

# Renewable Energy Team

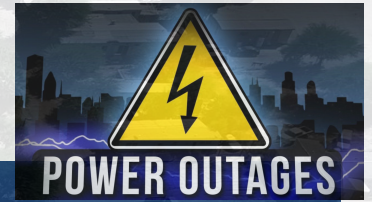
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# Objective

To provide a frugal renewable power source to  
impoverished mobile homes parks  
which face several power outages every year

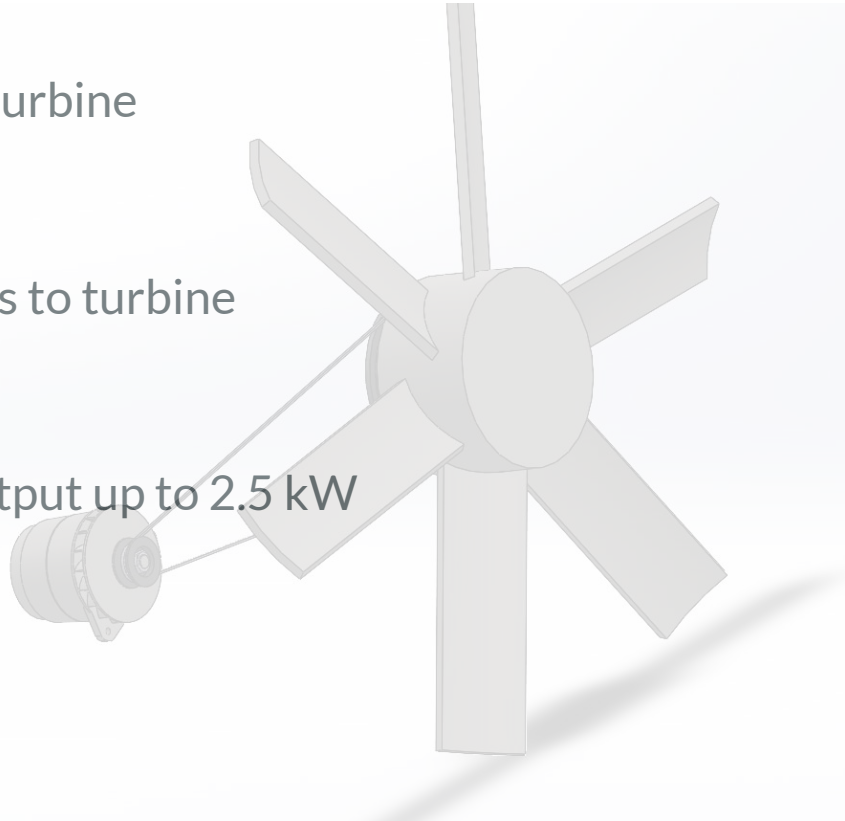
# Issue & Proposal

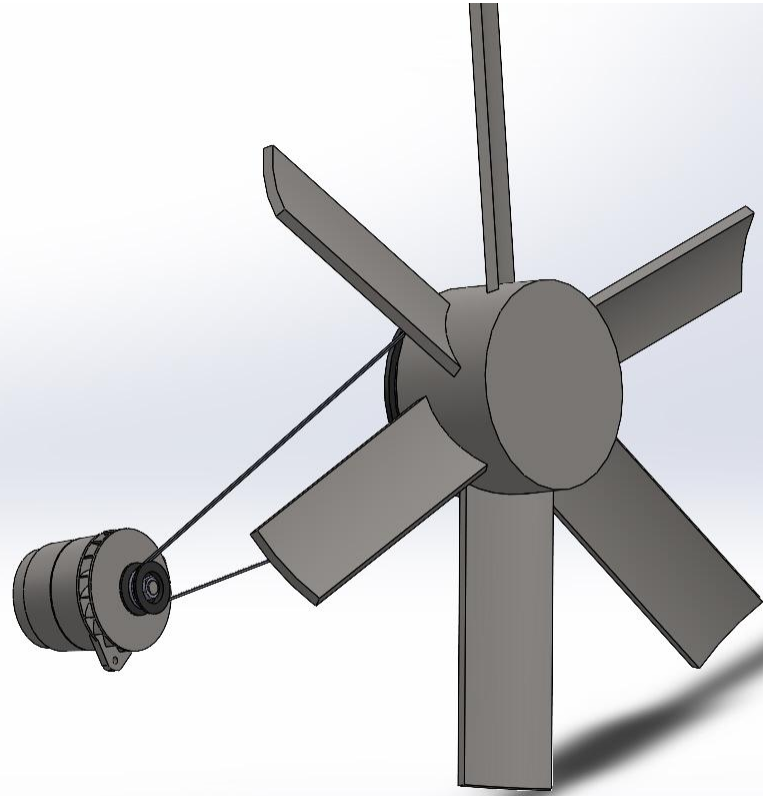
- Oasis Mobile Home Park
  - high electricity bills
  - power shut offs
- Frugal wind turbines
  - generate power for each individual home

