

Burton Residence Case Study

South Brunswick

(Kendall Park), NJ 08824

Located in approximate center of NJ near Princeton, NJ.
The border between zone 4 and zone 5 weather conditions is nearby.

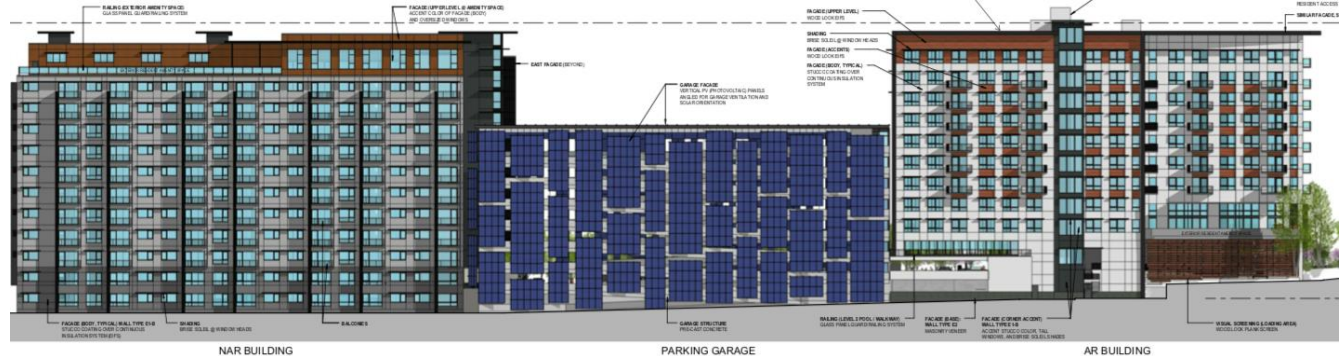


Sean Armstrong

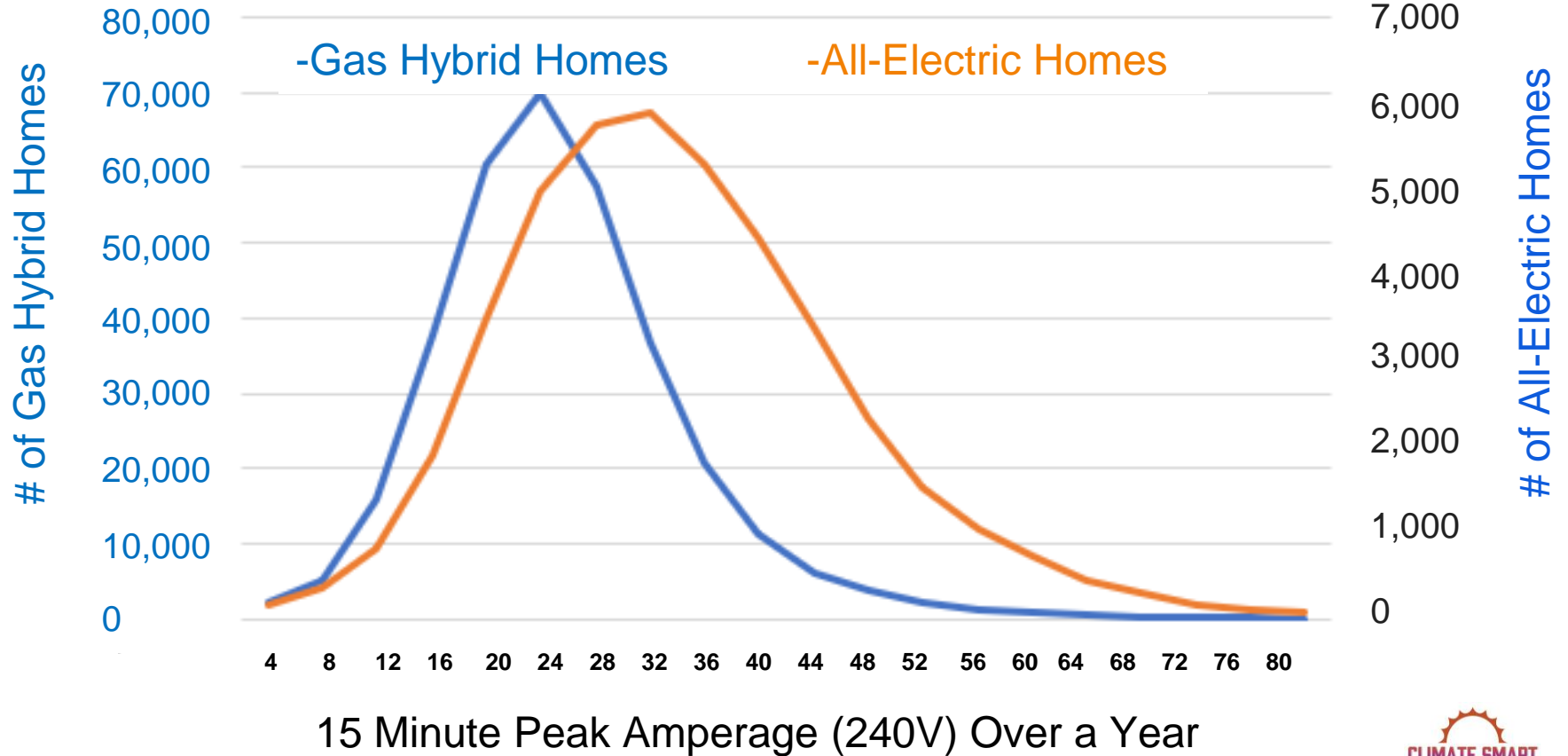
Managing Principal
at Redwood Energy
seanarmstrongpm@gmail.com
707.502.9513
calendly.com/seanarmstrong



