Sustainable and Resilient Multi-Family Building
572 Van Ranst in Mamaroneck, NY

Including Energy Building Blocks

- Rooftop Solar PV
- (4) EV Charging Stations
- State-of-the-art Fuel Cell System

Anticipated Results:

- Resilient "always on" electric service for tenants, common areas and electric vehicle charging stations
- 58%+ reduction in Greenhouse Gas emissions (GHG)
- A model multi-family housing project for others to follow

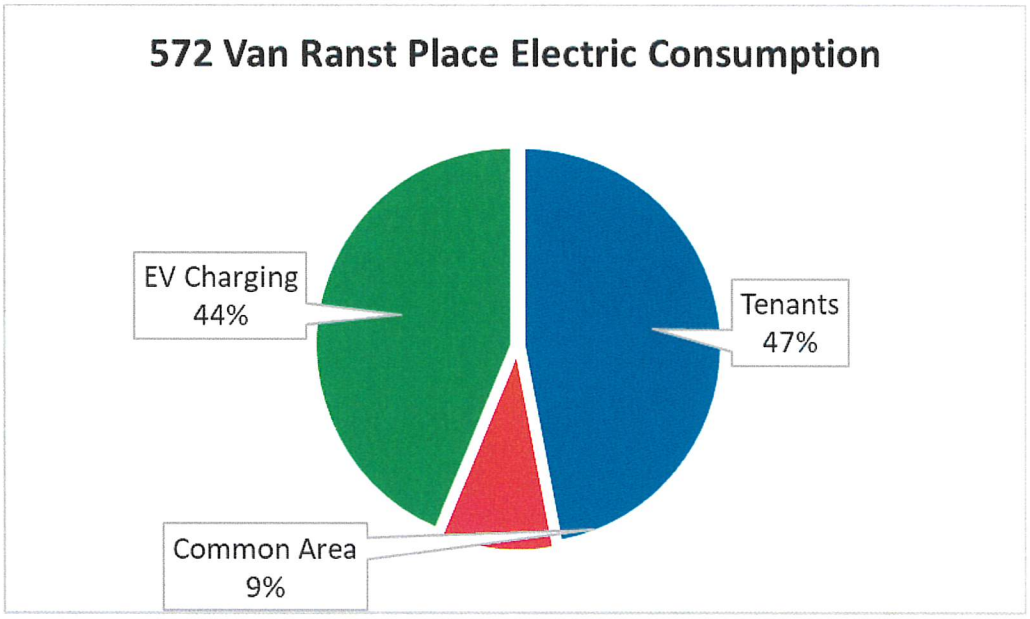
Aris Energy Solutions, Aug 25, 2001

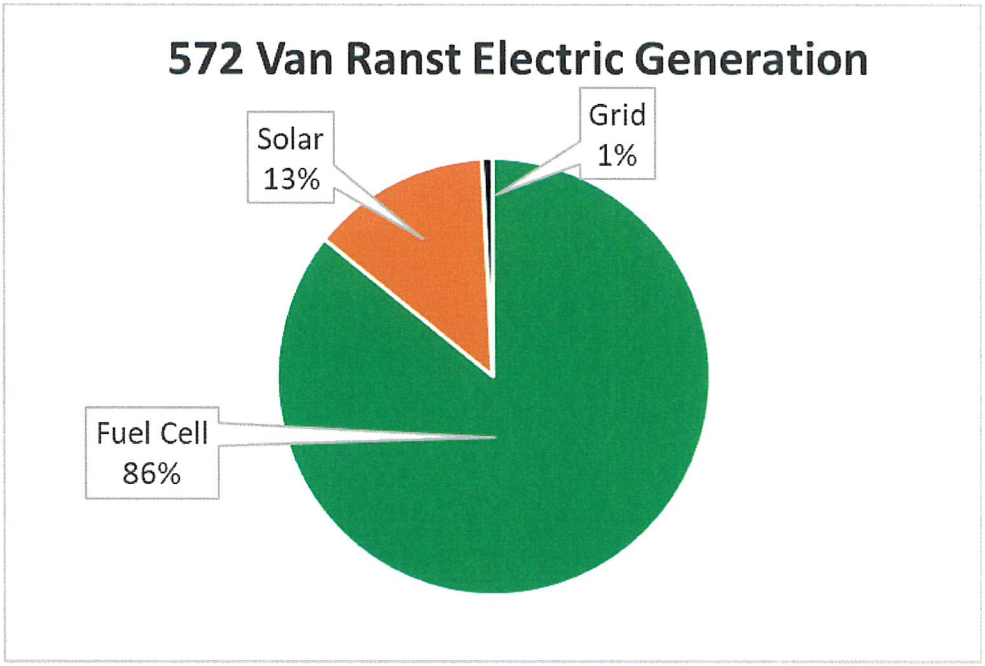
ARIS ENERGY SOLUTIONS

Estimated Electrical Consumption and Generation (kw-hr/year)

