APPENDICES BUILDINGS BASELINE STUDY

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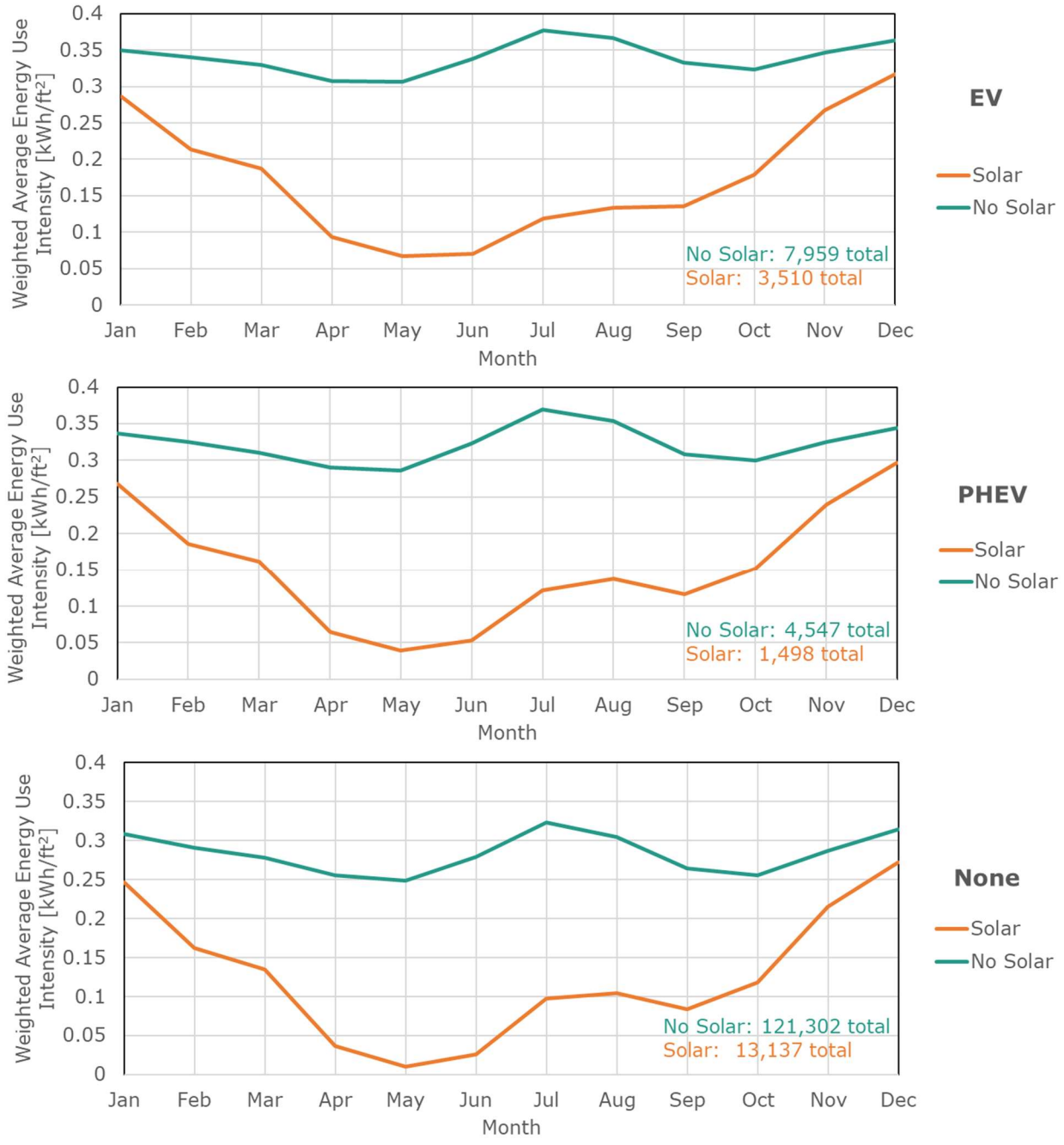
Appendix A: Residential EUI Versus Solar and EV Adoption

The electricity EUI was calculated for each month for single-family homes for the SVCE electricity accounts that were successfully matched to a parcel.[1] The resulting electricity EUI, as a function of existence of solar and vehicle type registered at the address, is shown in the figures below.[2]



