Freight, Fuel, Emissions, & Solution

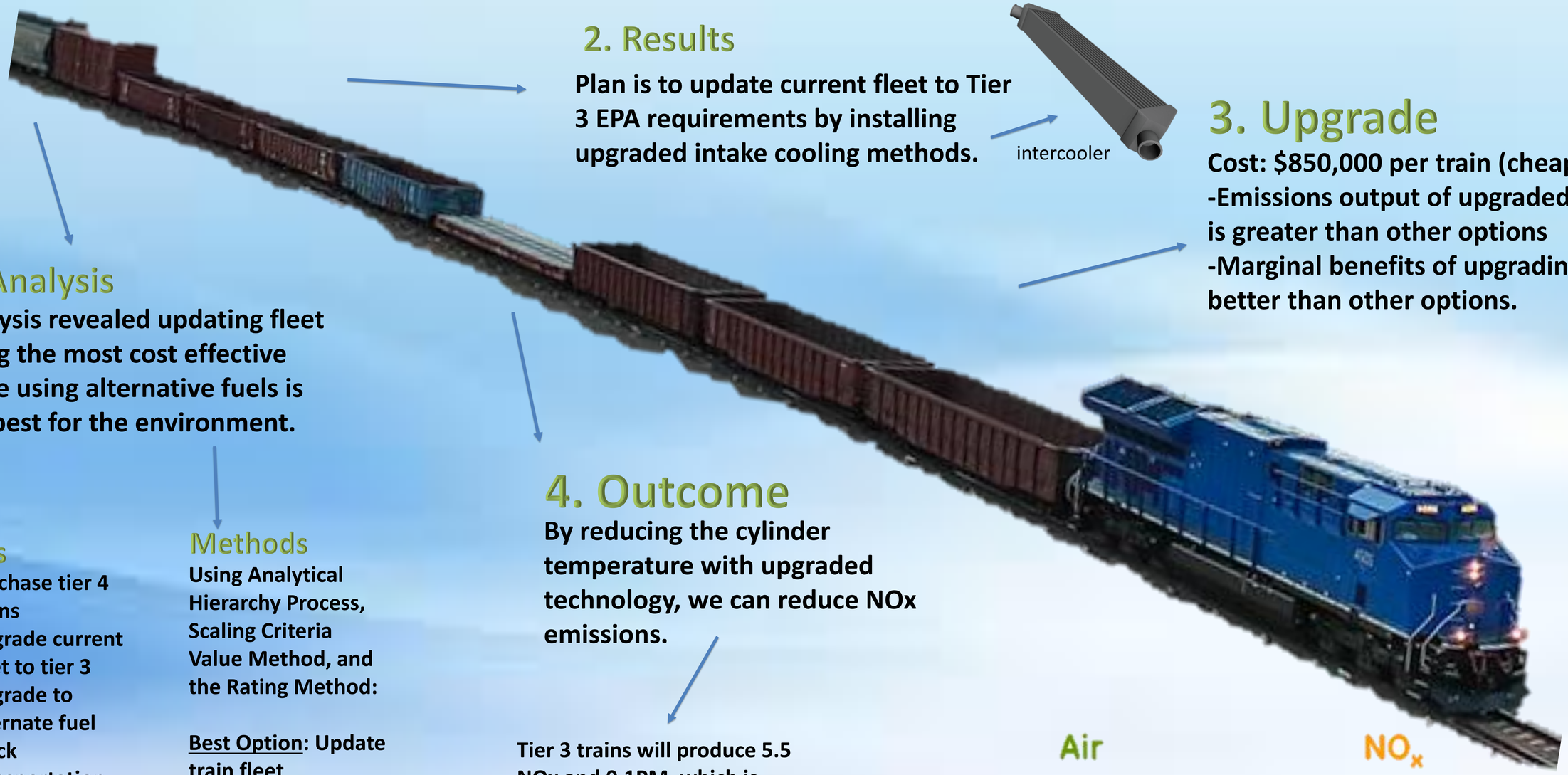
Collin Moyer, Tim Roehm, Hannah McGinley, Olivia Mroczko

Background

The Pittsdelphia route must continue to maintain EPA standards while still being cost effective.

Goal

To reduce emissions output while keeping costs low



2. Results

Plan is to update current fleet to Tier 3 EPA requirements by installing upgraded intake cooling methods.

intercooler

3. Upgrade

Cost: $850,000 per train (cheapest)
-Emissions output of upgraded trains is greater than other options
-Marginal benefits of upgrading is better than other options.

1. Analysis

Analysis revealed updating fleet being the most cost effective while using alternative fuels is the best for the environment.

Options

1. Purchase tier 4 trains
2. Upgrade current fleet to tier 3
3. Upgrade to alternate fuel
4. Truck transportation
5. Air transportation
6. Boat transportation

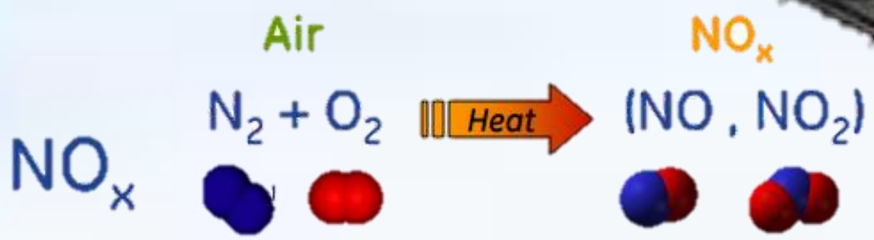
Methods

Using Analytical Hierarchy Process, Scaling Criteria Value Method, and the Rating Method:

<u>Best Option</u>: Update train fleet

<u>2nd Best Option</u>: Upgrade to alternative fuels

4. Outcome

By reducing the cylinder temperature with upgraded technology, we can reduce NOx emissions.

Tier 3 trains will produce 5.5 NOx and 0.1PM, which is significantly less than the existing tier 2 trains.