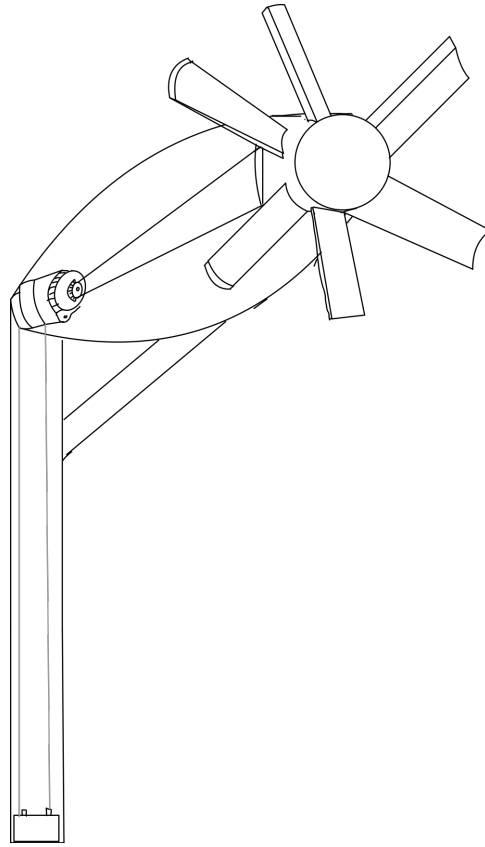


# Solution (Theoretical)

- Construction of the turbine
- Connect car batteries to turbine
- Alternator power output up to 2.5 kW

