

# METRICS MATTER:

## Exploring the Performance of Single Family Homes Using Energy and Carbon Metrics

Margaret Pigman

RESOURCE ■  
REFOCUS ■■

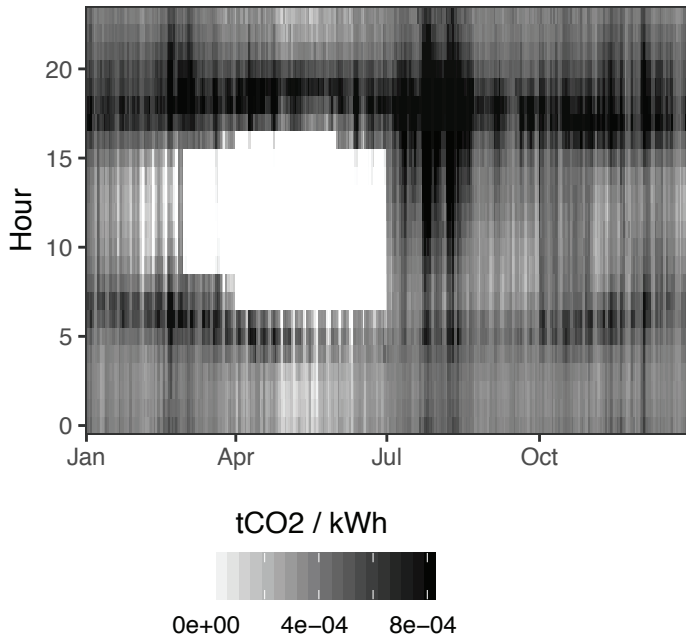
# METRICS

	Energy	Carbon
Annual, flat multiplier	<ul style="list-style-type: none"><li>- Site</li><li>- Source</li></ul>	<ul style="list-style-type: none"><li>- Annual average</li></ul>
Hourly or sub-hourly multiplier	<ul style="list-style-type: none"><li>- Time dependent valuation (TDV)</li></ul>	<ul style="list-style-type: none"><li>- Average</li><li>- Marginal</li></ul>

