



# Micro-CHP: Reliability & Economic Benefits

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CEO





**WE'RE ON A MISSION  
TO MAKE COST  
EFFECTIVE,  
RELIABLE  
CLEAN ENERGY  
AVAILABLE  
TO EVERYONE**

**ENGINITY**  
POWER SYSTEMS

**SIMPLY EFFICIENT™**

**DECARBONIZED  
GRID  
BY 2050**

**WE  
CANNOT  
WAIT UNTIL  
2050**

**WE MUST  
DO BETTER  
TODAY**



**In 2000, there were fewer  
than 24 major electricity  
disruptions in the U.S.**

**In 2020, this number  
surpassed 180.**

American Society of Civil Engineers

“

**Without CONTINUOUS  
IMPROVEMENTS in  
ENERGY EFFICIENCY,  
the world would need  
2X as much energy  
by 2040.**

CAPP, World Energy Needs

”



# E|ONE™

## All-in-One Home Appliance



# E|SERIES: AWARD-WINNING, PATENTED TECHNOLOGY

RECORD BREAKING, AWARD-WINNING TECHNOLOGY  
2020 Las Vegas International Builder's Show:

**BEST HOME TECHNOLOGY PRODUCT**

**BEST ENERGY EFFICIENCY PRODUCT**

**BEST IN SHOW**



**ENGINUITY**  
POWER SYSTEMS





# E|ONE FEATURES:

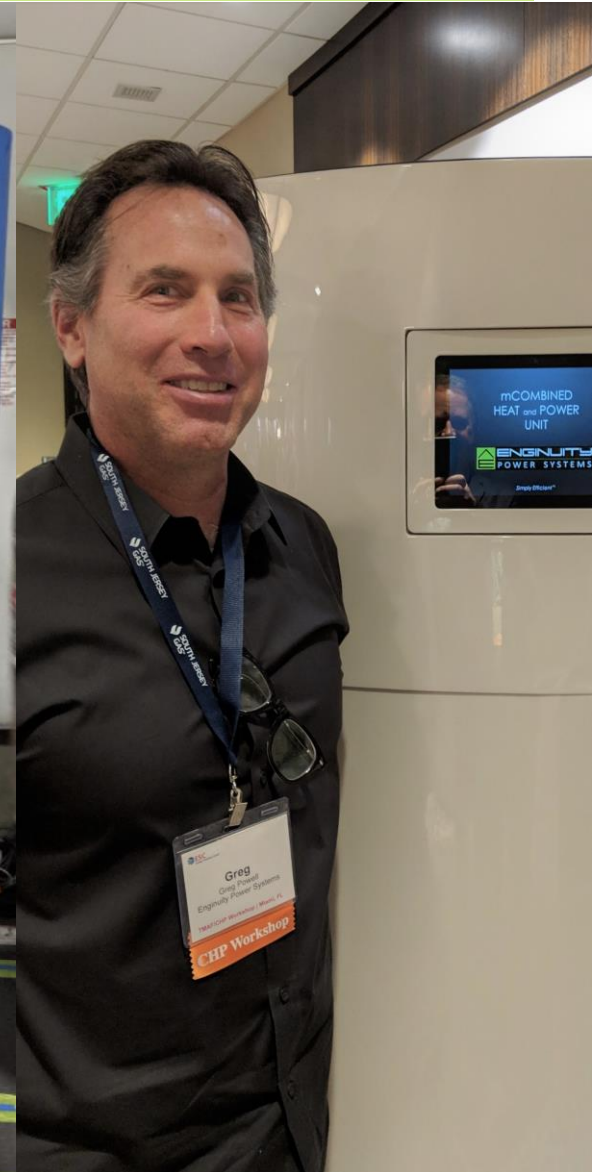
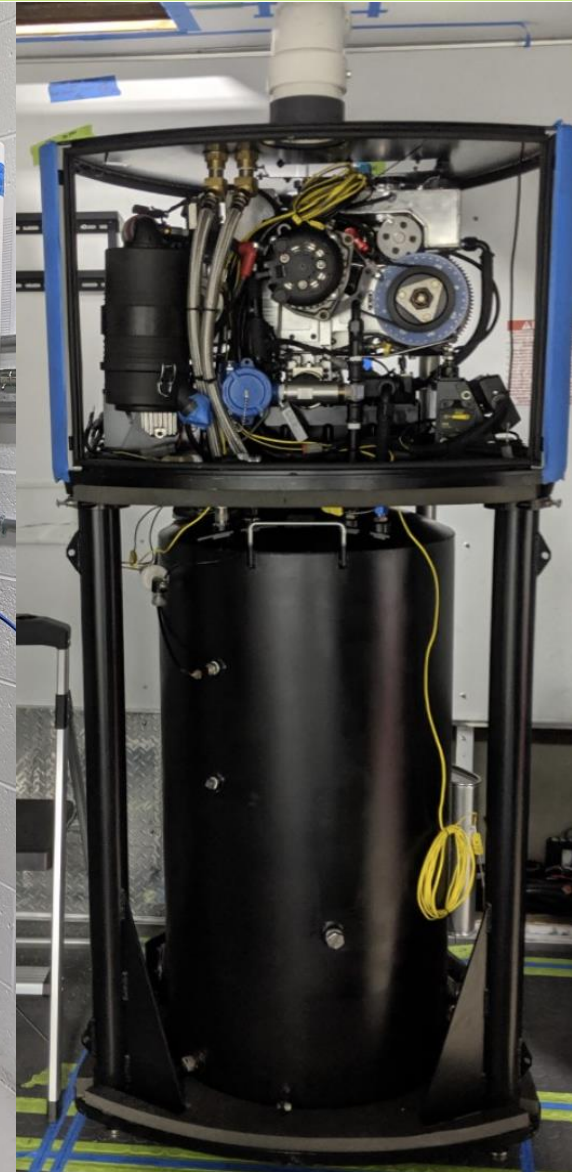
## 8 KW POWER + ON-DEMAND HOME HEAT

