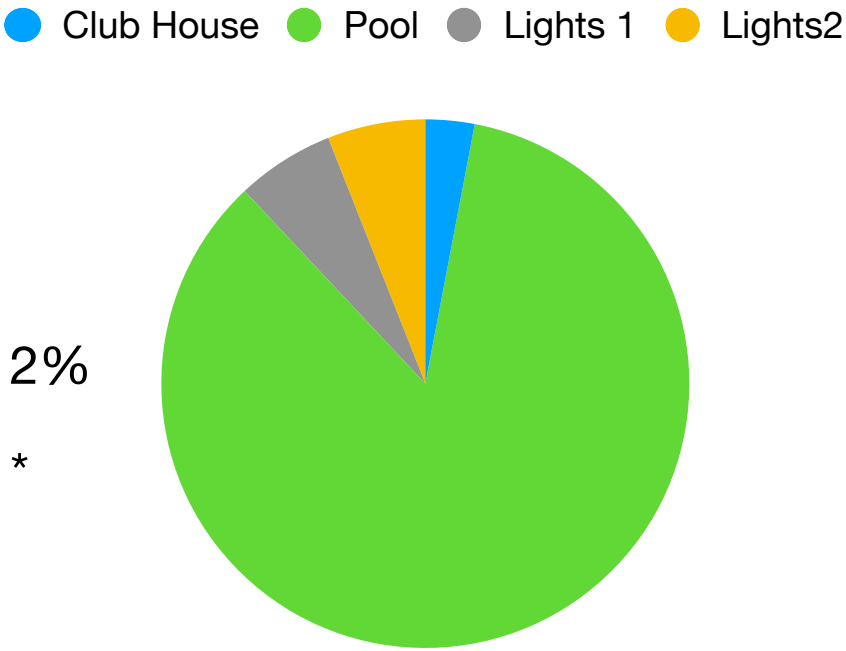
Canon Del Sol - HOA Solar Analysis

Analysis and Recommendations

Bob, Colin, and David - version 0.76 - 1:15 pm Dec. 4th, 2021

Annual PG&E kWh Analysis

- 4 PG&E Meters/Accounts
  - (#1) Clubhouse - Est. 3%
  - (#2) Pool - 85% (not heating - just kWh)
  - (#3 & #4) Street Lights & Irrigation - Est. 12%
- Annual kWh Usage is **dominated** by Pool - *
  - 30,061 kWh Max (year 2013 - $8,657)
  - 28,752 kWh Median
  - 25,447 kWh Minimum (year 2019 - $7,788)



* - (2020/2021) pandemic years excluded - not representative

CDS Solar System Goals

- 2012-2019 usage data and estimates show (33,508 kWh annually) - 4 meters combined
  - electrical panel upgrade required for more production
  - 32,132 kWh annual system (55 panels - 20,350 kW) is most we can handle
- Such a system would “wipe out” 9x% usage and offset $10,380/annual PG&E kWh billings for the combined 4 meters
  - Median 2012-2019 billing rates used for calc’s (pandemic years excluded - shut down)
  - PG&E rates won’t stay fixed…
  - minimize annual bill for what ever production short fall we experience
    - (~2,000 kWh annually would be an educated guess) - PG&E cheapest power - no tier 1 or 2 costs

Bids Obtained to date

- 2 Local bids obtained - Alterra Solar & Day One Solar
  - (3rd is requested from two vendors - no response so far - SunPower & Moreno Solar)
- Alterra Solar - $78,700 - 32,133 annual kWh ($0.13 kwh cost - 8.1 year breakeven)
- DayOne Solar - $72,684 - 34,964 annual kWh ($0.09 kWh cost - 7.5 year breakeven) - * too big?
- 2012-2019 avg. PG&E Cost/kWh is ($0.3069/kWh)…
- 25 year warranty on solar panels - 10 years on inverters - 10 years roofing - industry standard
- Alterra bid preferred due to superior equipment choices and high quality personal experience with vendor (both bids include US manufactured Solar Panels & Santa Cruz local solar companies)
  - Alterra also did a detailed site visit and high confidence no “surprise” extra costs bid…
  - Both bids are “turn key” - all permits, applications, install, electrical, roofing, etc…