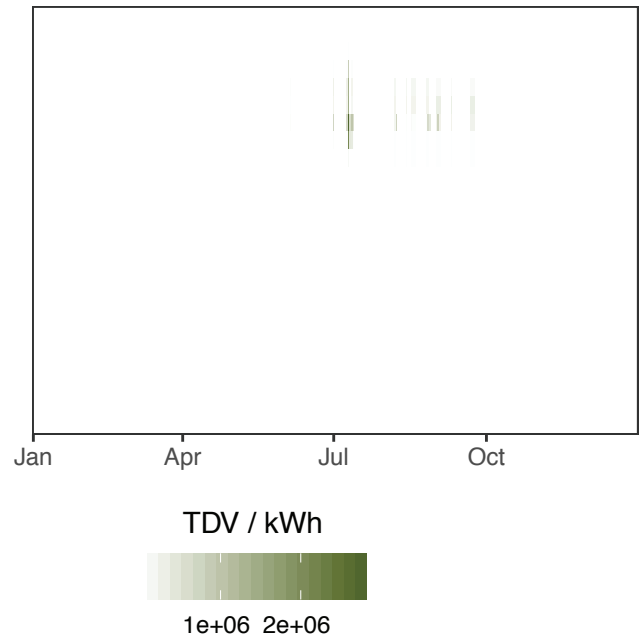


# HOURLY CARBON & TDV

2019 Marginal Carbon



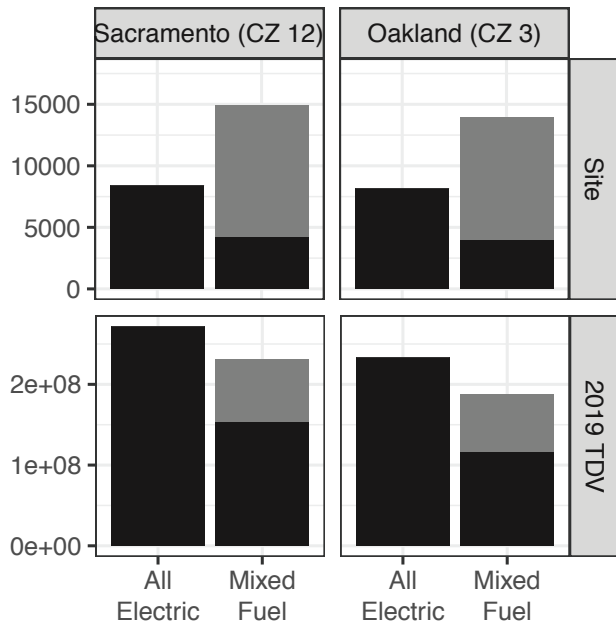
2019 TDV – CZ 12



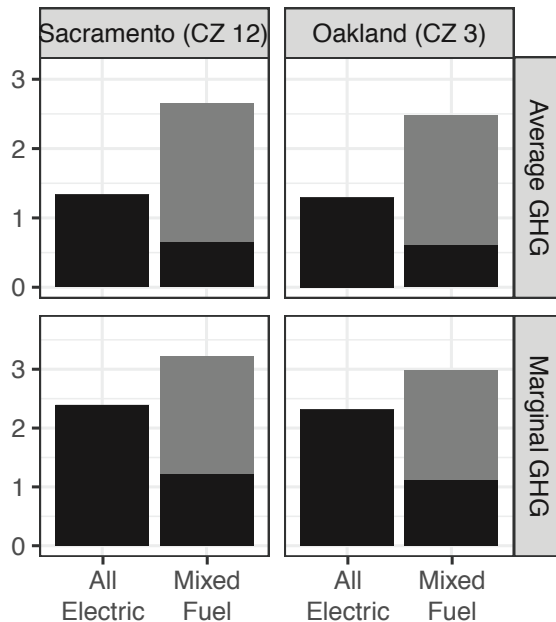
