

Ways of Going About Determining Backup Power Options for Homes in California

James Ziebell
California Polytechnic State University
San Luis Obispo, California

Deliverables

Through this project, a step-by-step procedure will be developed that homeowners in fire prone areas can follow in hopes of finding the most effective backup power solution for their home. Additionally, homeowners will be provided with an Excel sheet that will help them in deciding on a backup power option for their home. The other deliverables for my project are an electricity usage breakdown of the two homes, a Tesla Powerwall breakdown, and lastly a price breakdown of the backup power options for the two homes.

Table 5: Excel sheet for homeowners to use to determine usage and Tesla Powerwall requirements

Month	Daily Average Usage (kWh)	Monthly Usage (kWh)	Daily Average Generated (kWh)	Monthly Generated (kWh)	New Average Daily Usage W/ Daily Average Generated (kWh)	New Monthly Usage W/ Monthly Generated (kWh)
Month 1	0.00		0.00		0.00	0.00
Month 2	0.00		0.00		0.00	0.00
Month 3	0.00		0.00		0.00	0.00
Month 4	0.00		0.00		0.00	0.00
Month 5	0.00		0.00		0.00	0.00
Month 6	0.00		0.00		0.00	0.00
Month 7	0.00		0.00		0.00	0.00
Month 8	0.00		0.00		0.00	0.00
Month 9	0.00		0.00		0.00	0.00
Month 10	0.00		0.00		0.00	0.00
Month 11	0.00		0.00		0.00	0.00
Month 12	0.00		0.00		0.00	0.00
Average	0.00	0.00	0.00	0.00	0.00	0.00

Tesla Powerwall - Required						
Home	Tesla Powerwall Capacity (kWh)	Minimum Daily Usage (kWh)	Average Daily Usage (kWh)	Maximum Daily Average (kWh)	Minimum Required Powerwall(s)	Required Powerwall(s) For Average Usage
Home	13.5		0.00		0.00	#DIV/0!

Conclusion

The main goal and purpose for this project was to ensure that homeowners with no prior expertise in backup power are able to determine the best option for their home. The Excel sheet and step-by-step process that have been developed will allow homeowners that reside in the state of California and beyond to make an educated and informed decision when they decide on a backup power option for their home. Throughout the duration of this project, the lessons learned were very beneficial in the realm that they ultimately made the Excel sheet and step-by-step process more user friendly and beneficial. In the end, this project was successful and most importantly became a useful tool that will benefit people in need of backup power for their home.

Backup Power Options For The Two Homes

Backup Power Options	Home 1	Home 2
Tesla Powerwall	\$10,500.00	\$17,000.00
Generator	\$15,000.00	\$15,000.00

The Powerwall quotes were gathered from visiting SolarReviews, in which the quotes include material and labor. Whereas the generator quotes including material and labor were gathered from a local electrical contractor in addition to HomeAdvisor and fixr.