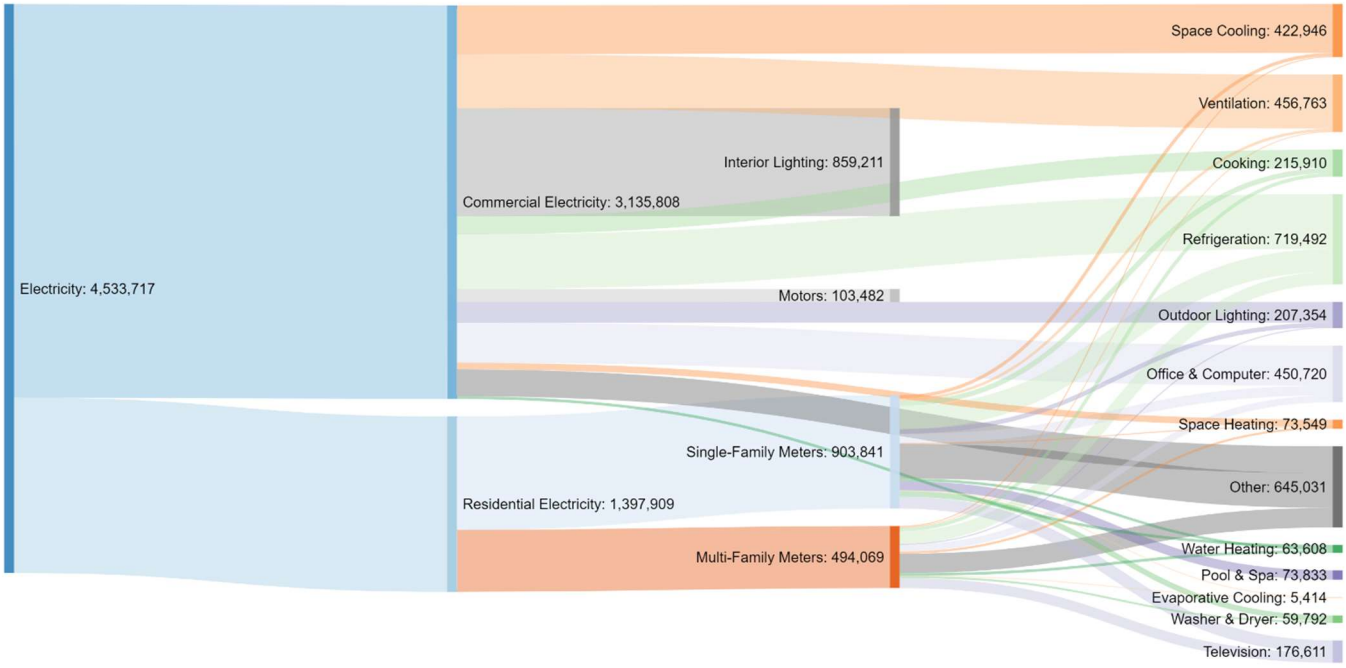
[1] Condos were not plotted in this figure due to there being only a few condos that were matched to an account with solar.
[2] The combined EUI of multiple buildings is calculated using the weighted average (by square footage) of the EUIs of each building.

As shown in the figures above, solar customers have a very different monthly electricity EUI profile compared to non-solar customers. The figure above shows that solar residential customers have the lowest electricity EUI in the summer months, while non-solar residential customers have increased electricity EUIs in the summer months. This has implications for seasonal trends in net electricity consumption as a function of solar PV adoption.

Non-solar customers with an electric vehicle tend to have an annual electricity EUI that is approximately **14% to 20% higher** than non-solar customers with no electric vehicle. Solar customers with an electric vehicle tend to have an annual electricity EUI that is approximately **22% to 37% higher** than solar customers with no electric vehicle. These trends give a sense of the increased electricity demand due to home EV charging.