### CORE APPLICATIONS

- Generates up to 8.6 kw on demand and serves as an in-home back-up power generator
- Replaces traditional home furnace and water heater
- Natural distributed power platform

### ANCILLARY APPLICATIONS

- Charges electric vehicles (EV)
- Lowers humidity
- Complements and runs countercyclically to solar systems
- Runs chillers to provide cooling
- Powers snow-melt systems





# E|ONE: ULTRA – EFFICIENT



## HIGHLY-EFFICIENT

- E|ONE is 90% efficient vs. <30% for traditional centralized distribution model



## PAYBACK

- Reduces a home's electric bill; energy savings lead to a quick payback
- Grid services and incentives accelerate payback substantially



## SUSTAINABLE

- High-efficiency means less fuel, cleaner air, and less carbon emissions
- Green hydrogen-enabled, operates on renewable natural gas (RNG)



## INTEGRATED

- Seamlessly fits into the same location as a home's water heater and furnace
- Operates with existing fuel supply: natural gas or propane



## COMPATIBLE

- Compatible with ancillary and existing systems: batteries (storage), solar, and the grid

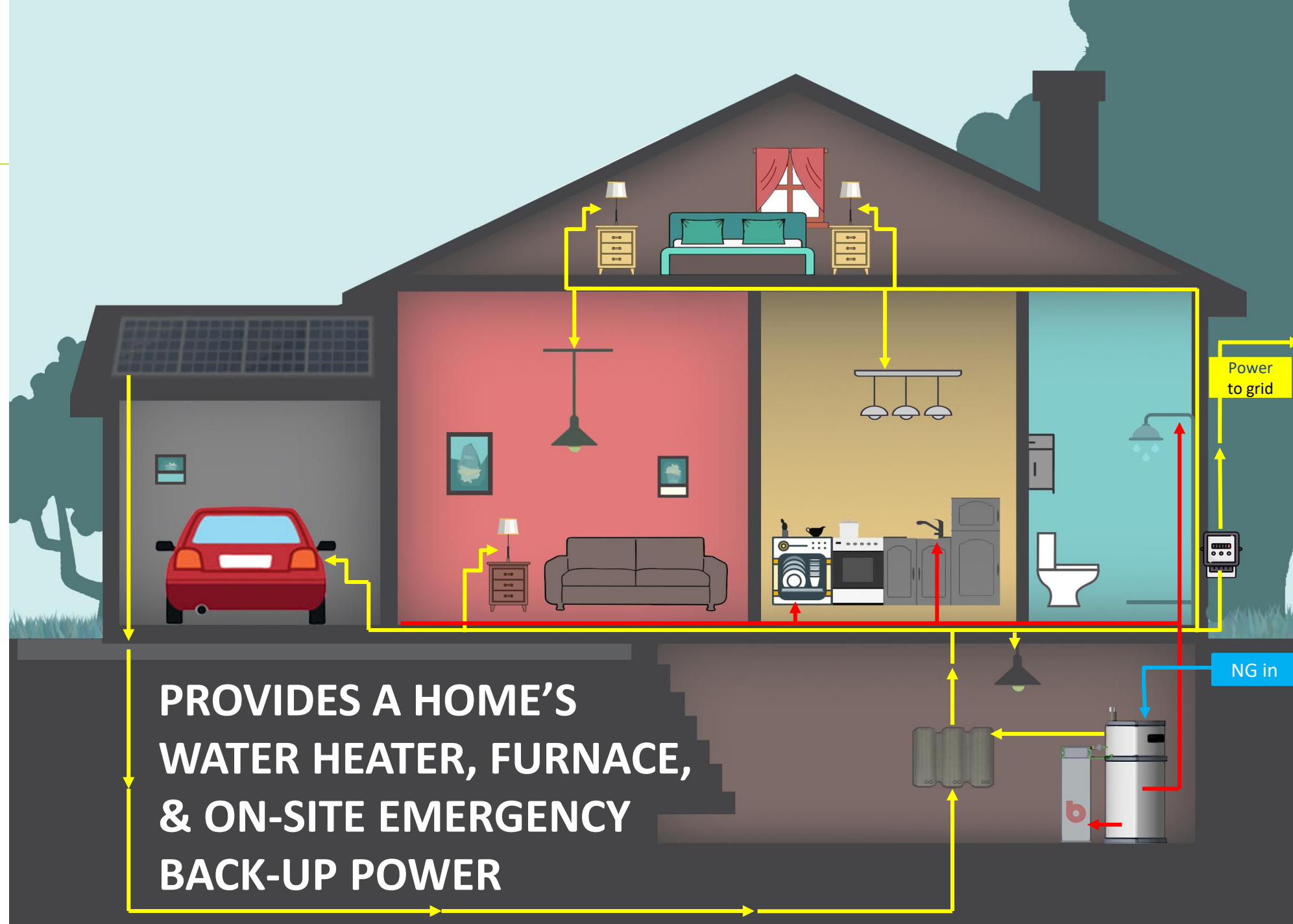


## DURABLE

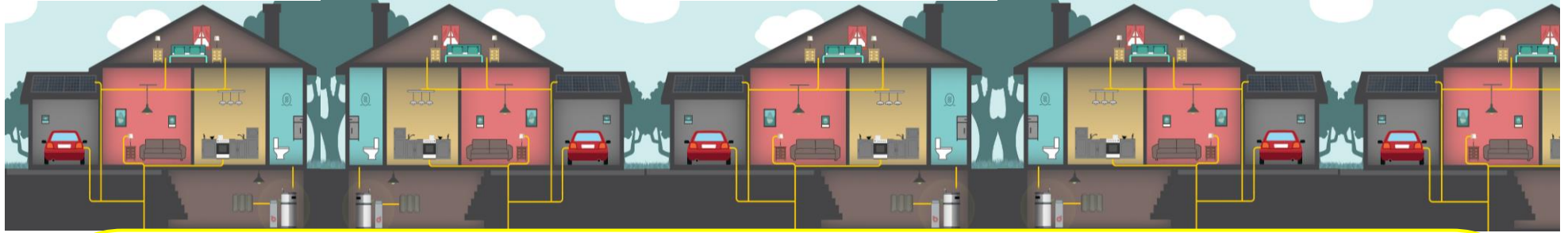
- Designed for indoor use with a 20+ year lifespan
- Many years of savings