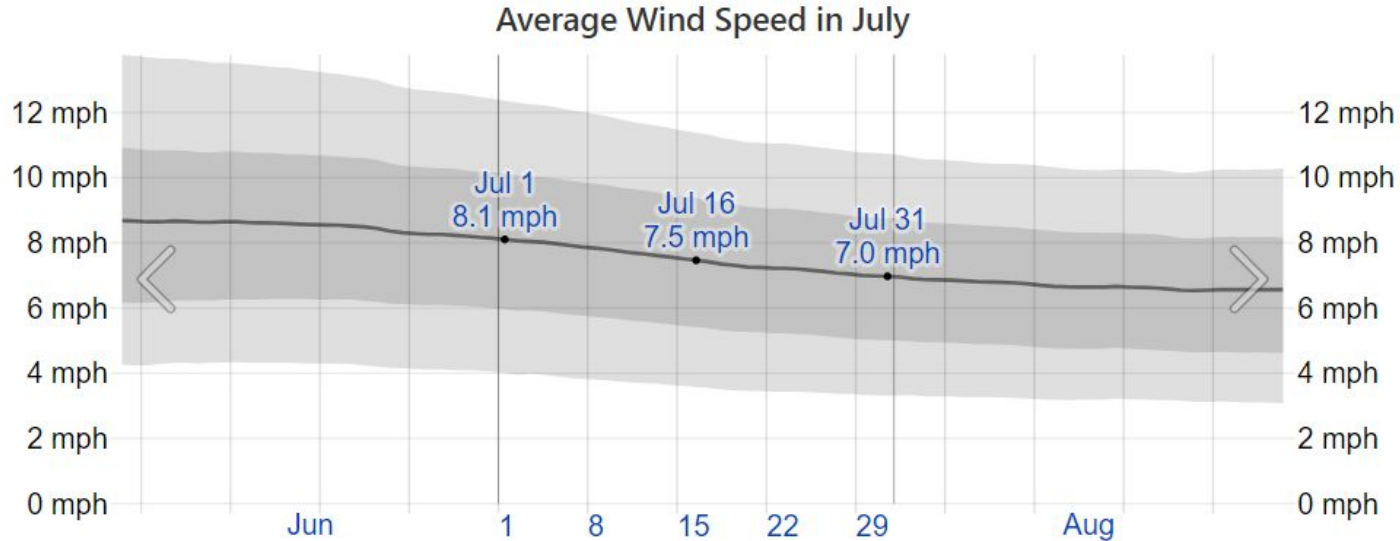






# Wind Speeds?

- Average wind speeds from March 16 to July 13 is 7.6 mph
- Average wind speeds from July 13 to March 16 is 6.8 mph



*The average of mean hourly wind speeds (dark gray line), with 25th to 75th and 10th to 90th percentile bands.*

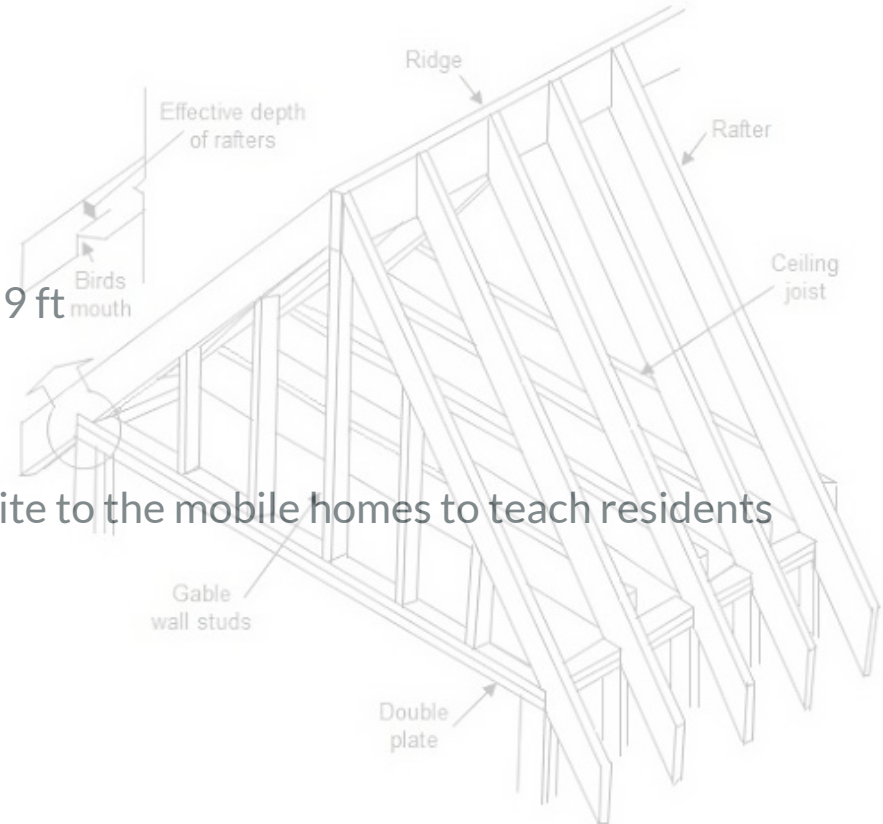
# Implementation

- Scott Lawson owns the mobile homes
  - Contact him for installation permits
    - Permit in Riverside County costs \$1,100, but can potentially be waived by gov. agencies



# Installation of Turbines

- Roof installation
- Wires to connect turbine to car batteries
  - Assuming distance from roof to floor is 9 ft
    - 15 ft red 15 ft black → 30 ft total
- Engineering students/mentors would go onsite to the mobile homes to teach residents how to handle installation