Appendix B: Electricity Consumption Disaggregation

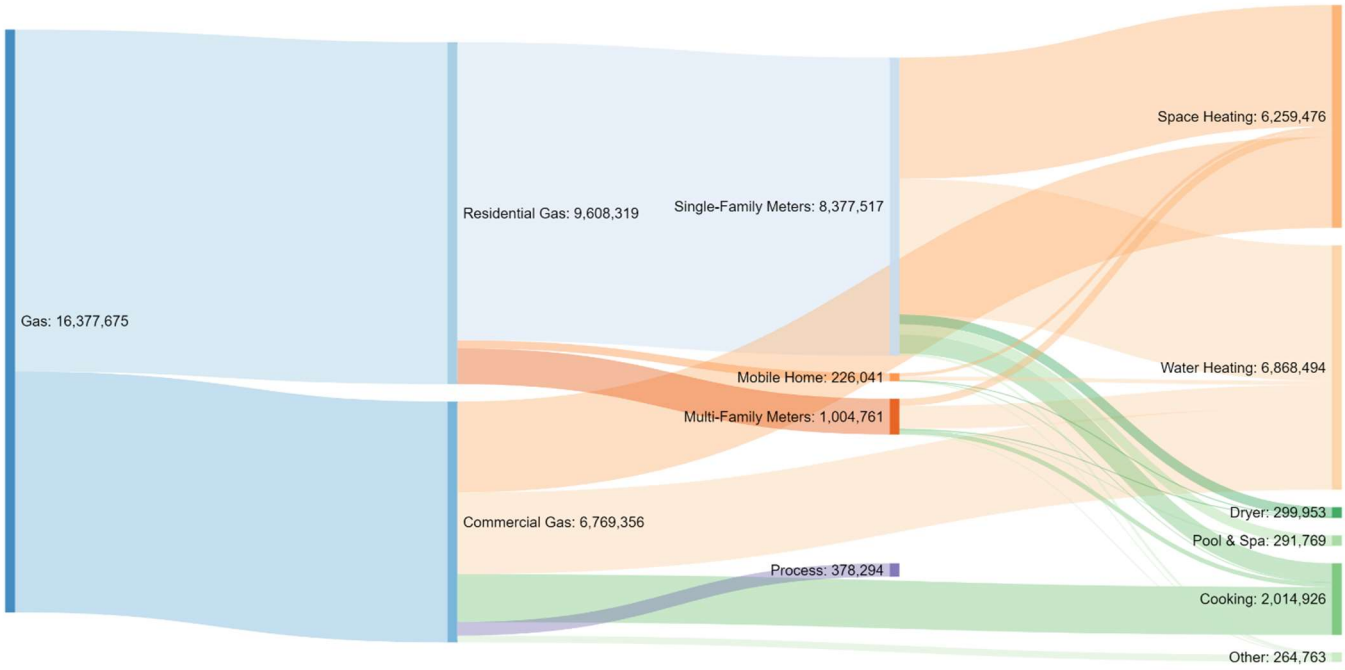
The figure below shows residential and commercial building electricity [MWh] end-use consumption patterns in SVCE territory in 2018.[3,4] In the following figure, single-family meters consist of single-family homes and townhomes; multi-family meters consist of condos and multi-unit dwellings.



[3] Includes T&D losses and excludes EV charging.
[4] Approximately 30% of residential electricity load is not categorized. It is also important to note that the residential (RASS, 2009) and commercial (CEUS, 2006) end-use surveys that the figures are based on predate the widespread adoption of LED lighting. The updated RASS and CEUS surveys are expected to be completed in June 2020 and March 2021, respectively—therefore, there will likely be significant changes in end-use fractions after the next survey update.

Appendix C: Natural Gas Consumption Disaggregation

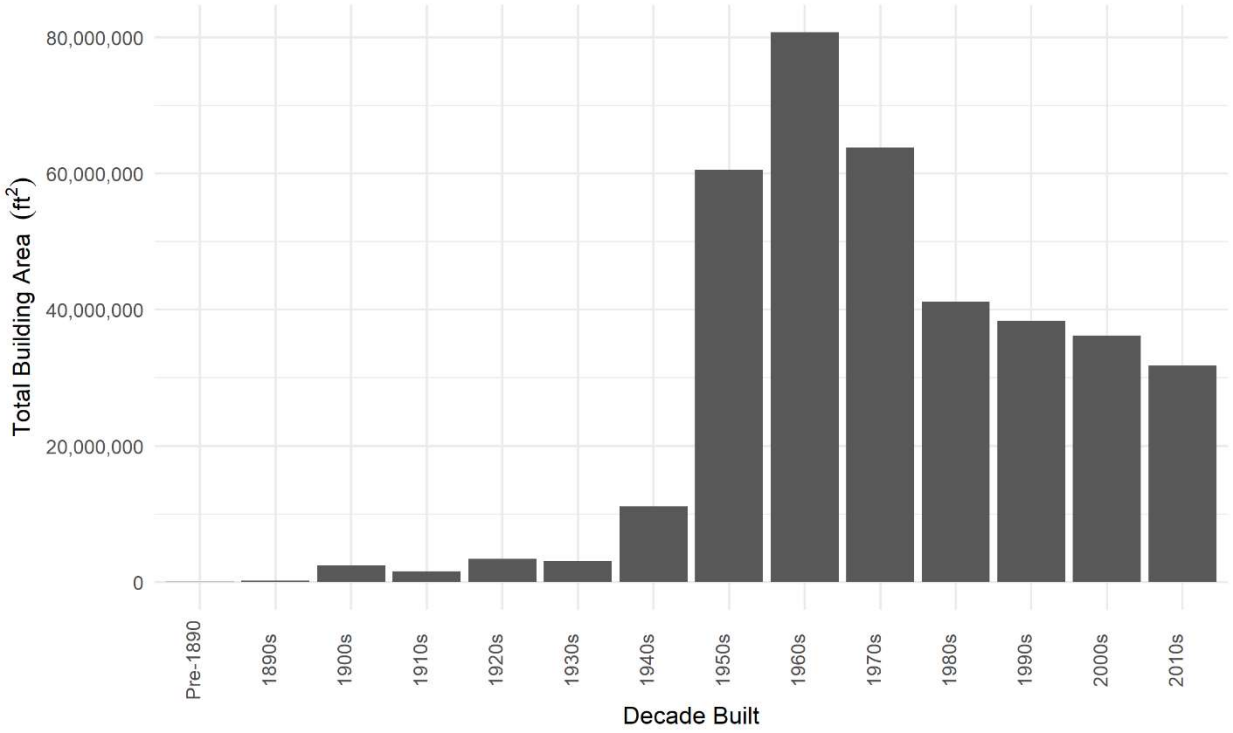
The figure below shows residential and commercial building natural gas [MMBtu] end-use consumption patterns in SVCE territory in 2018.[5] Water heating and space heating make up **80%** of overall natural gas consumption. In the following figure, single-family meters consist of single-family homes, townhomes, and condos; multi-family meters consist of multi-unit dwellings.



