# **Alternative fuels**

New Mexico Supercomputing Challenge Final Report April 1, 2008

Team 47 Jackson Middle School Albuquerque, New Mexico

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## Teacher(s)

Mrs. Glennon

### **Project Mentors**

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#### 1 Executive Summary

Many people have wondered which alternative fuel would be the best for the environment and to keep your wallet full. We already knew that Solar and Hydrogen fuel would be the best for the environment, because they emit no harmful carbon gases into the air.

Which one is most efficient? Does the weight of the car change everything? Does wind play a factor? Which one cost the least to run? These are all question we wanted to answer.

First, to solve the problems, we bought the solar car kit and borrowed the Fuel Cell car from our teacher Mr. Kindel. We knew that the sun (solar) and the ground that it ran on would be a problem. So we could not use certain programs, such as Starlogo, so we settled on Java.

## 2 Our Problem

We need an alternative way to fuel our planet. We decided to test using miniature fuel cell and solar energy cars. We are testing to see which car is most fuel efficient and ecofriendly.

#### 3 Our Method

Our purpose in our tests was to see if we could run the same car, using different ways to fuel it. Also, to find out what would be best for the environment, and what is most fuel-efficient

We lined the car up on a straight line, which is harder than you think. The Hydrogen car turns a lot and the solar car moved off at an angle. From that we learned that it was probably not design for moving in straight or racing even for only one meter. For the ten meters test we measured out ten meters of string and taped a pen cap to the car, which were hallowed out so the string could pass easily through it. Then we uncovered the solar panel of the solar car and we recorded the time in seconds marking every five meters for time.

#### 4 Results

At the beginning our solar car kit wouldn't use Hydrogen like the directions said it would. We had to get another car to test Solar against Hydrogen, so we borrowed a similar car from our science teacher, Mr. Kindel. We learned how to use a Hydrogen car.

After learning how to use this different car we used our knowledge on the solar car kit. After two different attempts we got our solar car to run on Hydrogen and were successful in testing the same car two different ways.

After testing we found that Hydrogen has zero emission. The Hydrogen car would never go in a straight line, so we had to keep redirecting the car to move in a straight line. After testing our solar car we found that it also has zero emission and preformed more efficiently. The Solar car also had its problems, such as the car only works in direct sunlight, which was difficult on cloudy days.

We are still programming but we will have our final program by the final presentation.

This is a project we would like to continue in high school, if we had higher caliber vehicles.

## 5 Conclusion

We found that solar power ran the most efficient and also had the fastest trials. Though solar power is a great alternative it has drawbacks on cloudy days. On a cloudy day or at night hydrogen is the best choice, but you may have to refill quite often.

### 6 Software, Tables, and others Products

Our software was Java.

We created our tables of our test results in Microsoft Excel.

Other Products we used for our cars:

- ➤ String
- > Rulers
- Distilled water
- ≻ Pen caps
- Our cell phones (to count time)
- ➢ Basketball courtyard









#### 8 Individual Achievements

**James** - I've learned that there are better alternative fuels than ethanol and that super computing challenge is harder than I thought.

**Kevin** - I learned how different fuels effect how the car performs and that different weights will also affect it too.

**Trevor** - I learned that the Super Computing Challenge takes patience and dedication.

**Aundre** - I learned the value of teamwork, and how different fuels work.

## 9 Special Thanks

<u>Scientist:</u> Tom Laub

## Our programming mentor: Nick Bennett

## Helpful People:

**Brittany Trepanier -** Who was a member of our team, helped us with our research and testing.

**Kathy Kortkamp -** Kevin's mother also was a big help when she drives us around to Glorieta and to UNM. Mrs. Kortkamp has been a real help to our team.

**JMS PTA** – Thank you JMS PTA for funding our trips and donating money helping us in the challenge.