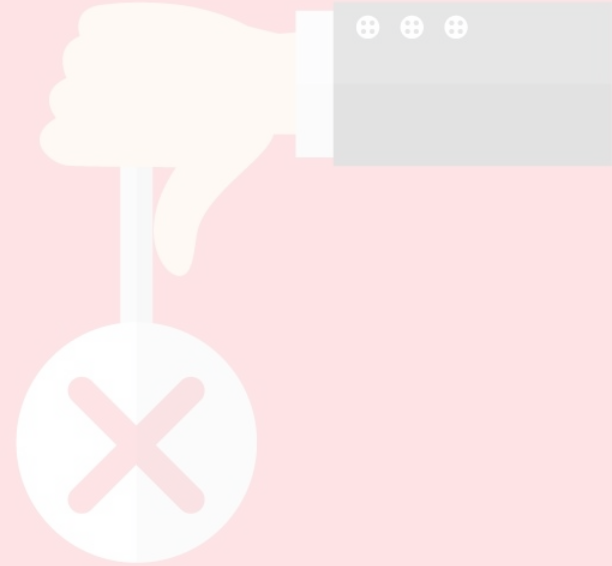
# Payment Plan

- Total cost of design
  - \$150
- If permit required (Riverside County)
  - + \$1,100
  - Microtransaction plan to make product more affordable
    - Down payment
      - + followed by small daily payments



# Cons of Solution?

- Longevity of design
- Flow is more turbulent at roof altitude
- Noise level generated
- Tools are necessary for set-up
- Regulations for Coachella Valley



# Conclusion



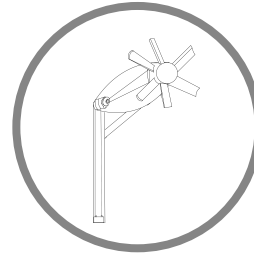
Wind turbine  
supply sufficient  
energy

In case of power  
shutoffs



Components  
from scrapped  
cars

Only wires and ceiling  
fans need to be  
purchased



Simple Design

Maintenance can be  
done by mobile home  
residents



Payment Plan

If permits are required

# Works Cited

<https://cvindependent.com/2021/03/a-housing-emergency-a-lawsuit-against-the-owners-of-the-oasis-mobile-home-park-shows-just-how-dire-conditions-are-in-some-east-valley-neighborhoods/>

<https://weatherspark.com/m/2104/7/Average-Weather-in-July-in-Coachella-California-United-States#Sections-Wind>

[https://www.amazon.com/Welding-Battery-Flexible-Inverter-WindyNation/dp/B011Z81P7C/ref=sr\\_1\\_6?dchild=1&keywords=2+AWG&qid=1618084769&sr=8-6](https://www.amazon.com/Welding-Battery-Flexible-Inverter-WindyNation/dp/B011Z81P7C/ref=sr_1_6?dchild=1&keywords=2+AWG&qid=1618084769&sr=8-6)

[https://www.build.com/product/summary/988500?uid=2437325&jmtest=gg-gbav2\\_2437325&inv=1&&source=gg-gba-pla\\_2437325!c1710655136!a69464684849!dc!ng&gclid=Cj0KCQjwmcWDBhCOARIsALgJ2QfD3SAI1ehnenf6xHT4RieJcuya11YqiMV2BARiwLtoOpb3zVKRXDEaAnrzEALw\\_wcB&gclidsrc=aw.ds](https://www.build.com/product/summary/988500?uid=2437325&jmtest=gg-gbav2_2437325&inv=1&&source=gg-gba-pla_2437325!c1710655136!a69464684849!dc!ng&gclid=Cj0KCQjwmcWDBhCOARIsALgJ2QfD3SAI1ehnenf6xHT4RieJcuya11YqiMV2BARiwLtoOpb3zVKRXDEaAnrzEALw_wcB&gclidsrc=aw.ds)

[http://resources.cleanenergyroadmap.com/WND\\_P\\_permitting-fees-small-wind-CA-counties.pdf](http://resources.cleanenergyroadmap.com/WND_P_permitting-fees-small-wind-CA-counties.pdf)