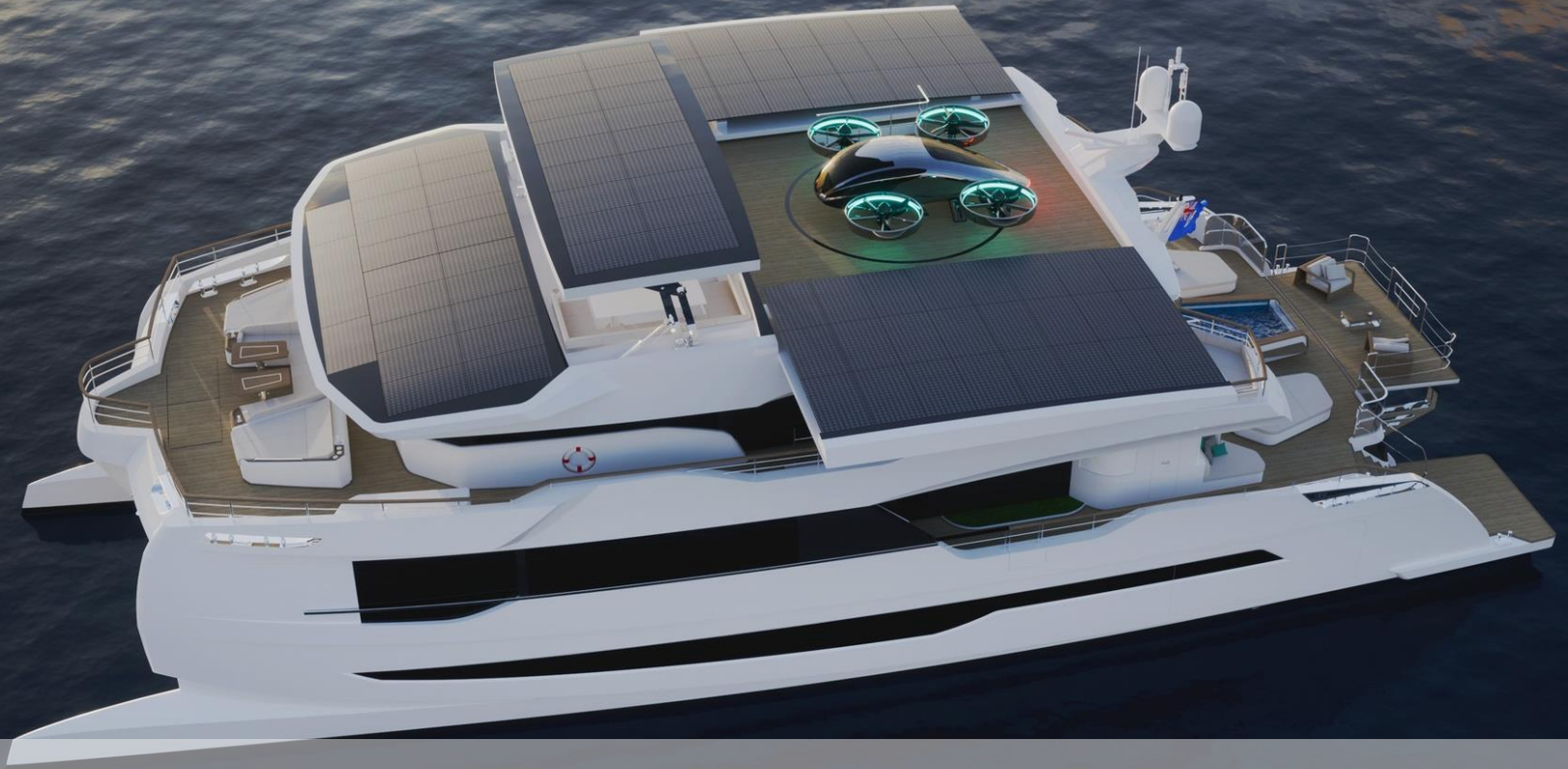
- **1995-2019** The Campus Center for Appropriate Technology
- **2002-2005** High School Science Teacher
- **2005-2011** Affordable Housing Project Manager, Pacific West Communities
- **2011-Today** Redwood Energy's Managing Principal. ZNE Design and Research.



