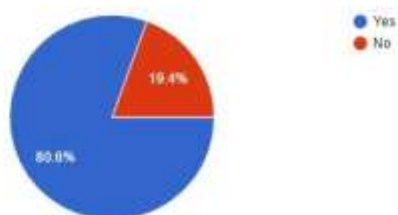
## Research

- I used a google form and did a survey to conduct my research. The goals of my research were to establish that there was a problem and that a need wasn't being met. From my survey, I was to establish that global warming is believed to be human driven (83.3% of participants believed this) and the main factor to global warming is due to the burning of fossil fuels (20 respondents gave serious answers and 17 of those said fossil fuels). I asked a few other questions and you can refer to the graphs below to see the results:

---

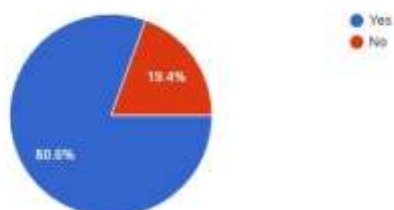
Do you think cars should transition from using fossil fuels (i.e. Gasoline) to renewable energy (i.e. Electricity)?

(36 responses)

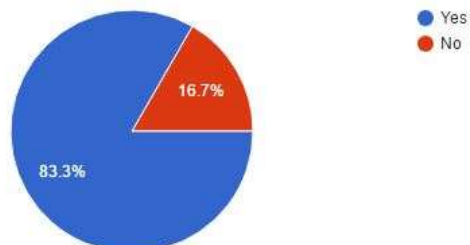


Would you be more inclined to use an electric car that recharges itself? (instead of you having to plug it in every day/night)

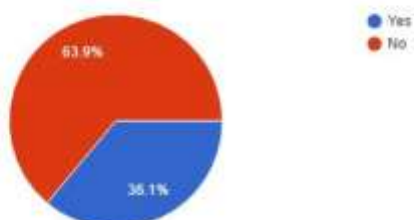
(36 responses)



Do you believe in human driven global climate change? (36 responses)



Do you often forget to charge your electronics? (i.e. phone, laptop) (36 responses)



## Insights

- As I showed above, the research I had done strengthened my belief that our transportation, specifically cars, is destroying our environment, specifically affecting climate change. I also believed my research showed that a problem with current hybrid/fully-electric cars is that they need to be charged often while people forget to charge their devices every day. This shows that people may forget to charge their car which can lead to bigger issues, such as missing school or work to getting fired. My research also showed that people would be more inclined to drive a hybrid/fully electric car if it were to charge itself somehow.

## Innovation

- The innovation I came up with was adding a renewable energy system to current hybrid/fully electric cars. The system I envisioned consists of three main parts, a wind turbine in the front of the car in order to capture wind energy as the car is driven, a solar panel infused hood, top, and bumper in order to capture the sun's energy as the car sits in a parking lot during the day, and a magnet/coil system in the tires and wheel wells in order to capture the kinetic energy of the car while it drives. I think all of these combined would help sufficiently power the car far longer than they are currently powered by just using batteries.
- My idea use case for this car would be every person in the world. I would hope that this technology would be able to come together with enough strength to fully power vehicles for long periods of time. I feel like this would be perfect for the everyday commuter, a person would drive to work, park their car in the sun, the car would charge back up and when it was time to go home, their car would make it home using only renewable electricity that the owner doesn't have to pay for. For the long distance drives, this technology would still be very effective but it would need to be done with a hybrid, if the batteries were to get low, the car would start using the fossil fuel engine in order to keep going. As this happens though, the batteries would still be charged by all three of the power sources which would allow the batteries to become fully charged again. Once this happens, the car would

switch back to using the electric motor. Not only would this solution reduce carbon dioxide and other emissions, it would prolong the need to make stops for fuel or to recharge.

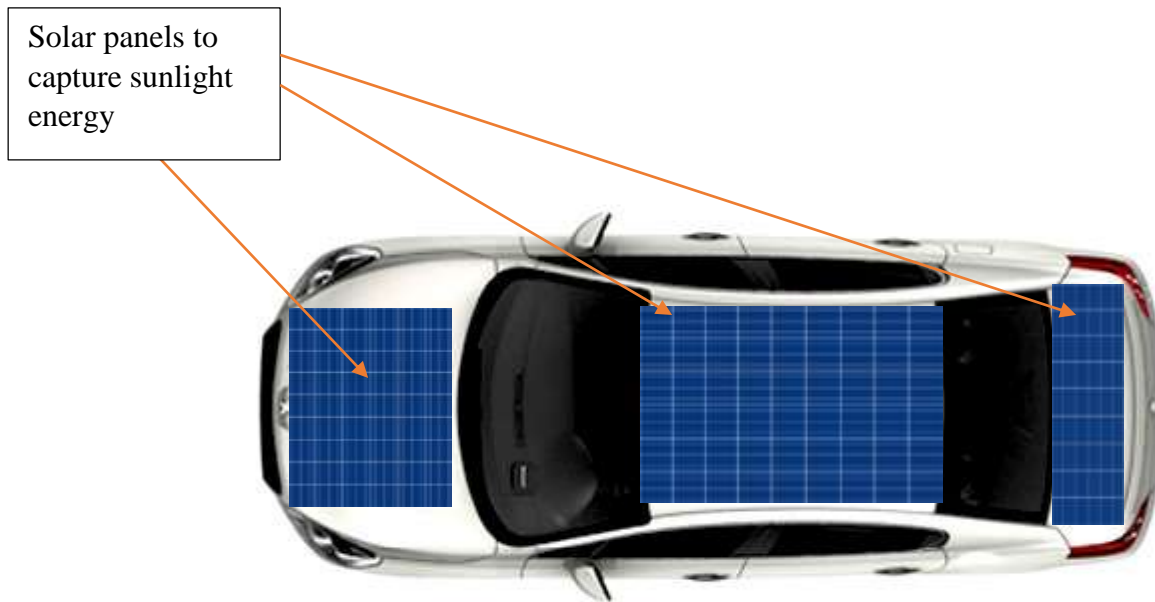
## Sketches

Turbine for  
capturing wind  
energy



Tire with  
embedded copper  
wire coil





## Implementation

- I thought of two major buy-ins that I would need to make this successful. The first would be a car manufacture, I would need them to buy in because there is no way I would be able to start a new manufacturing company and be profitable, I would use a large companies resources to get my product into production as soon as possible. I also decided the company I would try to partner with is Tesla, they are leading the country in hybrid cars and I think they'd be the most likely to partner with me. Tesla would also be able to help with the solar panels and wind turbine since they already produce these products, which would diminish the need for other buy-ins. I would then need to have a tire company buy-in. I would need them to help produce tires with a copper coil on the inside in order to make use of my magnetic energy producer. I would also need some subject matter expertise, such as electrical engineers, wind turbine engineers, design engineers, battery engineers, and solar engineers in order to help create my designs as well as to test the power of them. If Tesla were to buy-in to my ideas, they have all of these engineers already working for them, so I believe I'd be able to get this into production quickly and easily. So for my innovation, I'm using

three existing technologies: a wind turbine, solar panels, and a magnetic generator.