E|ONE:

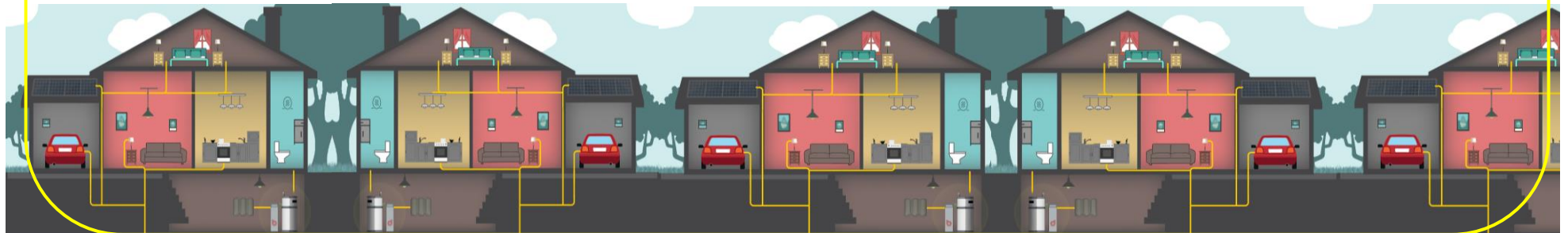
# THE HEART OF THE HOME



# E|ONE: MICROGRID CONFIGURATION



**E|ONE units linked together  
enable a local microgrid, each home supporting  
another home for resiliency, cost savings,  
and grid independence.**



