I1.01 - EV Charging Infrastructure Planning Project

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PROBLEM STATEMENT

- As the availability of electric vehicles grows over the next couple of decades, so does the energy required to provide dependable charging for the fleet.
- The state of Texas needs to implement reliable, clean, and cost-effective charging infrastructure to conveniently power the growing EV fleet.
- Using distributed renewable energy to supply the power needed for charging stations is the key to achieving environmental sustainability and grid stability.

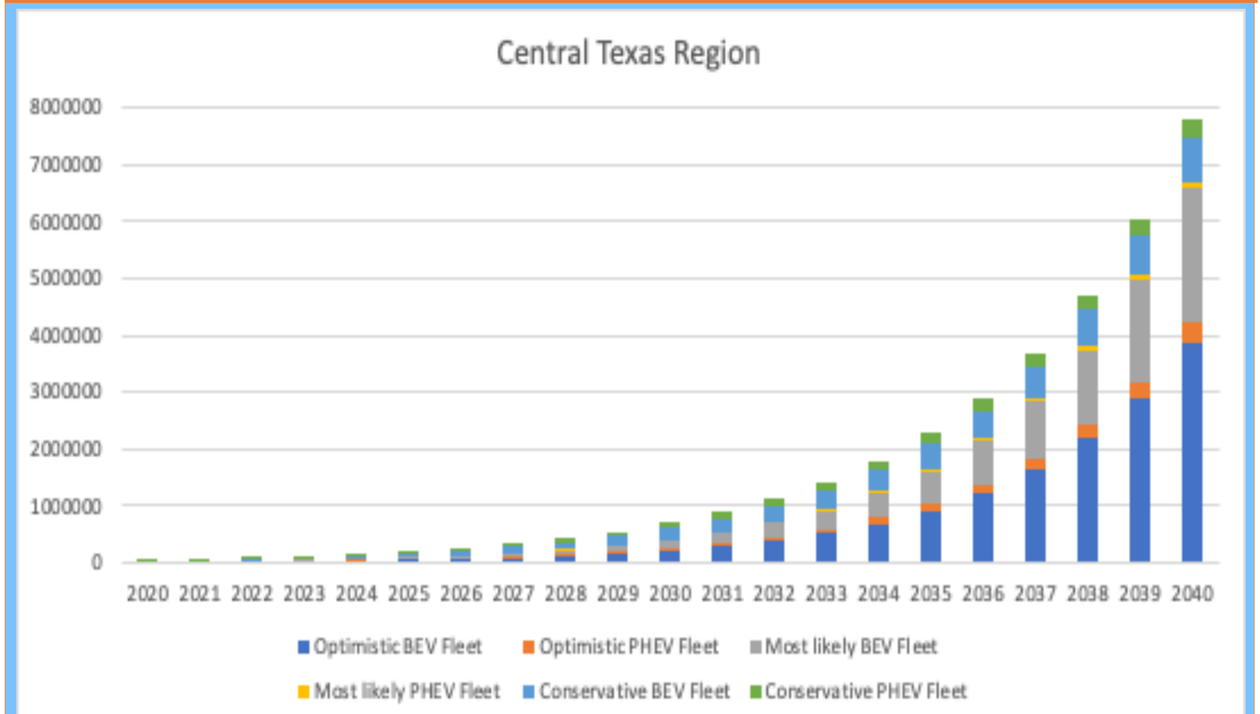
PROJECT PURPOSE

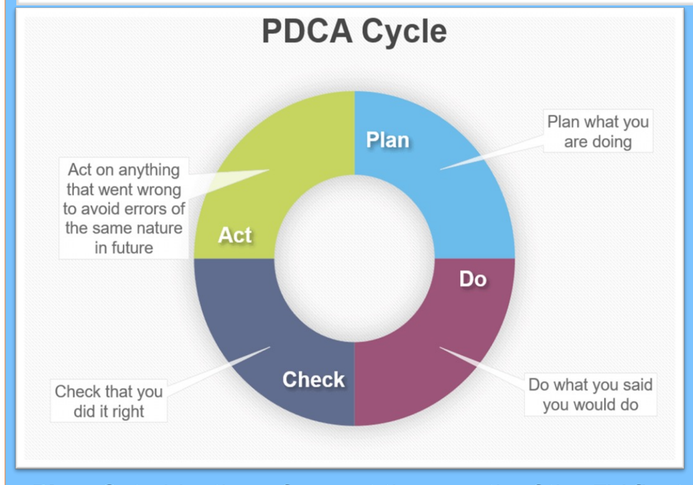
- Plan the first-ever, easy-access statewide EV charging network.
- The integration of wind or solar microgrid technology.
- Achieve energy independence and low carbon infrastructure operations.

BACKGROUND INFORMATION

- In the United States, 96% of energy consumed for the transportation sector comes from petroleum, 2.6% from natural gas, and less than 1% is in electricity, or other types of fuels.
- The development and production of electric vehicles are increasing to reduce our dependence on petroleum and natural gas the transportation industry.
- Electric vehicle charging infrastructures will eventually become a sustainable and long-term solution.

EV FORECASTED GROWTH USING AN EXPONENTAL MODEL FOR CENTRAL TEXAS





Plan: Set objectives, forecast the growth of the EV fleet in the state of Texas to establish a baseline for the charging infrastructure that will be needed through the year 2040.
Do: Utilize forecast data in software to effectively determine the required charging infrastructure needed in Texas.
Check: Run simulations and analyze results to discover if the power generation from the charging infrastructure will effectively support the EV fleet.
Act: Finalize results and propose the plan to implement reliable charging infrastructure to the state of Texas.

HUMAN FACTORS

- Faster charge time so less time is being spent at a charging station.
- Electric vehicle accessibility to chargers, easy to locate and find.
- Distance of chargers from the car, it should allow for the driver to charge without extra movements.

PROJECT OBJECTIVES

Forecast future size & growth of EV fleet in Texas by 2040

Design the charging infrastructure for Electric Vehicles in Texas that will efficiently sustain the power needs of EVs in Texas

Charging stations operate independently economically and ensure the return-on-investment of the state-wide charging infrastructure

Renewable sources of energy power the charging infrastructure

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TEAM

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