Distribution of Residential 15 Minute Peak Amperage Draws in Sacramento Municipal Utility District Territory



15 Minute Peak Amperage (240V) Over a Year



Best Practices From the Silent 120 Solar Super Yacht Efficiency Within Luxury

120V Power Efficient Appliances

1200W

LG 4.5cf Condensing W/D



500W

Rheem Proterra



1400W

Innova HPAC 2.0



**1800W
+ 900W**

LG LS-120HXV





FRONT

WARNING ADVERTENCIA AVERTISSEMENT

Always use proper electrical installation practices. See the NEC, local codes and manufacturer's instructions for details.

Always use proper electrical installation practices. See the NEC, local codes and manufacturer's instructions for details.

Always use proper electrical installation practices. See the NEC, local codes and manufacturer's instructions for details.

ADVERTENCIA

Siempre usar prácticas correctas de instalación eléctrica. Véase el Código NEC, los códigos locales y las instrucciones del fabricante para obtener detalles.

Siempre usar prácticas correctas de instalación eléctrica. Véase el Código NEC, los códigos locales y las instrucciones del fabricante para obtener detalles.

Siempre usar prácticas correctas de instalación eléctrica. Véase el Código NEC, los códigos locales y las instrucciones del fabricante para obtener detalles.

AVERTISSEMENT

Toujours utiliser les bonnes pratiques d'installation électrique. Voir le Code NEC, les codes locaux et les instructions du fabricant pour plus de détails.

Toujours utiliser les bonnes pratiques d'installation électrique. Voir le Code NEC, les codes locaux et les instructions du fabricant pour plus de détails.

Toujours utiliser les bonnes pratiques d'installation électrique. Voir le Code NEC, les codes locaux et les instructions du fabricant pour plus de détails.

29 **27** **26** **25** **23** **22** **21** **20** **19** **18** **17** **16** **15** **14** **13** **12** **11** **10** **9** **8** **7** **6** **5** **4** **3** **2** **1**