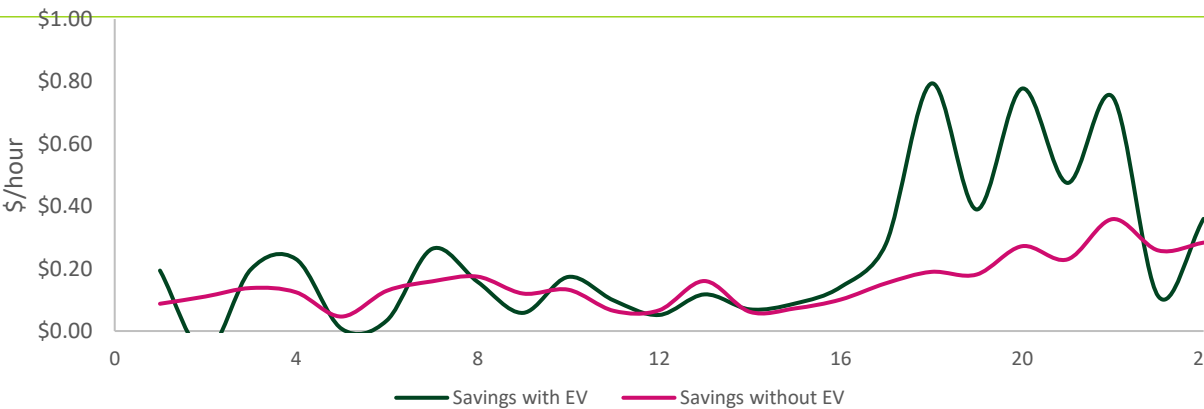


# E|ONE CONSUMER BENEFITS & PAYBACK: NORTHEAST EXAMPLE

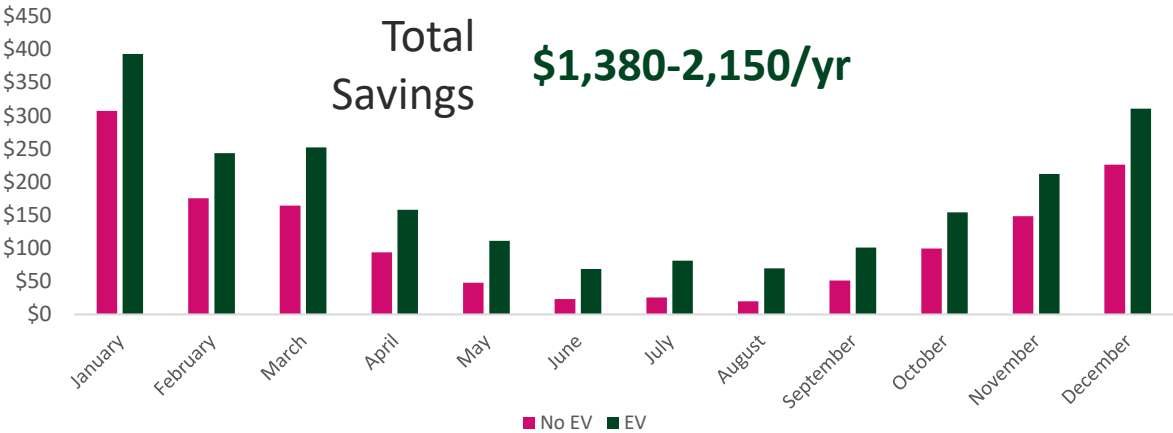
## ASSUMPTIONS

Assumption	Value
House Size	3,900ft <sup>2</sup>
Electrical Vehicle Case	3 kWh charge * 5 hours EV daily (optional)
Base Unit Model	8.6 kWh electricity
	13.5 kWh heat
	3.8 kWh embedded battery
Annual Case	52 weekly periods
Location	Northeast USA

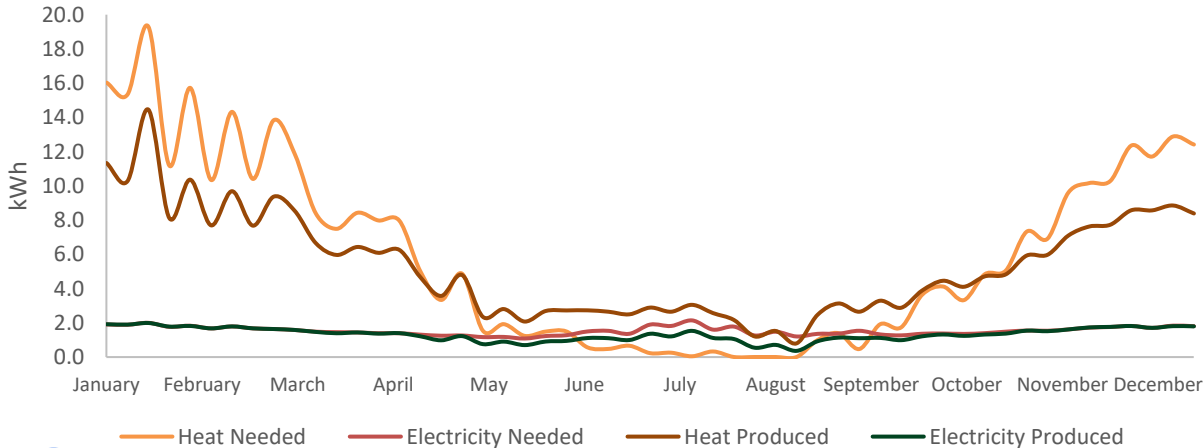
## E|ONE HOURLY ECONOMICS



## E|ONE MONTHLY SAVINGS



## ANNUAL PROFILE: PRODUCED VS. USED



- 1 Typical home in Northeast (Worcester, MA)
- 2 Big savings when E|ONE produces heat and makes power

- 3 E|ONE saves the homeowner money through the year
- 4 Most of power and heat needs can be met by E|ONE