# ALL ELECTRIC VS MIXED FUEL

## Single Family, 2019 Prescriptive Packages

Energy and TDV

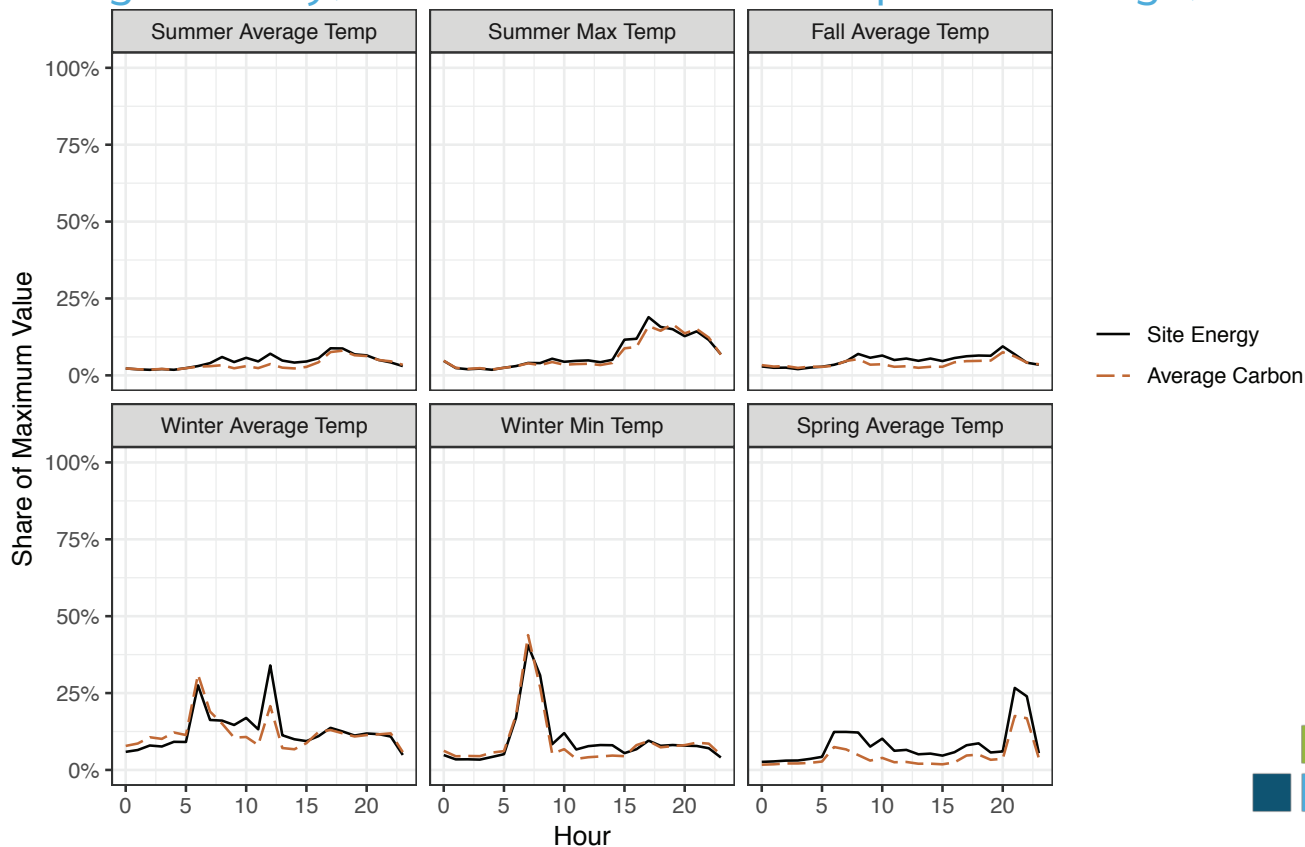


GHG



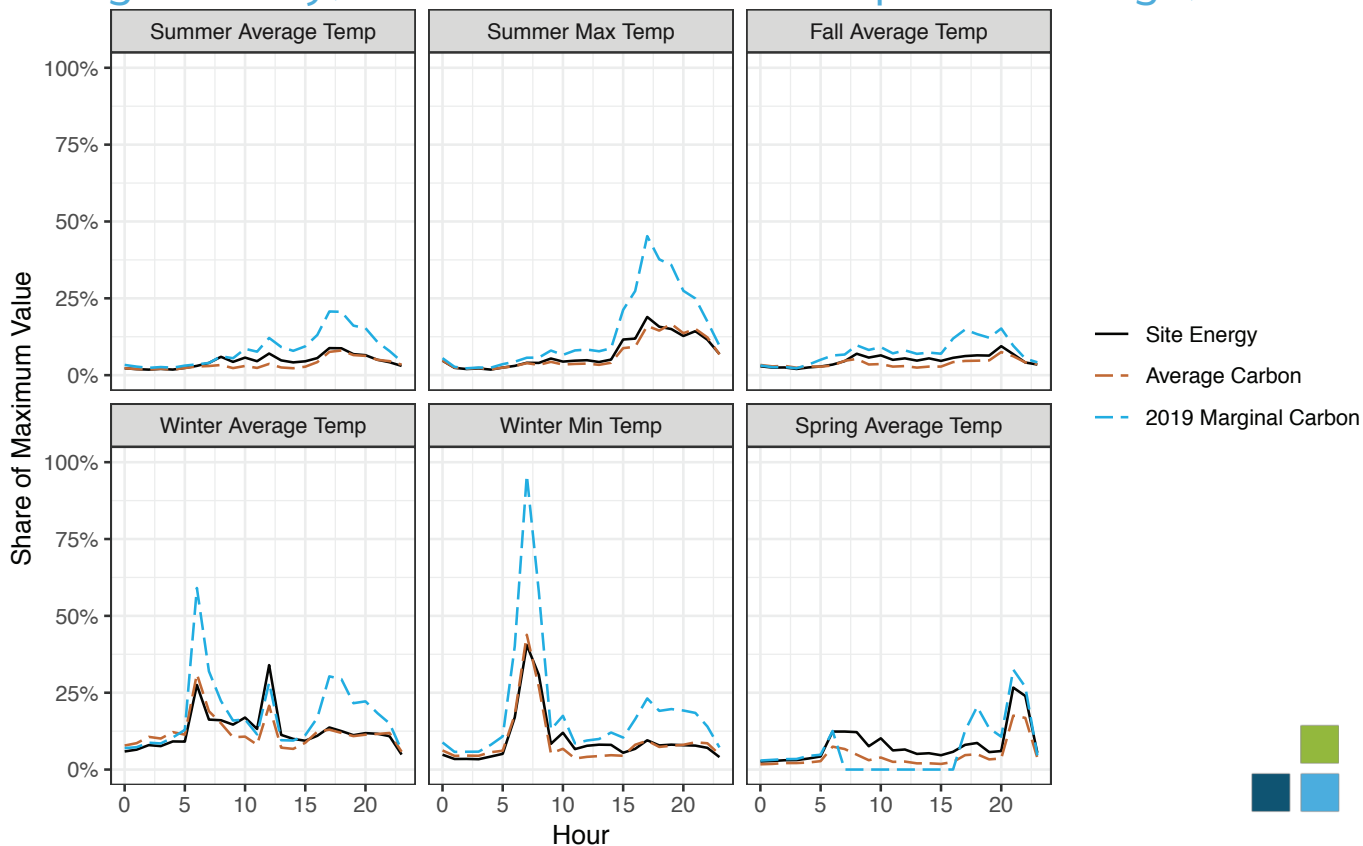
# SITE ENERGY VS CARBON

Single Family, 2019 All Electric