WASHER

NEW MASTER BEDROOM

MASTER BEDROOM

BATHROOM

MICROWAVE STOVE

FRIDGE

DRYER

DISCONNECT

KITCHEN OUTLETS

BEDROOM OUTLETS

DRYER

DISCONNECT

NEW MASTER BEDROOM

MASTER BEDROOM

BATHROOM

MICROWAVE STOVE

FRIDGE

DRYER

DISCONNECT

KITCHEN OUTLETS

BEDROOM OUTLETS

DRYER

DISCONNECT

HOMECOUC

ADVERTENCIA

PELIGRO

DANGER

DANGER

31 MASTER BEDROOM

32 BATHROOM

33 MICROWAVE STOVE

34 FRIDGE

35 DRYER

36 DISCONNECT

37 KITCHEN OUTLETS

38 BEDROOM OUTLETS

39 DRYER

40 DISCONNECT

1 2 3 4 5 6 7 8 9 10

11 12 13 14 15 16 17 18 19

20 21 22 23 24 25 26 27 28 29

30 31 32 33 34 35 36 37 38 39 40

MASTER BEDROOM

MASTER BEDROOM

150 amp disconnect breaker



Side-by-side furnace
and gas water
heater

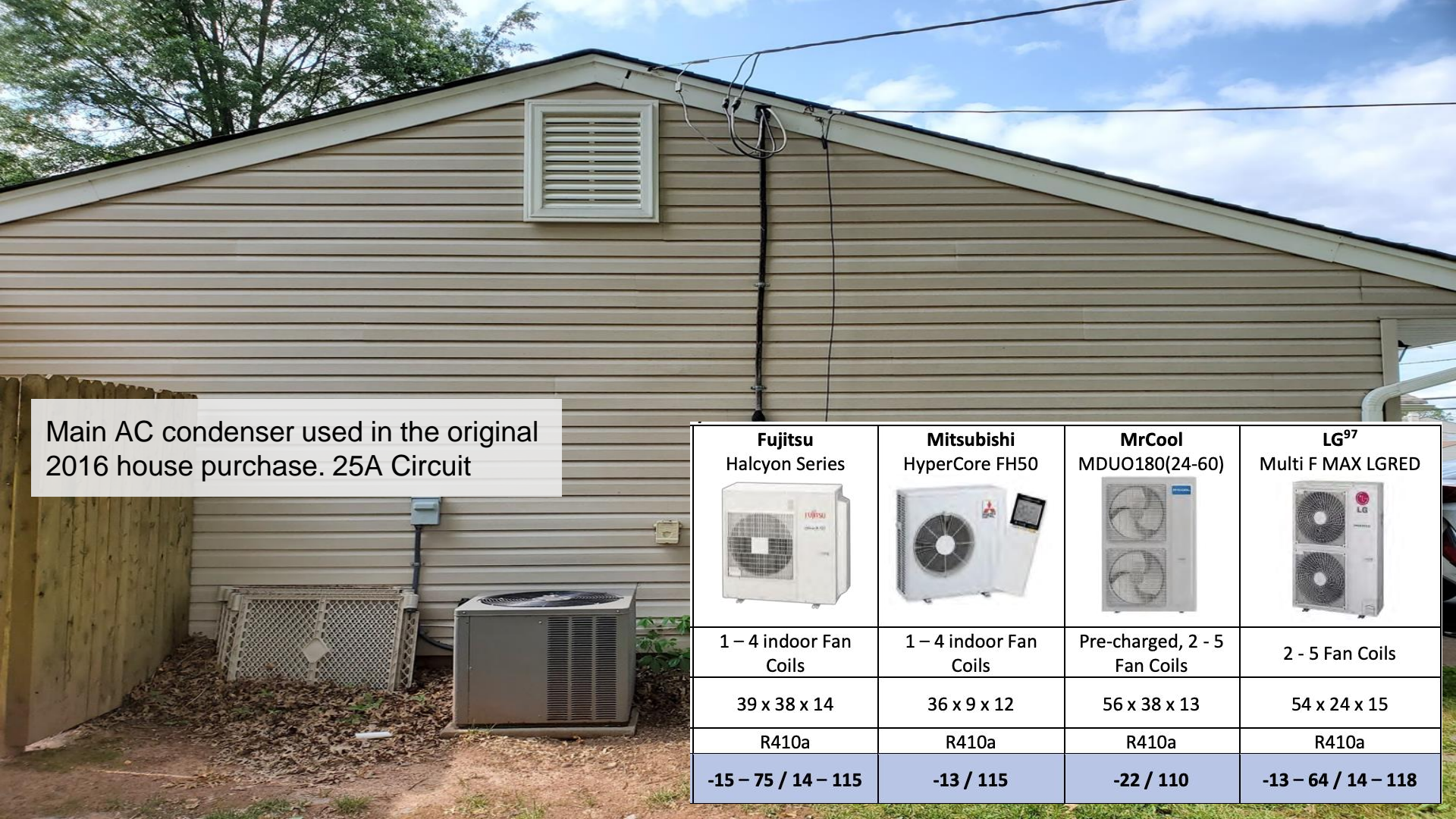
Furnace covers removed







Existing 18” diameter 40 gallon tank.