# ENGINUIITY PLATFORMS BEYOND E|ONE

## COMMERCIAL MARKETS

**mCHP  
Residential**



**mCHP  
Commercial/Pool  
Heater**



**mCCHP  
mCHP +  
Cooling**



**Industrial  
Greenhouses**



**EV Refrigeration**



## ENGINUIITY ENGINE POWER PLATFORM

## MILITARY APPLICATIONS

**UAV Engines**



**Portable  
Generation**



**Hybrid Gensets**



# MILITARY APPLICATIONS

**PORTABLE  
SUSTAINABLE  
RESILIENT**

**OPERATIONAL  
ENERGY**

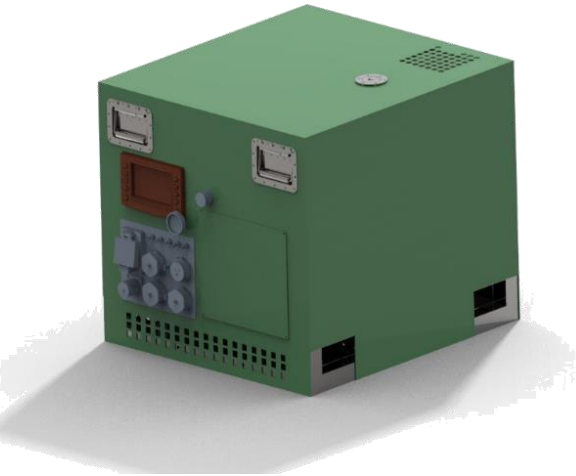


**\$8 MILLION**

**PROUD PARTNER  
of the  
U.S. DEPARTMENT OF  
DEFENSE**

# RIHGS™ : Ruggedized Integrated Hybrid GenSet™

Enginuity DoD Program advances critical U.S. Army hybrid small power (2-5 kW load following)



- Replaces three outdated 2kW, 3kW, 5kW systems in a single hybrid system with load follow capability
- Advances/optimizes the 2-5kW hybrid load following/single platform
- Adapts automatically to any tactical environment
- Significant weight reduction - RIHGS is 40+% lighter than the current 5kW
- RIHGS ensures greater flexibility via parallel application, small grid, slave for external battery use adds to power supply capability – up to 10kW continuous power for Brigade power, advanced weapon systems, combat outposts, tent cities
- RIHGS can be adapted for commercial applications



**We will not stop  
INNOVATING, INVENTING,  
& bringing to market  
carbon-reducing  
technologies.**



# ENGINUITY

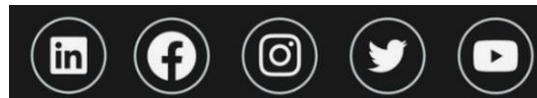
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P O W E R   S Y S T E M S

For more information,  
please contact:  
**[info@enginuitypowersystems.com](mailto:info@enginuitypowersystems.com)**



#EnginuityPowerSystems



[EnginuityPowerSystems.com](http://EnginuityPowerSystems.com)

# APPENDIX

# U.S. GRID INFRASTRUCTURE: UNPREPARED FOR THE FUTURE

## MAJOR ISSUES FACING THE GRID

### FAST GROWING DEMAND

- Net zero pathway increases power demand by a CAGR of **4.1%** from **2020-2050**<sup>(1)</sup>
- Without continuous improvements in energy efficiency, the world would need **2x** as much energy by 2040<sup>(2)</sup>

### INTERMITTENCY










- Intermittent renewable generation expected to grow from **11%** in 2020 to **39%** in 2050<sup>(3)</sup>

### CLIMATE CHANGE & UNRELIABILITY

- In **2000**, there were less than **24** major electricity disruptions in the US; in **2020**, this number surpassed **180**<sup>(4)</sup>

### INSUFFICIENT TRANSMISSION CAPACITY

- **70%** of transmission and distribution lines are nearing their expected 50-year lifespan<sup>(5)</sup>
- Investment shortfall needed to upgrade the **aging** grid is projected to reach **\$208 B** by **2029** and **\$338 B** by **2039**<sup>(5)</sup>

SOLUTIONS	COST	ENVIRONMENTAL IMPACT	ENABLES RENEWABLES	TECHNICAL FEASIBILITY
E SUITE				
PEAKER PLANTS				
BATTERY STORAGE				
GRID UPGRADES				

1) IEA, “Net Zero by 2050”

2) CAPP, “World Energy Needs”

3) EIA, AEO2022 Publication

4) American Society of Civil Engineers

5) Wall Street Journal, “America’s Power Grid is Increasingly Unreliable”