

Recommendation for the Palo Alto Airport on the use of Solar Panels Based on Case Studies



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INTRODUCTION

Abstract: The Palo Alto airport needed a plan to become more energy efficient. Through the examples of two case studies on Walmart and Alice Springs Airport in Australia, evidence on the efficiency and use of commercial solar panels was found. After the collection of the annual energy usage of the airport over a two year period of time, the case studies could be applied to the airport. Commercial solar panels only produce 15-20% of the daily energy use for both the Alice Springs Airport and Walmart, therefore, the Palo Alto airport could not rely solely on solar panels. The recommendation for the Palo Alto Airport is to install solar panels in the side area of the airport to produce energy for the airport terminal.

Background

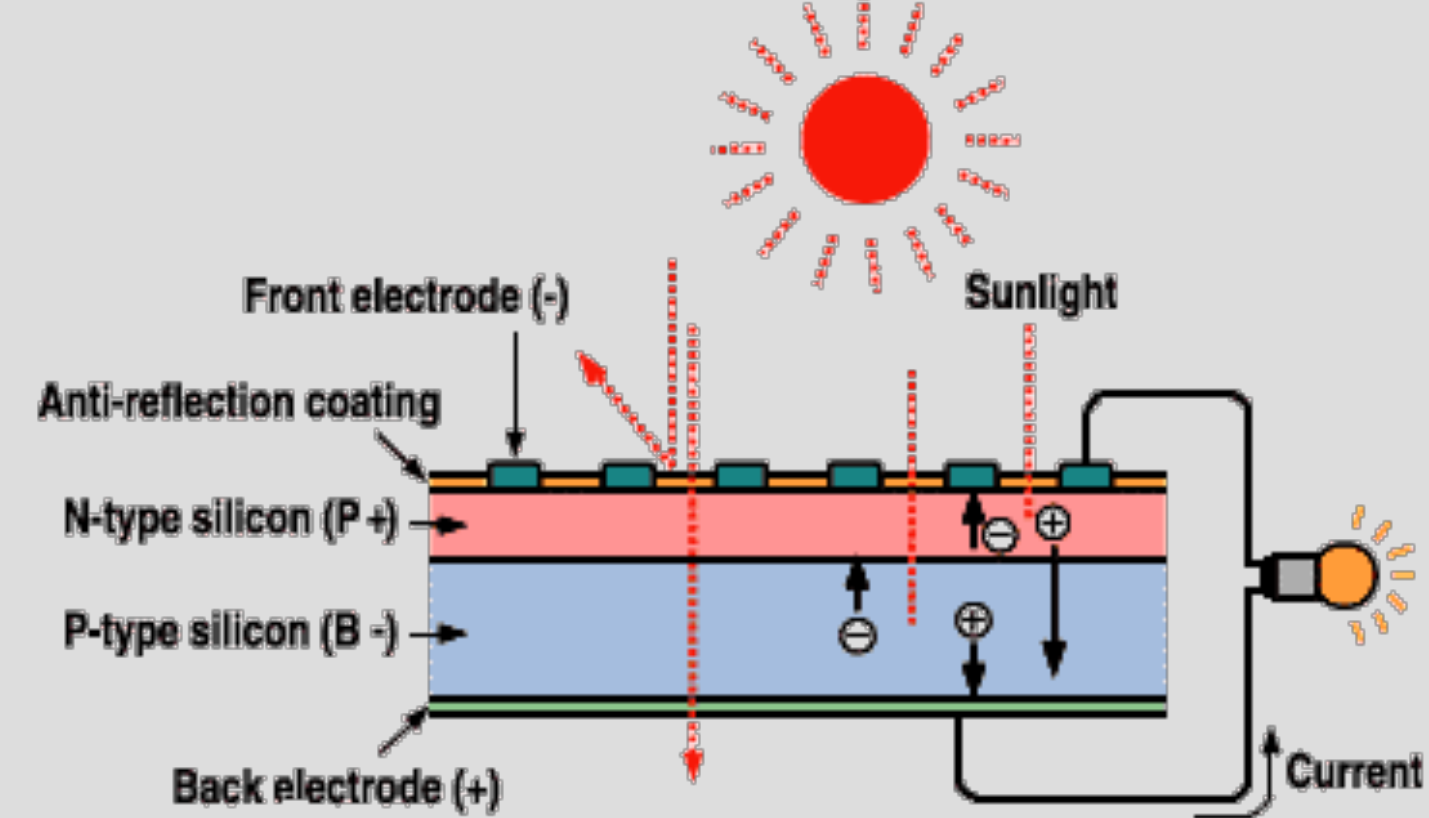
About the Airport



- Recently returned back to the City of Palo Alto
- 10th largest single runway airport
- Single runway: 2443 x 70 feet
- Current State: Does not meet FAA guidelines
- Wants to have t-shades

How Solar Panels Work:

Diagram 1. The photovoltaic effect



Solar Panel T-shades for car parking. The airport wants to implement a similar design for airport parking.