Prescriptive Package, CZ 12



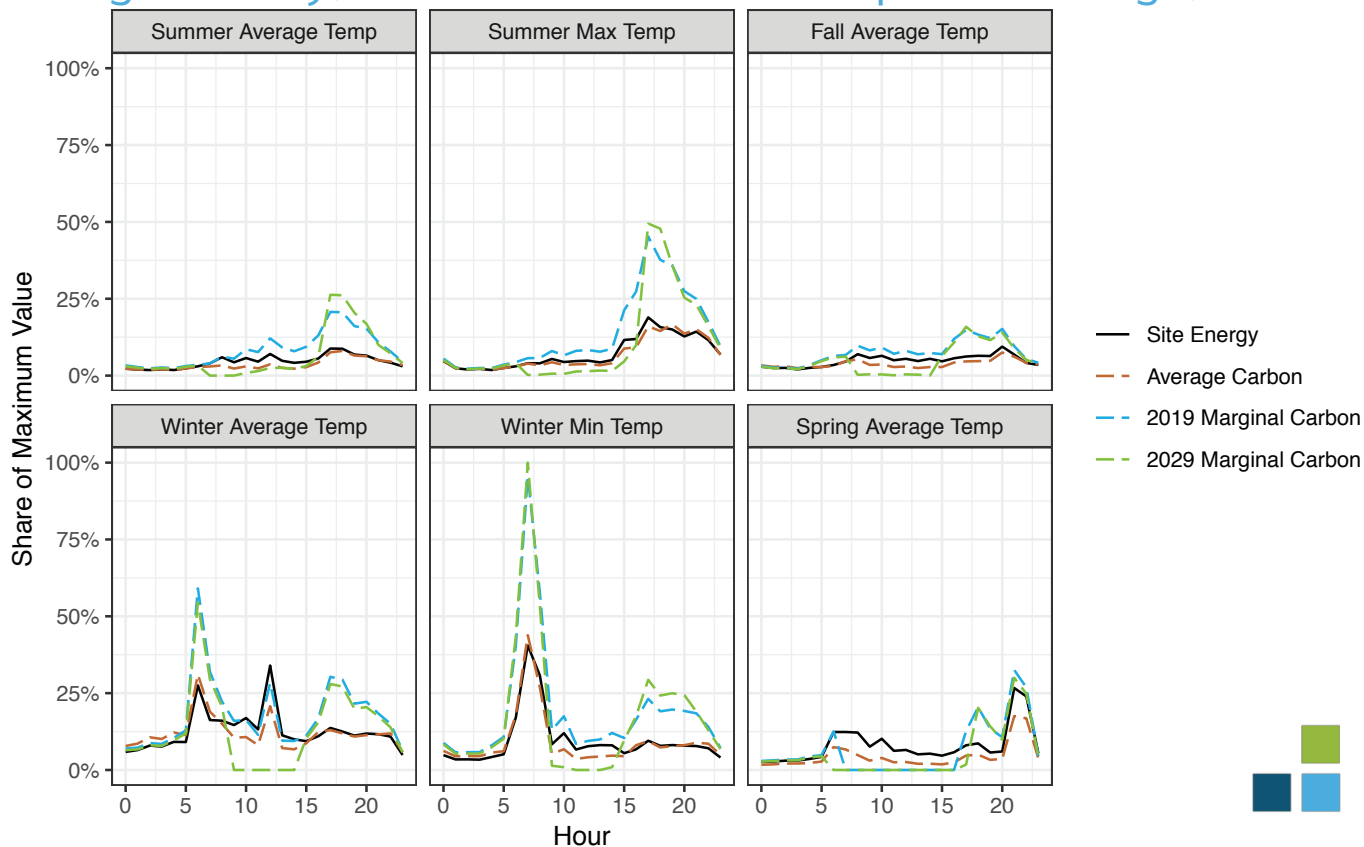
# SITE ENERGY VS CARBON

Single Family, 2019 All Electric Prescriptive Package, CZ 12



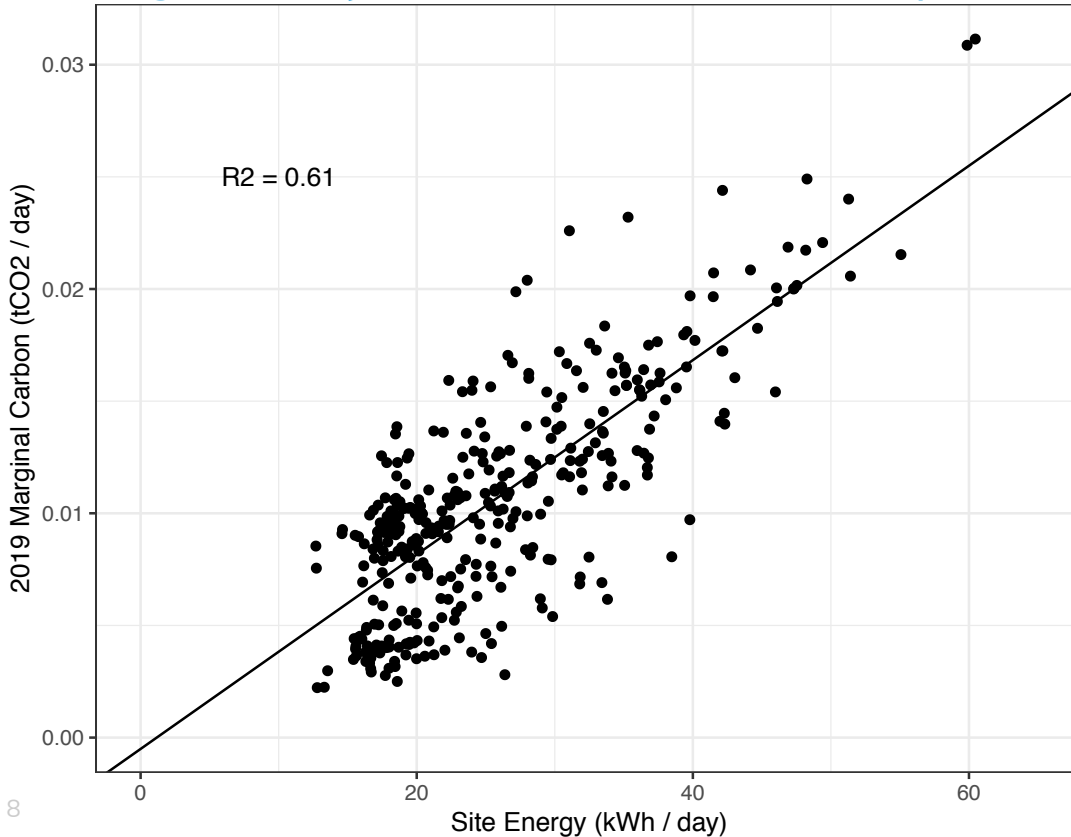
