GE Locomotive Project by Alex Kim, Sam Anawalt, Chris Decapua, and Vansh Prabhu

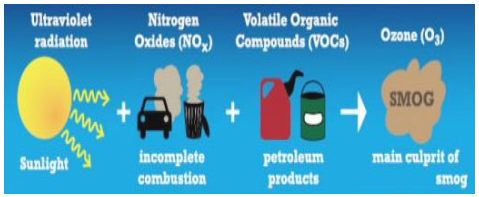
Problem Statement

Background Information: **Currently, Tier 2 and Tier 3 are the most commonly used with Tier 4 being in production**

Why do this?: **GE seeks that its locomotives transport about 165,000-tons of freight, attain EPA standards, and reduce smog by determining a cost effective solution.**

Mission Statement: **By using the given information and additional research we were able to pinpoint the exact design elements and constraints that would define our solution for the 50 locomotives.**

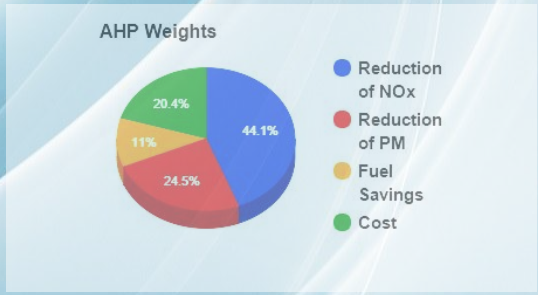
Problem



The main goal is to reduce smog in the city in a cost efficient way while transporting the 165,000 tons of freight to the city.

Current Situation

There are currently 50 Tier 2 locomotives. However, the locomotives need to be changed to meet the EPA Standards (Tier 3 locomotives). We need to think of a cost efficient method to reduce pollution.



Solution

The genset switcher is a different engine that maximizes the efficiency of the energy used (reduces emissions). The genset switcher is a Tier 3 locomotive that includes an after treatment system.

Analysis and Conclusion

Compared to a traditional locomotive in the same application, GenSet units have been shown to reduce NOx by 58%, HC by 94%, CO by 37% and PM by 80%

What we have learned: **Tier 3 Locomotive with after treatment (genset switcher) knows when to turn on certain parts to maximise efficiency. Saving more than 20%, compared to existing diesel locomotive technology in side-by-side use, have been demonstrated.**

Difficulties: **GE didn't provide enough information and a lot of the project was open sourced. Additionally, there were a lot of time conflicts for the group members.**