Case Studies

Case Study 1: Walmart -- In 2007, Walmart pledged to become more energy efficient by using solar panels.

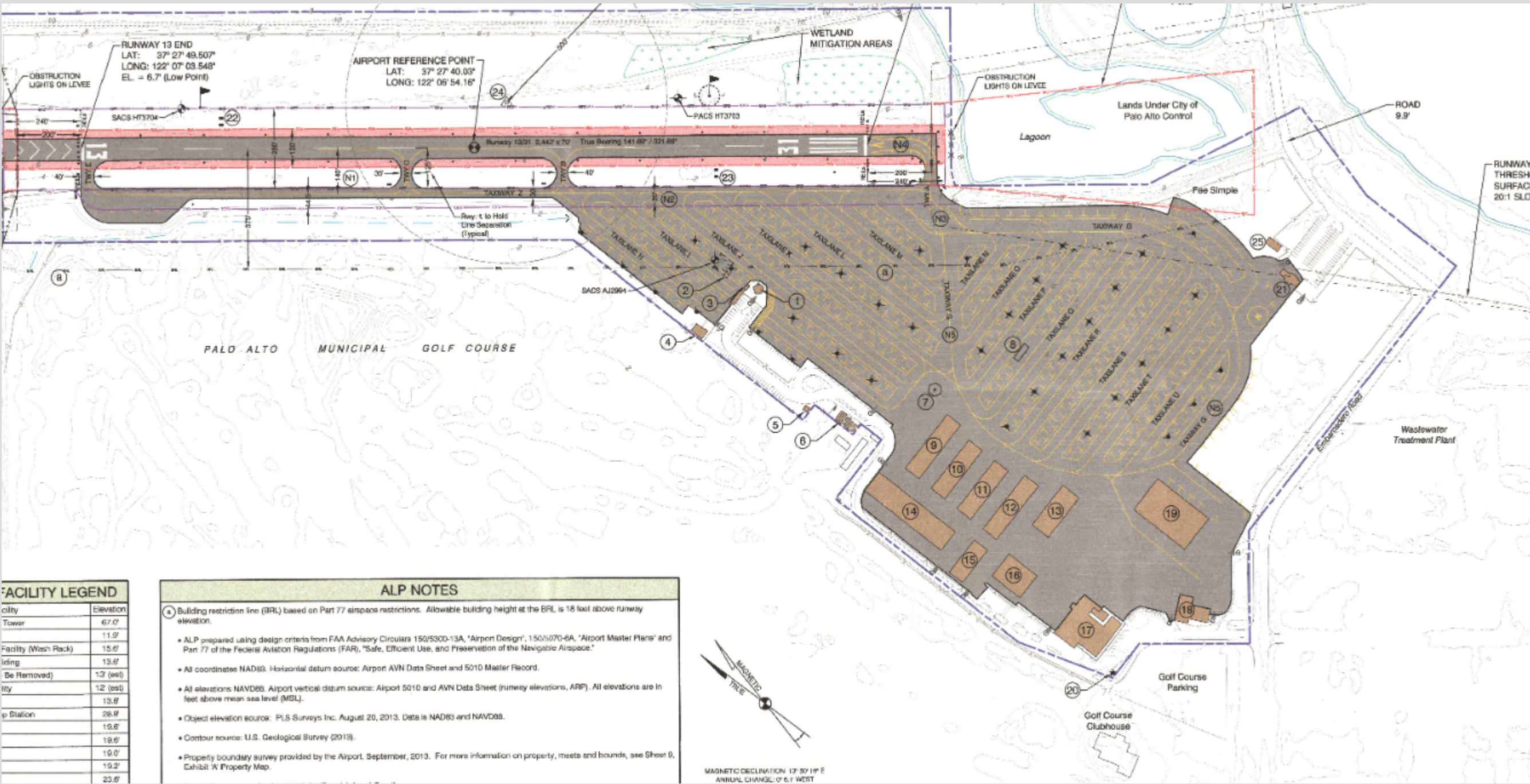
- Stores make 15-20% of daily energy use
- Promotes a better public image
- Working energy model



Based on these case studies, we can see that there is not a previous example on t-shades for airplane parking. These case studies, however, do provide a model for how the airport can use solar panels in the airport. Based on more research into solar panels companies, there are also multiple approaches to installing solar panels. Businesses can pay for the energy they use instead of paying for the solar panels upfront. These contracts usually last for 20 years.