# SITE ENERGY VS CARBON

Single Family, 2019 All Electric Prescriptive Package, CZ 12



# DAILY SITE VS 2019 MARGINAL

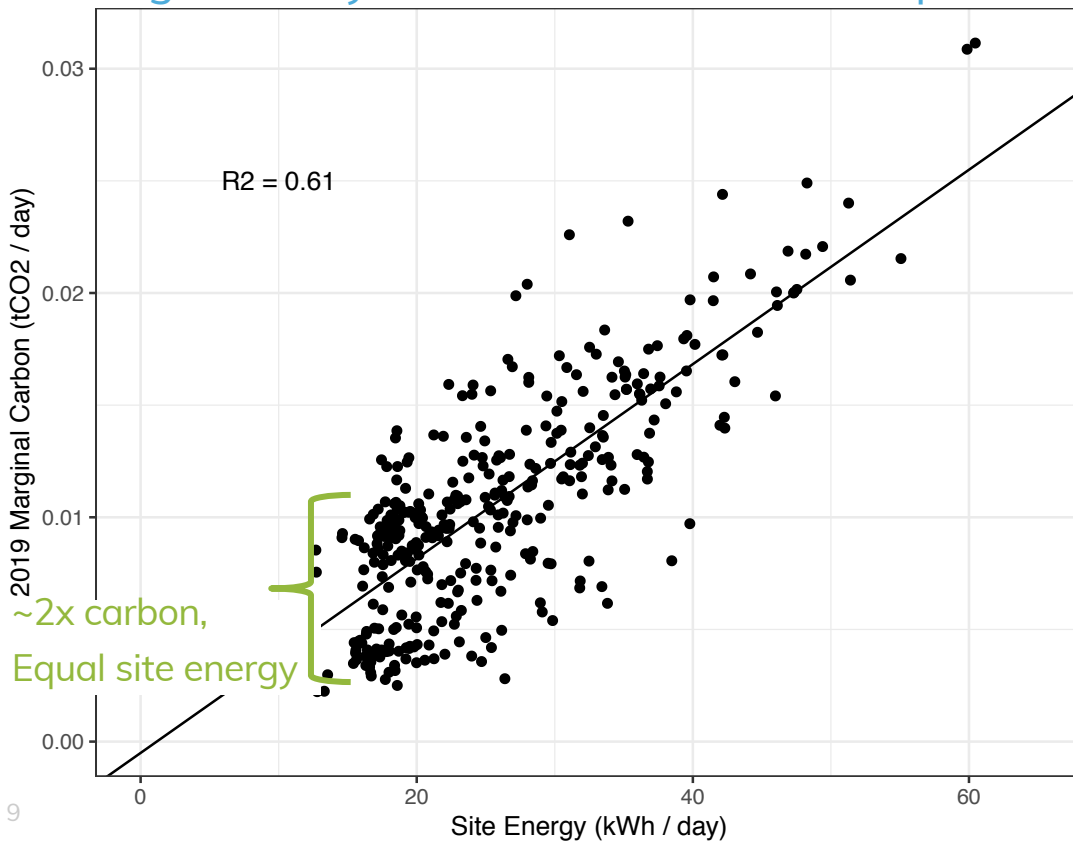
Single Family, 2019 All Electric Prescriptive Package, CZ 12





