Electric Vehicle Infrastructure in Massachusetts

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**Project Goal:**
To create a set of recommendations for how the state of Massachusetts can develop adequate infrastructure to support electric vehicles.

**Background**
- EVs are the future green cars due to the problems with ethanol and hydrogen.
- Installing battery switching stations and charging stations is cheaper than installing gas stations.
- New methods for funding the Highway Fund need to be created.
- The federal government provides a $7500 tax credit on PHEVs and EVs.
- Charging stations, battery switching stations already exist, and General Electric is installing 600,000 by the year 2015.
- Other countries and regions of the world are switching over to EVs, including Israel, Denmark, and Australia.

**Summary**
- Electric vehicles will significantly penetrate the market unless there is a supporting infrastructure.
- The impact the proposal may have is that people will switch from gas-powered cars to electric vehicles.
- Research involved obtaining public opinion, analyzing market trends, an interview with a state official, and comparing data on gas stations, charging stations, and battery switching stations.
- Between 8,000 and 10,000 EVs will be on the road by the year 2020 in Massachusetts, and that in order to support that many vehicles, there needs to be 12,000-15,000 public electric vehicle refueling stations in the form of charging stations or battery switching stations.
- Other countries and regions of the world are switching over to EVs, including Israel, Denmark, and Australia.

**Conclusions/Recommendations**
- Massachusetts will need 12,000-15,000 public charging stations or battery switching stations installed in order to support 8,000-10,000 electric vehicles that are predicted to be on the road in Massachusetts by the year 2020.
- Public stations should be installed in areas such as commuter rail/MBTA parking lots, shopping malls, and major businesses.
- The state should look into joining Project Get Ready and ChargePoint America to receive educated assistance for building infrastructure.
- Massachusetts should keep the tax incentives relating to EVs in place until battery technology improves significantly or until the cost of EVs is equivalent to a gas-powered vehicle.

**Survey Results**

**EV Sales Projections**

**Methods/Process**
- Surveyed 554 people from WPI and across the country.
- Analyzed the market trends of PHEVs and extrapolated the findings to estimate the predicted number of EVs on the road by 2020.
- Interviewed Linda Benevides (EOEEA) to find out what is currently happening in MA in terms of building EV infrastructure.
- Compared and contrasted Gas Stations to Charging Stations to Battery Switching Stations.