Estimated Electrical Consumption and Generation (kW-hr)				
572 Van Ranst Place, Mamaroneck NY				
	1 BR	**2BR**	**EV duty**	
Consumption				
kw-hr/day	20	30	kw per charge	55
kw-hr/yr	7,200	10,800	Charges/day	1
# units	6	4	kw-hr per station	55
Total kw-hr/yr	43,200	43,200	EV kw-hr/day	220
Total kw-hr/yr Tenants	86,400			
Est'd Common Area kw-hr	17,000			
EV charging stations	4			
EV charging per year	80,300			
Total kw-hr/yr	183,700			
Generation				
Solar	24,628		20.875kW x 13.5% capacity factor	
BG-60 Fuel Cell kw-hr/year	52,560		6 kw, 24/7	
# BG-60's	3			
Fuel Cell Generation	157,680			
Total Generation	182,308			
Grid kw-hr/year	1,392			

Estimated Electrical Consumption and Generation (kw-hr/year)

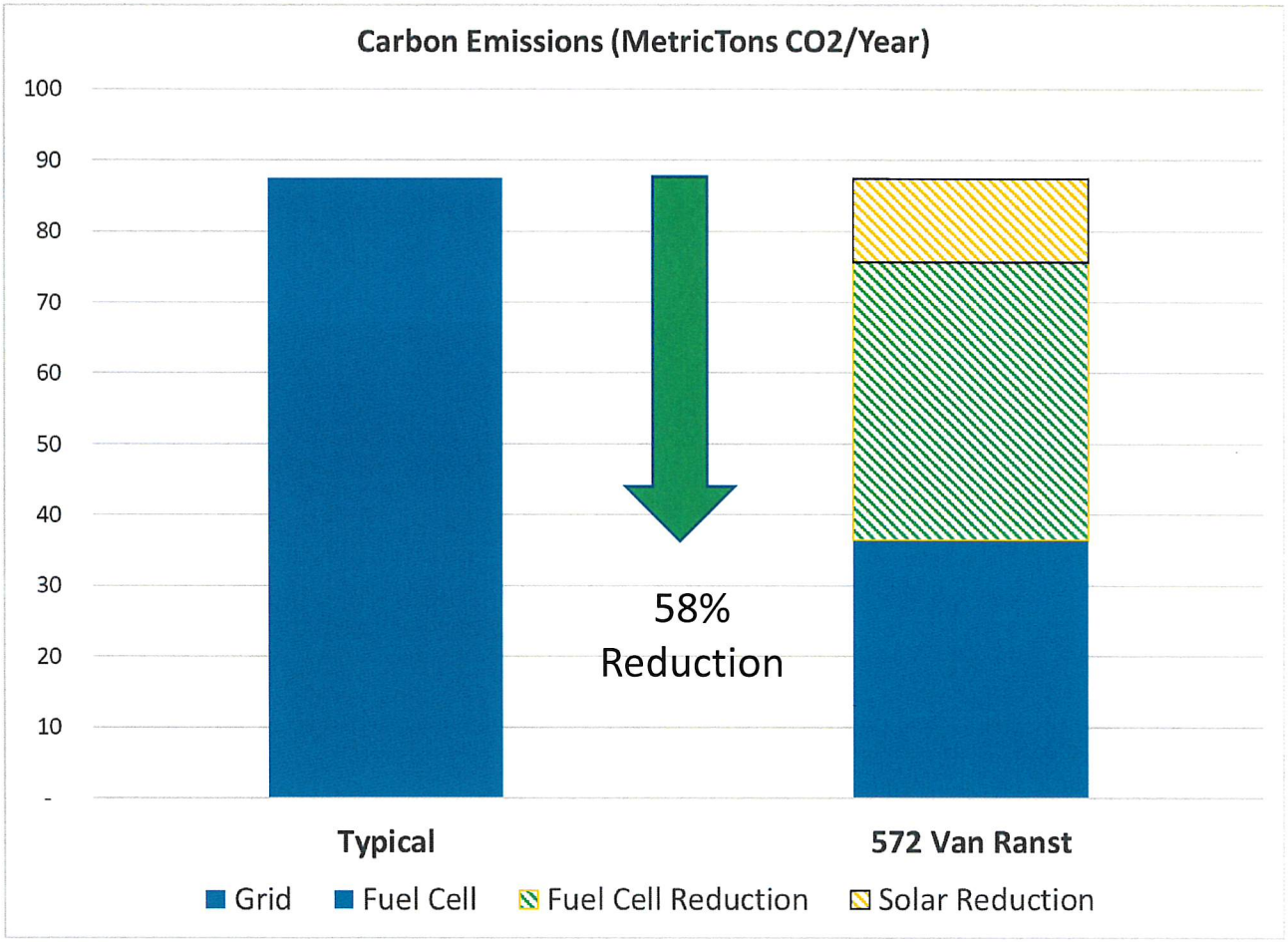




Note: Fuel cell power is "resilient", always on in event of electrical outage

Decarbonization

Estimated Reduction in Green House Gases (mT/year)

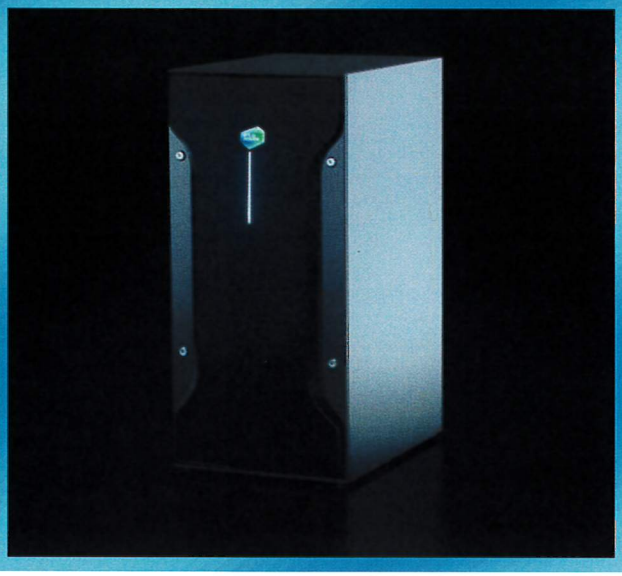


Notes:

1. 58% reduction illustrated above is based only on the electrical output, it does not include value of reduced GHG for fuel cell's CHP capabilities.
2. It does also not include GHG reduction value for the (4) EV charging stations' impact
3. GHG reduction for electrical based on 0.5 # CO2/kw-hr with fuel cell vs typical NY State average of 1.05 # CO2/kw-hr.