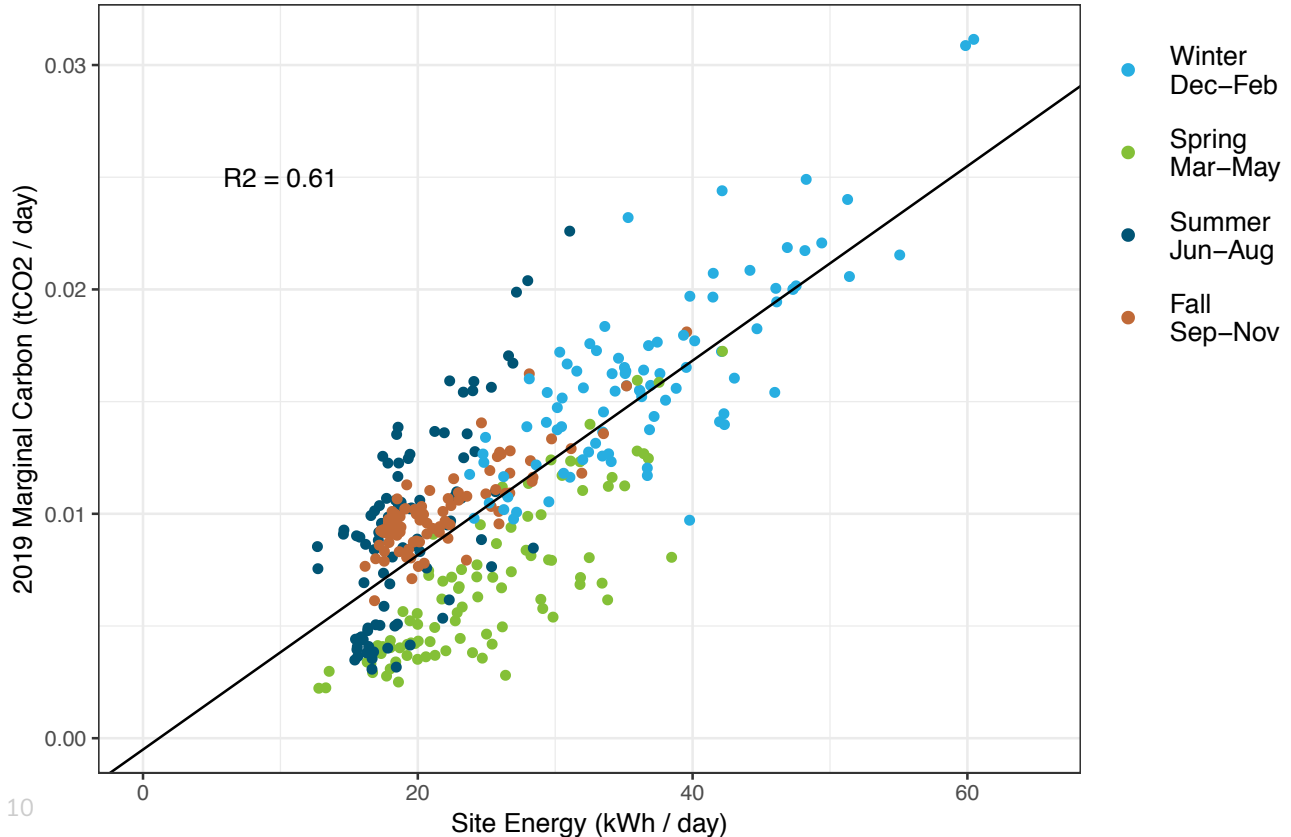
# DAILY SITE VS 2019 MARGINAL

Single Family, 2019 All Electric Prescriptive Package, CZ 12



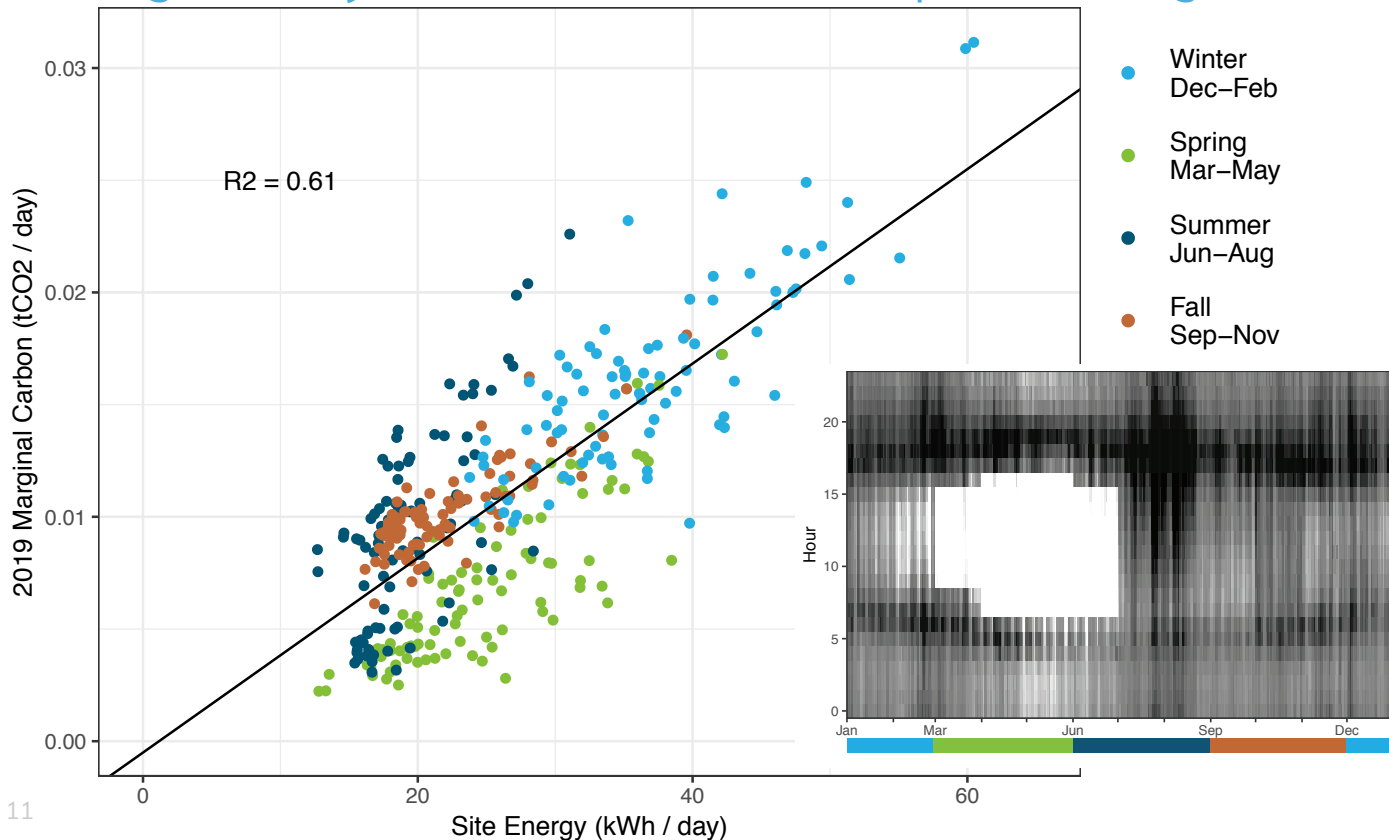
# DAILY SITE VS 2019 MARGINAL

Single Family, 2019 All Electric Prescriptive Package, CZ 12



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Single Family, 2019 All Electric Prescriptive Package, CZ 12