Bottom Line Summary

Based on 2012-2019 actual PG&E Pool usage

- The Pool uses 28,000 to 30,000 kWh/annually - it's consumption is the main cost
  - The other 3 meters almost don't matter
- We're spending over $10,000/year on Electricity on all 4 meters
- A solar system costs $78,000 to cover nearly all annual usage
- Simple analysis equals 8 year pay back worsecase
  - Any future PG&E rate increase would accelerate payback
- 25 year life of the solar system is minimum $162,438 total savings
  - more savings if you assume future rate increases…

Next Steps

- Consolidate billing rate of 4 PG&E accounts for “virtual” net metering
  - all 4 bills need to be on same PG&E “rate plan”
  - Bob this is in progress?
- Choose a vendor - both are booking Feb-April 2022 install dates - so we need to get going to hit NEM-2 deadlines for PG&E applications- see below…
  - Approve initial deposit for Solar Vendor w/NEM2 required rider (if we don’t get NEM2 we get a refund).
  - Alterra - $1000 deposit (refundable) until final design & permits pulled - NEM2 contingent
- 3rd bid is unlikely to be lower than Day One - and I think Alterra will do the best job with the best equipment.

Details

[DATA] - 10 Years of PG&E Pool kWh Data

8 Years analyzed - pandemic years excluded (not representative)

8 Year Analysis of CDS Pool House Costs

Year	Annual kWh	Annual Cost	Avg. Cost/kWh	Avg. Daily kWh	Avg. Daily Cost
2012	29,510	$8,237	$0.2791	83.6190	$23.34
2013	30,061	$8,657	$0.2880	84.9423	$24.46
2014	28,795	$8,187	$0.2843	81.5922	$23.20
2015	29,166	$8,036	$0.2755	82.9327	$22.85
2016	28,708	$9,837	$0.3427	81.3227	$27.87
2017	27,394	$9,489	$0.3464	77.7342	$26.93
2018	28,256	$9,411	$0.3331	80.0122	$26.65
2019	25,447	$7,788	$0.3060	71.9080	$22.01
2020	17,355	$4,311	$0.2484	49.1674	$12.21
2021	19,063	$5,604	$0.2940	65.0726	$19.13
2021 Estimated	22,876	$6,725	$0.2940	78.0871	$22.96
2012-2019 Avg	28,417	$8,705.28	$0.3069	80.5079	$24.66
2012-2019 Median	28,752	$8,447.18	$0.2938	80.6674	$23.27
Estimated 4 Meters	33,825	$10,380.63	$0.3069		

Data says - Pool is dominate…

- Pool House Usage 2012-2019 year Averages & Median
  - Average - 28,417 kWh Annually
  - Median - 28,752 kWh Annually
- Pool is 85% of usage across the 4 meters
  - 4 meters = 28,482 / 85% = 33,508 kWh target for “wipe out”
  - 2012-2019 price per-kWh = $0.3069 totaling $10,380.63 **combined** estimate annually for all 4 meters
  - *Assumptions*: Pool = 85% usage, 2012-2019 avg. price/kWh

25 Year Cost Estimates…

- Estimated 25 year production @ 0.5% degrade = 823,610 kWh total production
- PG&E value of kWh Production @ fixed 2021 per/kWh rates = $242,138
- PG&E value of kWh Production @ 2% year rate increase = $308,638
- System Cost ~$79,000
- Estimated Savings over 25 years
  - flat 2012-2019 avg. rate = $163,438 ($6,538 year - 8.31% annual ROI)
  - 2% rate increase = $243,473 ($9,739 year - 12.37% annual ROI)

ROI Calculated by: Yearly_Savings / System_Cost