ProLine XE® Voltex® AL 50-Gallon Smart Hybrid Electric Heat Pump Water Heater



Main AC condenser used in the original 2016 house purchase. 25A Circuit

Fujitsu Halcyon Series 	Mitsubishi HyperCore FH50 	MrCool MDUO180(24-60) 	LG⁹⁷ Multi F MAX LGRED 
1 – 4 indoor Fan Coils	1 – 4 indoor Fan Coils	Pre-charged, 2 - 5 Fan Coils	2 - 5 Fan Coils
39 x 38 x 14	36 x 9 x 12	56 x 38 x 13	54 x 24 x 15
R410a	R410a	R410a	R410a
-15 – 75 / 14 – 115	-13 / 115	-22 / 110	-13 – 64 / 14 – 118



HEATING & AIR CONDITIONING



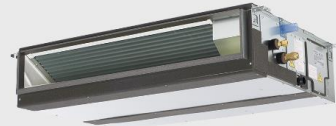
**MULTI-POSITION AIR
HANDLER**

SVZ



**LOW STATIC INTELLI-AIR™
DUCTED SOLUTIONS**

SEZ



**MID STATIC INTELLI-AIR™
DUCTED SOLUTIONS**

PEAD



**MULTI-POSITION AIR
HANDLER**

PVA

SEER 42, HSPF 15!



Infinity® Heat Pump with Basepan Heater

38MPRA

Single-zone system with up to 42 SEER and 15 HSPF for premium energy savings.



17 Reviews

TYPE SINGLE-ZONE

30 inch gas range.
The overhead
microwave power
vent appears to be
externally vented. (If
used, this vent could
help exhaust the gas
fumes)

Note: clothes dryer
is electric





AUTHORIZED DEALER

LG LSIL6336F

30 Inch Slide-in Induction Smart Range with 5 Radiant Elements, 6.3 cu. ft. Oven Capacity, Storage Drawer, ProBake Convection®, Air Fry, Sabbath Mode, Self+EasyClean®, Wi-Fi, and InstaView®

☆☆☆☆ No reviews yet [Write a review!](#)

quick specs

Sabbath Mode: Yes

Fingerprint Resistant: Yes

Cooktop: Smoothtop

Drawer: Storage

Width: 29 7/8 Inch

Depth: 26 7/8 Inch

Height: 36 1/2 Inch

Number of Burners: 5

Primary Oven Capacity: 6.3 Cu. Ft.

Hot Surface Indicator Light: Yes

Convection: Yes

Self-Cleaning: Yes

Steam Clean: No

Glide Rack(s): No

FRIGIDAIRE GALLERY

AUTHORIZED DEALER

Frigidaire Gallery Series GCRI3058AF

30 Inch Freestanding Induction Range with 4 Induction Zones, 5.4 Cu. Ft. Capacity True Convection Oven, Storage Drawer, Self Clean, and Air Fry: Stainless Steel

★★★★☆ 4.6 Average rating of 2221 reviews

quick specs

Sabbath Mode: No

Fingerprint Resistant: Yes

Cooktop: Smoothtop

Drawer: Storage

Width: 29 7/8 Inch

Depth: 25 3/4 Inch

Height: 36 1/8 Inch

Alexa: No

Google Home: No

Number of Burners: 4

Primary Oven Capacity: 5.4 Cu. Ft.

Hot Surface Indicator Light: Yes

Induction: Yes

Convection: Yes

Self-Cleaning: Yes

Steam Clean: Yes

Glide Rack(s): Yes

Temperature Probe: No



This item qualifies for free delivery!

List Price: \$3,299.00

SALE PRICE: **\$2,595.00**

You save **\$704.00** (21%)

As low as **\$162**/mo or 0% APR with **affirm**.
[Learn more](#)

You will also need:

- [Broiler Pan Kit](#) + \$29.99
- [Electric Range Cord Kit - 40 Amp, 4 ft.](#) + \$49.99

Qty

1

ADD TO CART

[More on the Way](#)

This item qualifies for free delivery!