# DAILY SITE ENERGY VS CARBON

Single Family, 2019 Prescriptive Packages, CZ 12

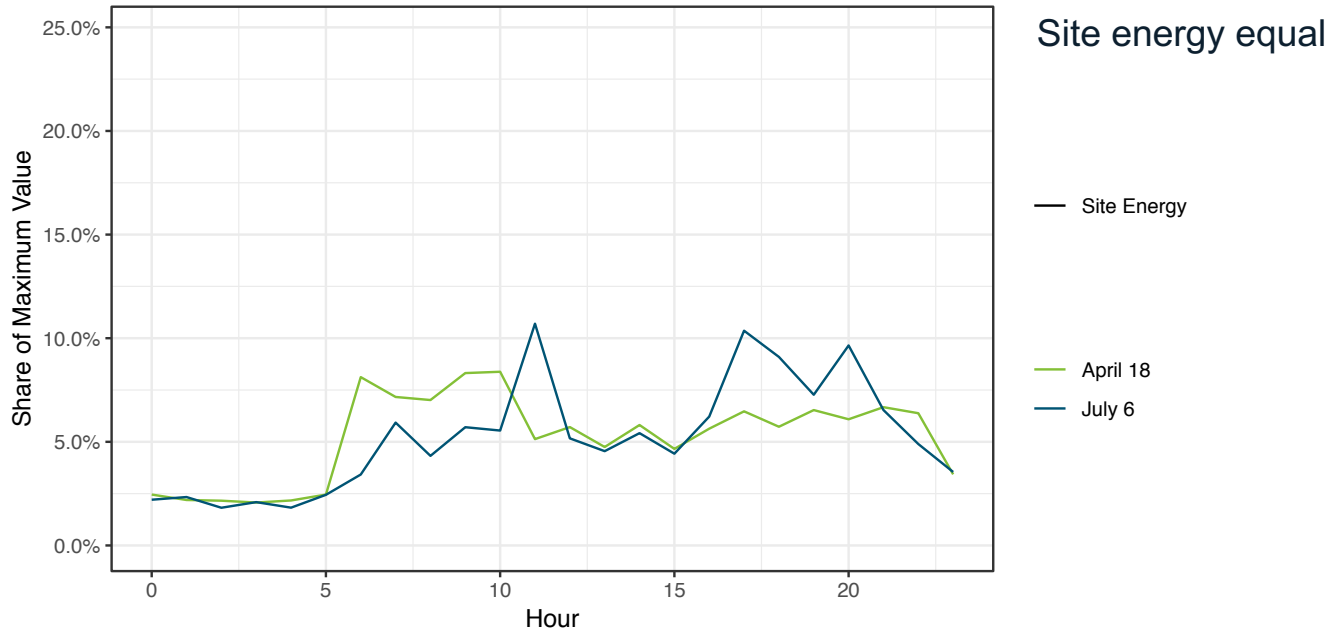
Correlation between site energy and

<b>R<sup>2</sup></b>	<b>All Electric</b>	<b>Mixed Fuel</b>
<b>Average Carbon</b>	0.74	0.99
<b>2019 Marginal Carbon</b>	0.61	0.85
<b>2029 Marginal Carbon</b>	0.53	0.92