[5] Excludes fugitive emissions.

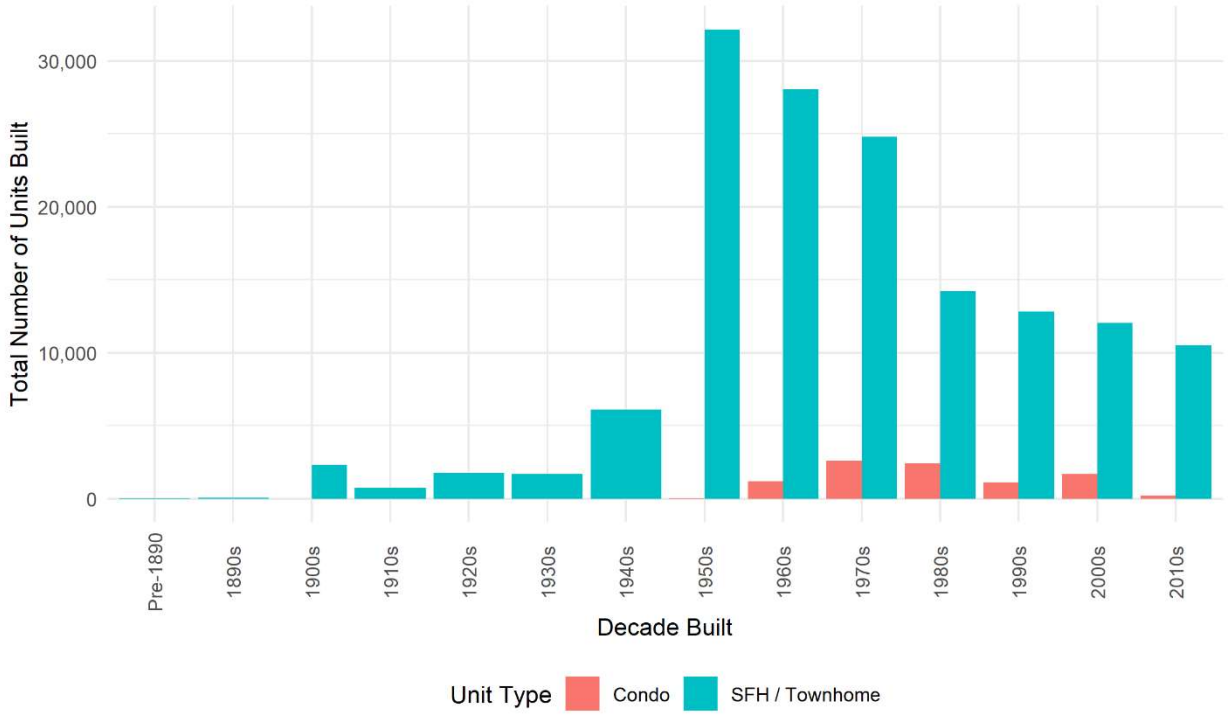
Appendix D: Residential Square Footage by Decade Built

The following figure shows the total residential square footage (both single and multi-family) in SVCE territory by construction decade, after removing outliers. A large percentage of residential square footage was constructed in the 1960s.



Appendix E: Single-Family and Condo Units by Decade Built

The following figure shows the total single-family home/townhome and condominium unit count in SVCE territory by construction decade, after removing outliers. Most condos were built after 1960.



Appendix F: Multi-Family Units and Parcels Built by Decade

The following figure shows the total number of multi-family (apartment) units in SVCE territory built by decade, as well as the total number of *parcels* developed. This shows that new multi-family dwellings typically have more units than older multi-family dwellings. A large percentage of multi-family parcels and units were developed in the 1960s.