

## Pasadena Water and Power Scholarship

Accessible energy is one of the many facets of life in the United States that is taken for granted by a majority of the citizens of the nation. Constantly, whether we are aware of it or not, utilities, refrigerators, cellular technology, medical equipment, televisions, radios, transportation, heaters, air conditioners, and although obvious, the lights we use to illuminate our homes, consistently operate seamlessly without much thought to the electrical systems that power it. In my personal life, a majority of my electricity usage is a given, and I am privileged to seldom have concerns regarding whether or not I will have access to it. In my community of Pasadena, we see these same power usages on a larger scale. Electricity powers streetlights, electric transportation such as our Metro buses and trains, provides essential services for homes and businesses, hospitals and research laboratories are powered for their computers, equipment, and the required systems to study far galaxies or diagnose a patient. All of this being said, it would be impossible for the city of Pasadena to function without the power infrastructure to help operate our complex and involved community. While my community and home is privileged to have such easy access to electricity and power systems, many places globally do not have the same luxuries. In developing countries, reliable electricity isn't always readily available, and even when available, it is not necessarily financially feasible. This dictates much of the abilities for more rural regions to engage in commerce and similar technological advancements to the US, as electricity is a necessity to even begin to approach a larger scale of production.

The advantages of electrification extend from individual homes throughout Pasadena to the broader scale of powering the city. Most importantly, the investment towards a complete shift to electrification would have a lasting impact on reducing Pasadena's carbon emissions and fossil fuel usage. Pasadena's lush mountains, creeks, and forests underscore the importance of clean

energy in our wild urban interface environments. Additionally, with continuous concerns of natural disasters brought forth by warming temperatures globally, it is now more crucial than ever to have reliable power sources in the case of an emergency. The combination of electrification's benefits all contribute to a more sustainable, reliable, and successful community. This being said, there are challenges that coincide with increasing the electrification of Pasadena. Expanding the electrification of the city would lead to a larger demand on the power grid. While changing the narrative of our power supply would equate to better grid management, it is imperative that our systems are prepared for the shift and can be adapted to adjust to a change in demand without putting too much strain on the community with outages. While it is of extreme importance to have efficient energy sources, it is also critical that there is affordable access to such resources.

Germany is a strong leader in their renewable energy sources, with 45% of their energy being a renewable source as of 2019 ("Energy Resource Guide - Germany, 2019"). In implementing strong wind, solar, and hydroelectric power systems, they have employed hundreds of citizens to sustain such work, and are on their way to meeting the goal of net zero by 2045. The primary way Germany has been able to move so quickly and efficiently in such drastic changes to phase out coal, is due to their heavy legislative changes and reforms. To even begin to replicate such changes in the US, it's critical that there is support from the government to move forth with putting money towards renewable energy efforts that can support full electrification of cities.

Canada's Smart Grid (SG) Program holds an objective to develop smart grids for the benefit of new economic and social growths as well as to reduce greenhouse gas emissions. Their SG Program consists of twenty one projects including microgrids (which autonomously operate

outside of the bounds of a traditional power grid, withstanding disruptions from a larger power grid system), power distribution updates to infrastructure, and a multitude of smart grid systems in urban centers (*SMART GRID Program Overview, n.d.*).

Pasadena Water and Power has made a big push to encourage Pasadena residents to be thoughtful and informed about electrification in the city. The Residential Electric Vehicle (EV) Incentive Program that makes residents eligible to rebates up to five hundred dollars for qualifying cars that help move towards a national goal of fully electric vehicles . Additionally, rebates are available for installing a qualified Electric Vehicle (EV) charger, changing your appliances in accordance to EPA's designated Energy Star ratings, updating your heating and cooling systems to keep them energy efficient, wall and ceiling insulation to fight wasted energy on heating and cooling the home. The implemented initiatives and programs are a strong supporter in sustainability for homeowners in Pasadena and show the city's dedication to making the necessary changes of our city in correlation with the changing environment and electrical systems in place ("Save Energy | Pasadena Water and Power").

## Works Cited

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