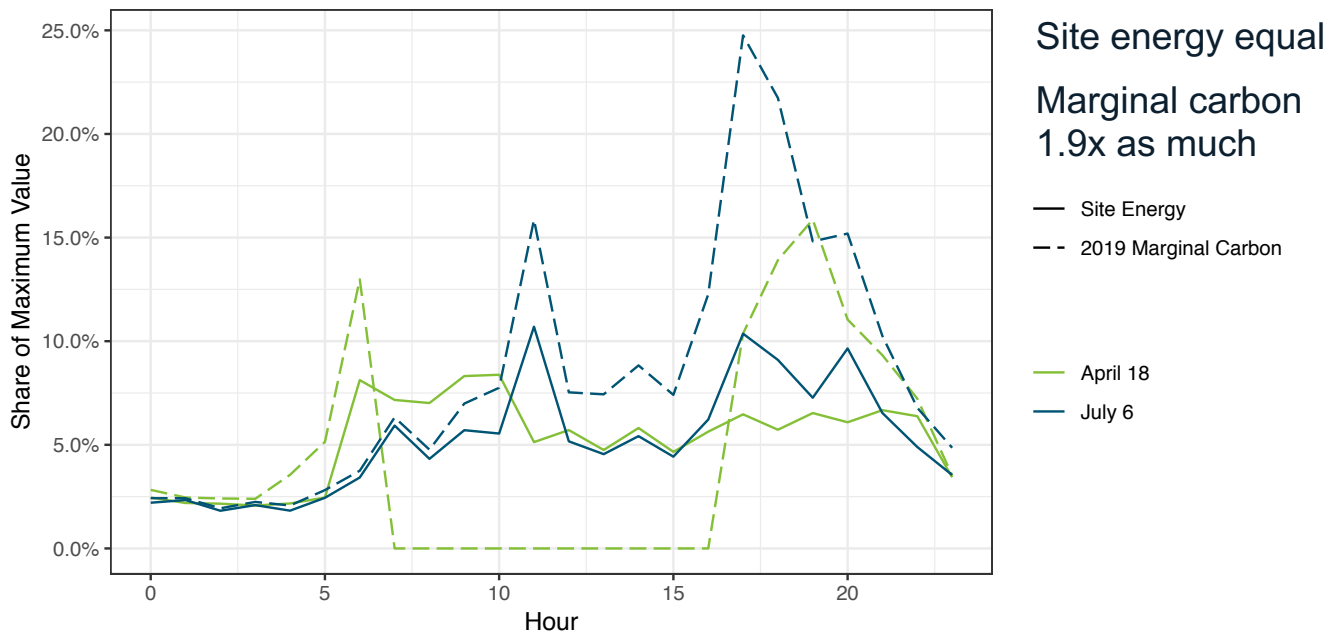
# DAILY SITE VS 2019 MARGINAL

Single Family, 2019 All Electric Prescriptive Package, CZ 12



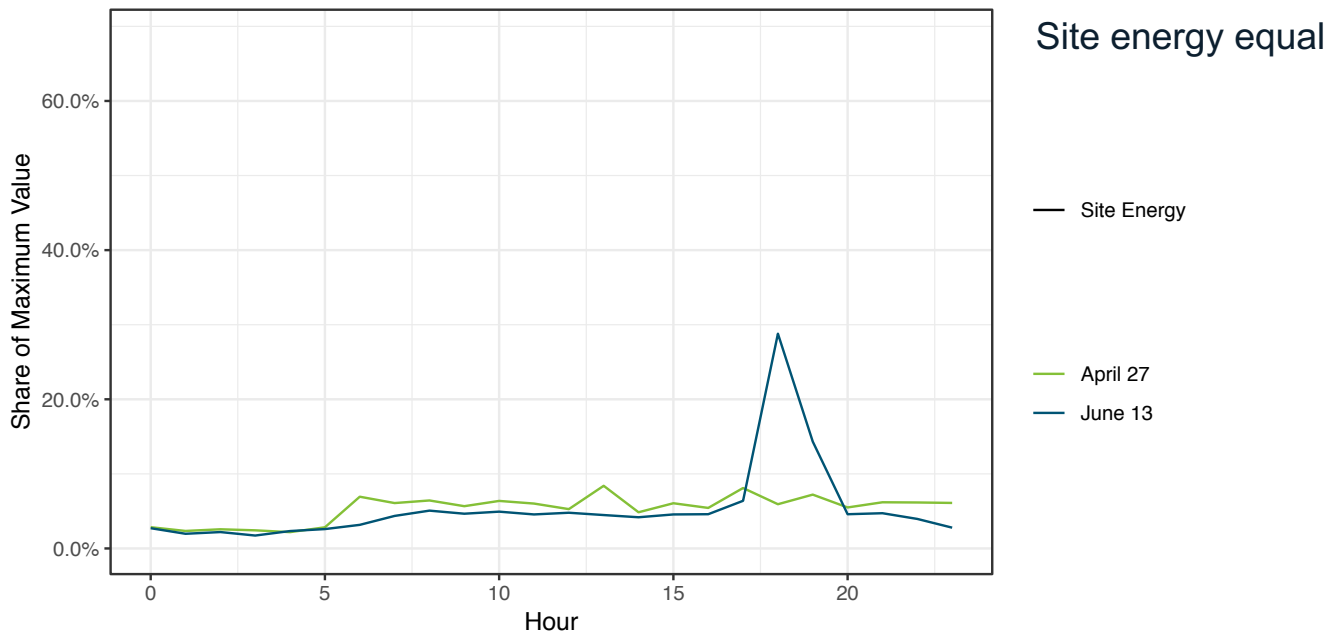
# DAILY SITE VS 2019 MARGINAL

Single Family, 2019 All Electric Prescriptive Package, CZ 12



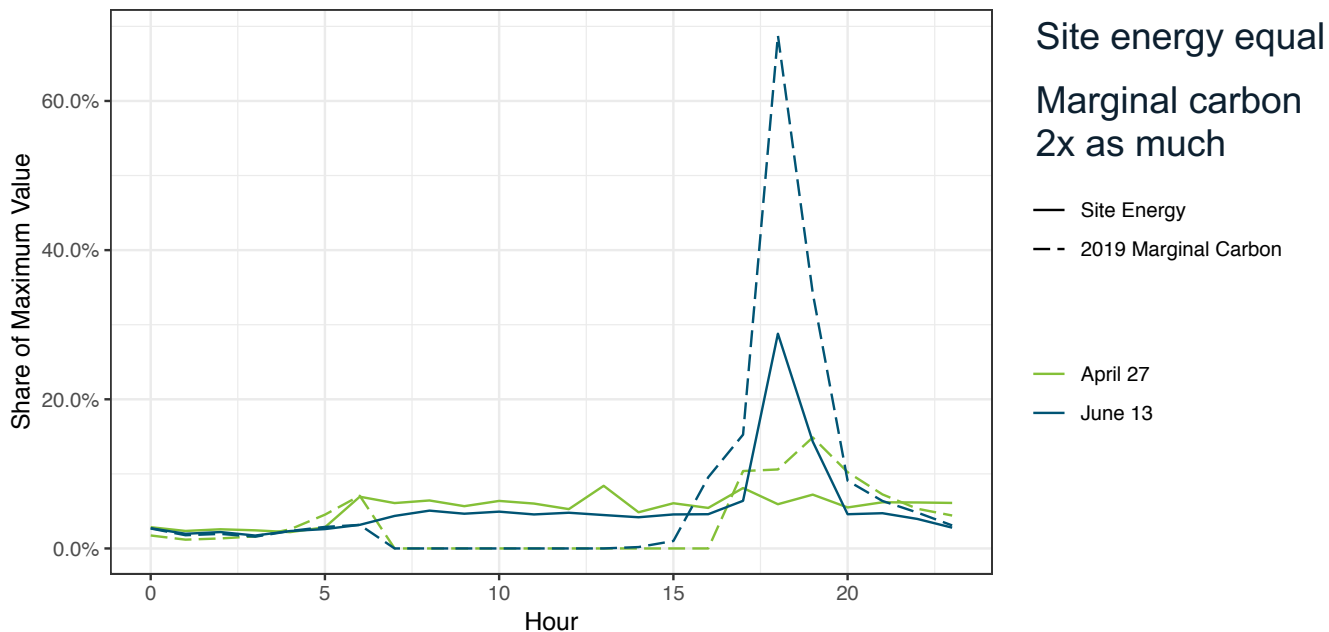
# DAILY SITE VS 2019 MARGINAL

Single Family, 2019 All Electric Prescriptive Package, CZ 12



# DAILY SITE VS 2019 MARGINAL

Single Family, 2019 All Electric Prescriptive Package, CZ 12





# Thank You!

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# REFERENCES AND NOTES

- Marginal carbon emissions factors are from E3's 2019 Avoided Cost Calculator, <https://www.cpuc.ca.gov/General.aspx?id=5267>
- Average carbon emissions are draft long-run values from the CEC.
- Energy modeling was done with CBECC-res 2019.