List Price: \$1,649.00

SALE PRICE: **\$1,449.00**

You save **\$200.00** (12%)

Starting at **\$91**/mo with **affirm**.
[Prequalify now](#)

You will also need:

- [Broiler Pan Kit](#) + \$29.99

Qty

1

ADD TO CART

[More on the Way](#)

Current Offers

[Frigidaire - Buy More. Save More. Save](#)

Dimplex Optimyst



120V Mist Fireplace Replacements



**Dimplex Opti-Myst® Pro 500 Built-In
Electric Cassette**

CDFI500-PRO

Multiple Options Available



**Dimplex Opti-Myst® Pro 1000 Built-In
Electric Firebox**

GBF1000-PRO

Multiple Options Available



**Dimplex Opti-Myst® Pro 1500 Built-In
Electric Firebox**

GBF1500-PRO

Multiple Options Available

END of BURTON
RESIDENCE CASE STUDY

Smart Circuit Splitters for Sharing a 240V Outlet

<p>Neo Charge¹²⁷ Smart Splitter</p> 	<p>BSA Electronics¹²⁸ Dryer Buddy</p> 	<p>SimpleSwitch¹²⁹ 240V Circuit Switch</p> 	<p>Splitvolt¹³⁰ Splitter Switch</p> 	<p>Thermolec¹³¹ DCC</p> 	<p>Evduty¹³² Smart Current Sensor</p> 
<p>\$500 (Appliance) \$550 (Dual Car)</p>	<p>\$200 – 365 (several outlet versions)</p>	<p>\$550 (240V) \$650 (EV) \$550 (120V)</p>	<p>\$319</p>	<p>\$1,050 (DCC-9), \$945 (DCC-10)</p>	<p>\$500</p>

Span and Genius Panels: 100A Can Support 400A of Loads!



120V Dryer Options to Avoid Rewiring: Heat Pump, Resistance and Condensing

\$798⁰⁰

Top Rated

Samsung

4 cu. ft. 24 in. Stackable Ventless Electric Heat Pump Dryer in White

★★★★★ (95) Questions & Answers (59)



\$1214⁰⁰

Whirlpool (Brand Rating: 4.1/5)

6.7 cu. ft. 120 Volt White Commercial Electric Vented Dryer

★★★★★ (6) Questions & Answers (6)



\$1798⁰⁰

LG Electronics

27 in. 4.5 cu. ft. Large Capacity Electric All-in-One Washer Dryer Combo in Black Steel

★★★★★ (708) Questions & Answers (305)



Hover Image to Zoom

120V and 240V
Electric BBQs by Weber,
George Foreman,
Kenyon, more



The ConnectDER™ Solar Collar



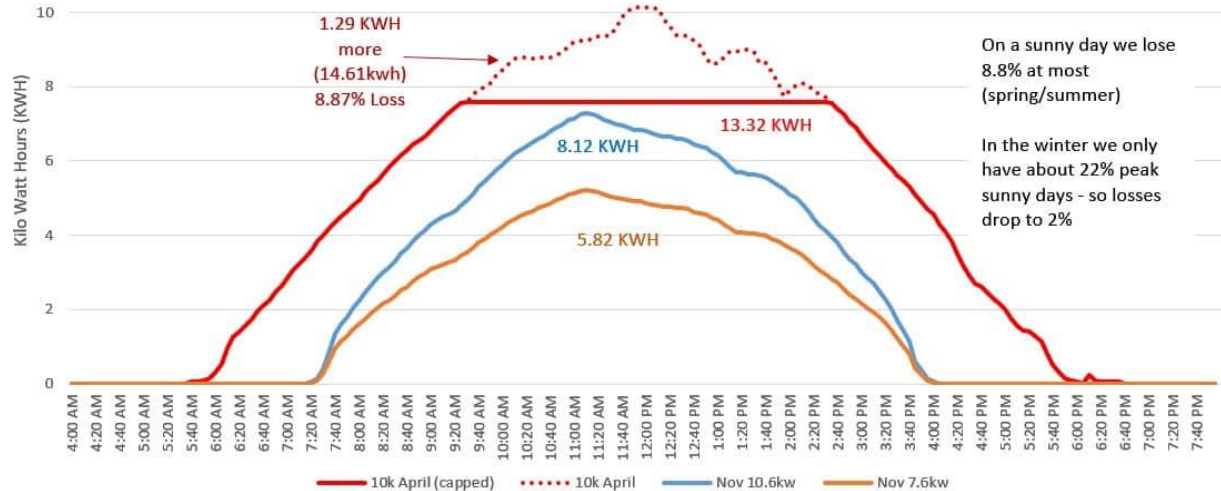
Plug-and-play access point for solar installation