4. Fuel cell output power is also 100% resilient to electrical grid power loss, including opportunity to power EV's during grid blackouts.

BlueGEN BG-60 FUEL CELL

Micro Combined Heat & Power (mCHP)



The BG-60 provides 6.0 kW of dependable, resilient power, plus by-product heat

Advantages

- High Efficiency - 57% electric, up to 90% total CHP efficiency
- Reduce carbon emissions *today* (~50%)
- "Hydrogen Ready" to step to zero emissions *tomorrow*
- RESILIENT – if grid goes down, fuel cell stays up
- Hi availability ~99% capacity factor
- Highly distributed, dispatchable behind the meter solution helps utility grid
- Can turn down production and load follow

Commercial Status

- Successful BlueGen European operating history:
  - 2500+ installations
  - 40+ million operating hours
  - 7 yr stack life
  - 10 yr service contract
  - Growing installed US operating fleet

Integration/Installation

- Integrates into MicroGrids with other DER's and energy technologies
- Base fuel cell product with optional "Resiliency Package" or "CHP Package"
- Indoor or outdoor installation
- Uses low-pressure gas 0.13-0.30 psi

Applications

- Single Family Residential
- Multi-Family Residential
- Small/Med Commercial
- Municipal/Institutional
- Data Centers/Critical Power

Europe's broad deployment program ("PACE") installing 1000's of units in residential and small commercial sites, enabling volume based cost reduction