Data:

	kWh in 2015	2016
Jan	54402	55082 kWh
Feb	47195	38620
Mar	46911	45190
Apr	43466	43233
May	47743	46040
Jun	45341	43798
Jul	53390	47107
Aug	53979	47372
Sep	49626	45984
Oct	48981	45913
Nov	47223	45882
Dec	50787	52659



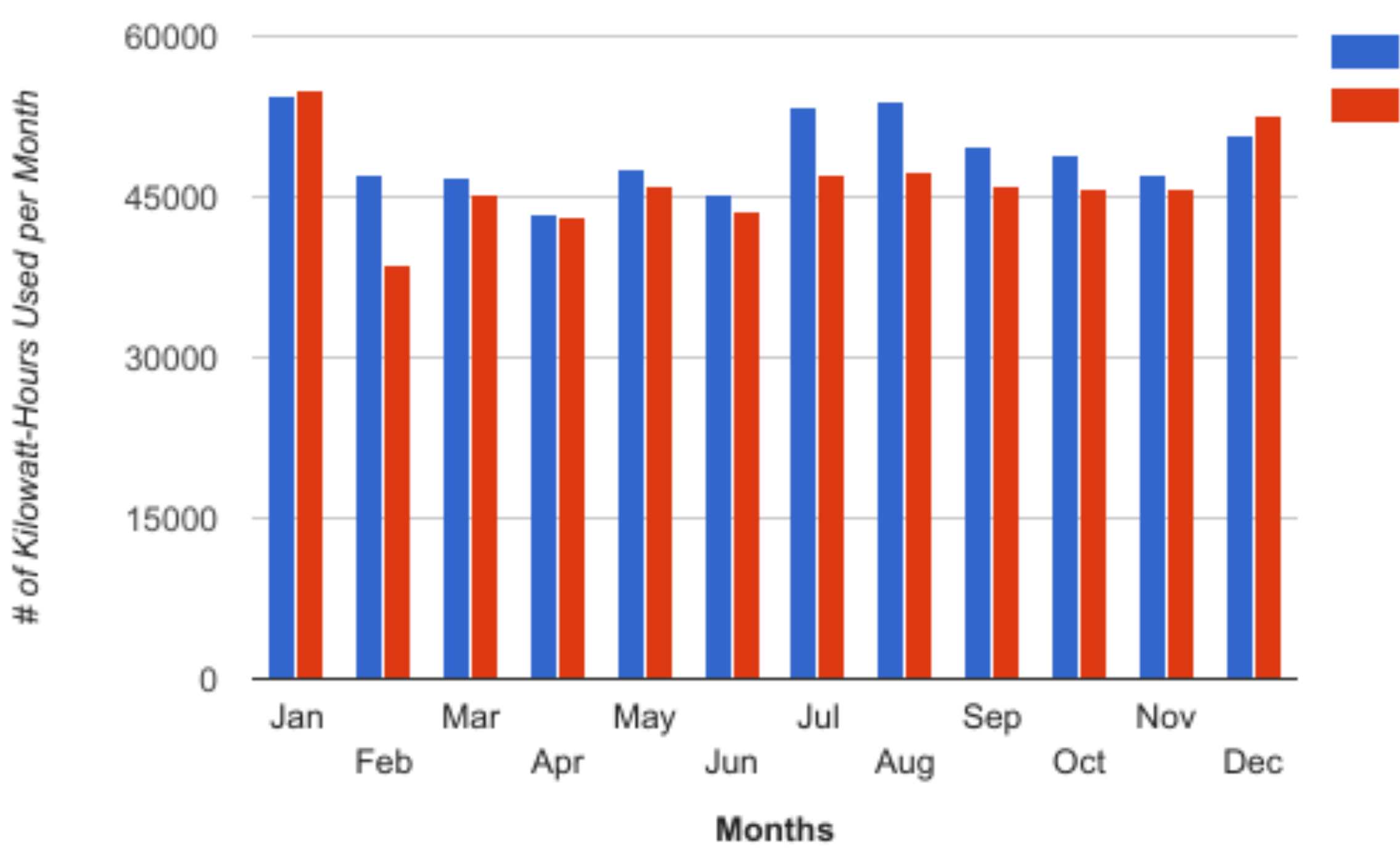
Palo Alto Airport Map

Works Cited:

Case Study 2: Airport in Australia using T-shades for Car Parking -- This case study correlates directly with what we hope to see in the airport: t-shades. The airport wants to use t-shades for airplane parking



Monthly Airport Energy Usage over 2 years



This data shows the monthly energy usage of the airport in kilowatt hours. Based on the graph and data table, we can see that the energy usage of the airport stays fairly consistent over the two year period. Some discrepancies may be due to the weather or the amount of air traffic in a given time period.

Recommendation for the Airport: I would recommend that the airport install solar panels in two phases: Phase 1) Install solar panels in the side lot to power the air traffic control tower and the airport terminal. Phase 2) Install t-shades in the airplane parking to power the rest of the airport.

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