Design Project 2

Design Project 2 was a sponsored project by General Electric to modify existing train transportation to meet EPA standards for emissions of NOx and PM while being cost effective. The project was fairly open ended and as such a great deal of research was needed to determine what the most effective method was. In order to determine what method was the best our team utilized the analytical hierarchy method, scaling value method, and rating method.

Example Data with Rating Method:

44 Tier II Locomotives	Cost ($M)	Freight Capacity (tons)	Mineral/Freight	Emissions (PM kg/300miles
Upgrade all to Tier III	24	175000	14/1	163.35
Buy all new Tier IV	101	175000	14/1	37.125
After-Treatment	-4.6	175000	14/1	163.35
22 Tier III+ 22 Tier IV	71.5	175000	14/1	100.2375

22 Tier III + 22 Tier IV

Emissions (PM kg/300miles) - 5	Cost ($M) - 4	Freight Capacity (tons) - 1	Ranking
100.2375	71.5	175000	[redacted]
7.9	5.8	4	6.67

Our group concluded that updating the current fleet would be the most effective in the long run and would allow for the best correlation between cost, freight weight, and emissions. Our poster is avaliable on my personal website.