Aris Energy Solutions, LLC
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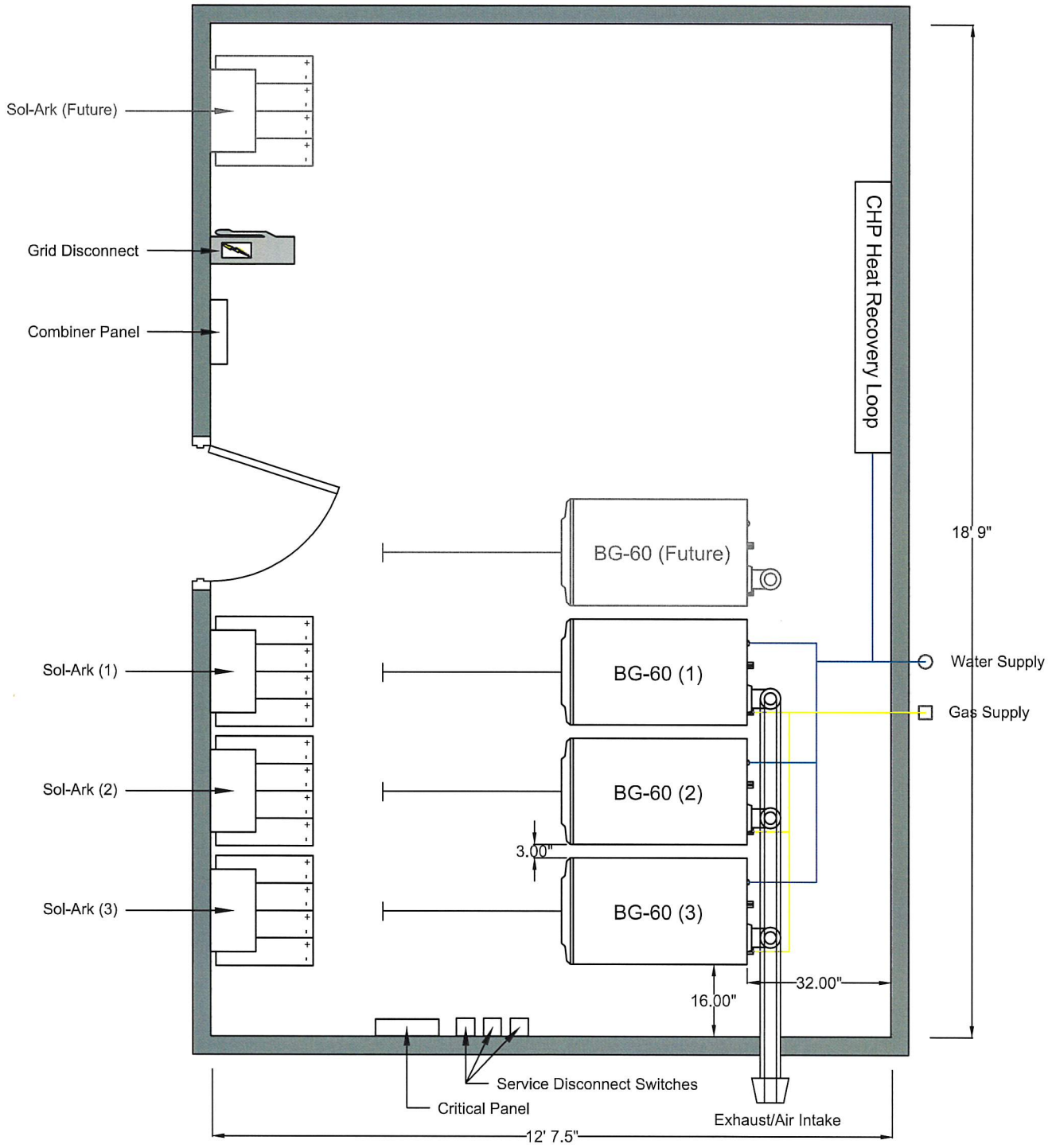
TECHNICAL DATA

Application	Electrical power generator with heat recovery for commercial businesses, public buildings and private homes
Use	Large residential and commercial buildings
Operation Mode	Year-round (approx. 8,700 hours)
Fuel Type	Natural gas (biogas methane)
Fuel cell technology	Solid oxide fuel cell (SOFC)
Fuel consumption[1)]	Approx. 10.8 kW (36.8 MBH)
Power output	Max. 6kW, min. 0.5 kW
Electrical efficiency[2)]	Up to 57%
Thermal output[2)]	Up to 3.4 kW
Heat recovery	Exhaust gas heat exchanger
Overall efficiency[2)]	Up to 90%
Electrical energy generated/year	Up to 52,000 kWh
Thermal energy generated/year	Up to 29,580 kWh
Operation	Fully automated start/stop
Carbon emissions	2 pounds/kw-hr
Control	24Hr remote monitoring by manufacturer, Internet/smartphone app control
Weight	1432 lb
Height x width x length	63" x 23.6" x 41.3"
Decibels	< 47 db (A)
Service interval[3)]	12 months
Full maintenance service	Yes (120 months)