- Interconnect systems in minutes instead of hours
- 100A service functions like a 300A service for solar connection

“Clipping” Inverter from SolarEdge

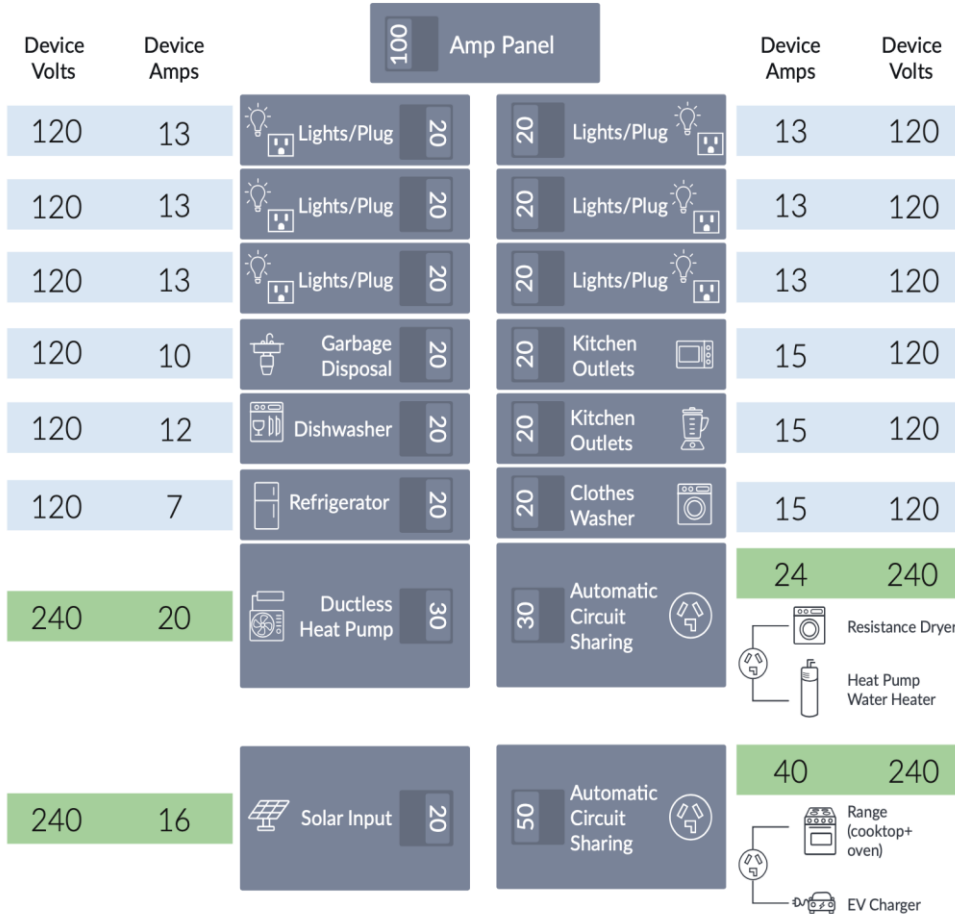
12-25
YEAR
WARRANTY

Example: 40% more solar, with clipping, gained them 33% more energy in the spring and summer, and 39% more energy in the winter.



All Electric 100 Amp Home (3,000 square feet)

Two "automatic sharing" circuits, ductless mini split heat pump, resistance dryer, high power heat pump water heater



3000sf on 100 Amps



Additional House Information

- 4-6 occupants
- EV charging up to 38 miles/hr
- Located in California climate zone 3 (SF Peninsula)
- Some insulation
- 48,000 BTU heating and cooling
- 40-80 gallon heat pump water heater
- 4-burner induction or standard electric range
- 7.4 cu. foot standard resistance dryer
- A 20-amp circuit will support a 3.8 kW inverter. (Many 3.8 kW inverters can support roughly a 4.6 - 5.9 kW solar array depending on inverter load ratio)

Diagram creation and design by Josie Gaillard and Courtney Beyer