Let’s Drive the Future!

In recent years, the electric vehicle (Battery Electric, Plug-in Hybrid Electric, and Hydrogen Fuel Cell) market has surged dramatically as people seek to replace fossil fuels with alternative fuel sources. The electric vehicle market has evolved from golf carts and small cars to muscle cars, heavy-duty pickup trucks, and delivery vehicles. The current administration has set a target for electric vehicles to make up 50% of all new vehicle sales by 2030. A strategy to make this happen must include, at a minimum, an examination of these two areas: 1) Are electric vehicles the best choice for the future environmentally and/or economically? and 2) What infrastructure is necessary to facilitate the change?

Your team must research the costs and benefits of using electric vehicles, including direct costs to users and to the economy as well as costs to the environment. This research should enable you to perform a cost-benefit analysis on whether changing to an electric vehicle for a specific usage is feasible. Your team should use mathematical modeling to address the following in your solution:

- **Purpose:** Choose a specific purpose for an electric vehicle such as (but not limited to) the following: Uber/Lyft driver, Amazon/UPS delivery truck, personal use.

- **Practicality:** Using your chosen specific purpose, what adjustments to the current state of affairs are necessary to allow transitioning to 50% electric vehicles practical by 2030? Consider, but do not limit yourself to, the following areas: charging station infrastructure, maintenance costs, vehicle range/battery life, and charging time.

- **Environmental Impact:** Using your chosen specific purpose, what would be the environmental impact of switching to 50% electric vehicles by 2030? Consider, but do not limit yourself to the emissions/fossil fuels involved in the manufacturing and delivery process as well as raw materials required for batteries (mining, etc.)

- **Recommendation:** Using your chosen specific purpose, provide a realistic target minimum achievable level of electric vehicle sale shares in the U.S. by 2030, a timeline to reach this level, and any circumstances that may accelerate or hinder the achievement of your target and timeline.