1) Based on the lower calorific value for natural gas at the start of operation
2) The thermal output/energy varies depending on the electrical efficiency and the return flow temperature
3) Filters are replaced depending on the actual water, air, and gas quality



BG-60 Dimensions:

23.6" W x 41.2 D x 63.0" H

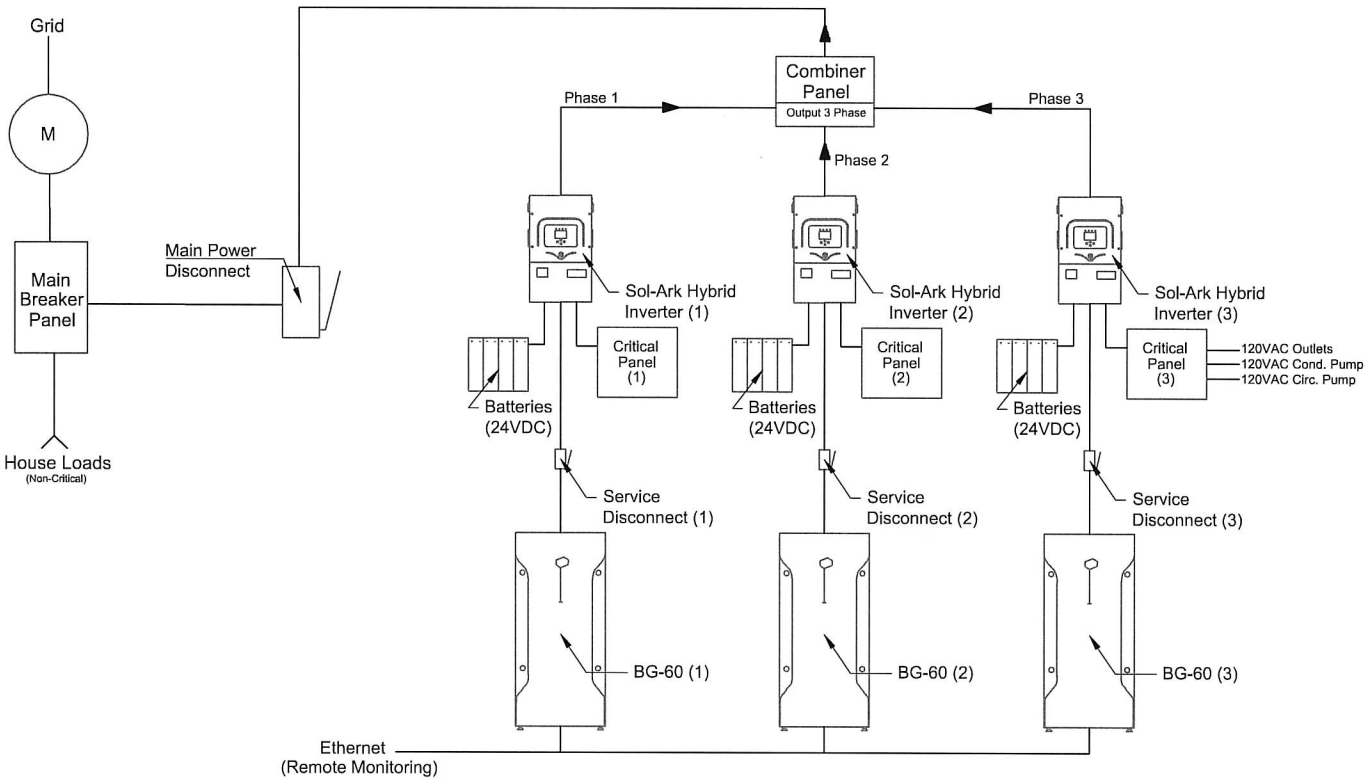
NO.	REVISION	DATE

ARIS_ENERGY_SOLUTIONS_572_VAN_RANST

PLAN_VIEW

FUEL_CELL_LAYOUT_(BG-60)

DRAWN	CHECK			SCALE	DATE	DRAWING NO.	REVISION
CS	INITIALS			X	8/23/2021	AES-21-6-01 SHEET1OF1	#2



NO	REVISION	DATE

ARIS_FUEL_CELL_DEMO
PRELIMINARY_1-LINE_WIRING_DIAGRAM
(3)_BG-60_1-LINE

DRAWN	CHECK		SCALE	DATE	DRAWING NO.	REVISION
CS	-	NOT FOR CONSTRUCTION	NONE	08/23/2021	AES-21-6-02 SHEET1OF1	#1