microEra Power

Commercial on-site power with electrical peaking & thermal storage

NREL Industry Growth Forum
May 9, 2019

TRANSITIONING ENERGY LANDSCAPE

Current problems:

1. Intermittency of renewables (wind/solar)
2. High cost of batteries for energy storage
3. Centralized Power 40% net efficiency (vs 90^{+}% CHP*plus*)
4. Peak consumption drives 30-50% of commercial electricity cost
5. $188 B annual business losses from outages and power quality

CHP*plus*™

COOLING

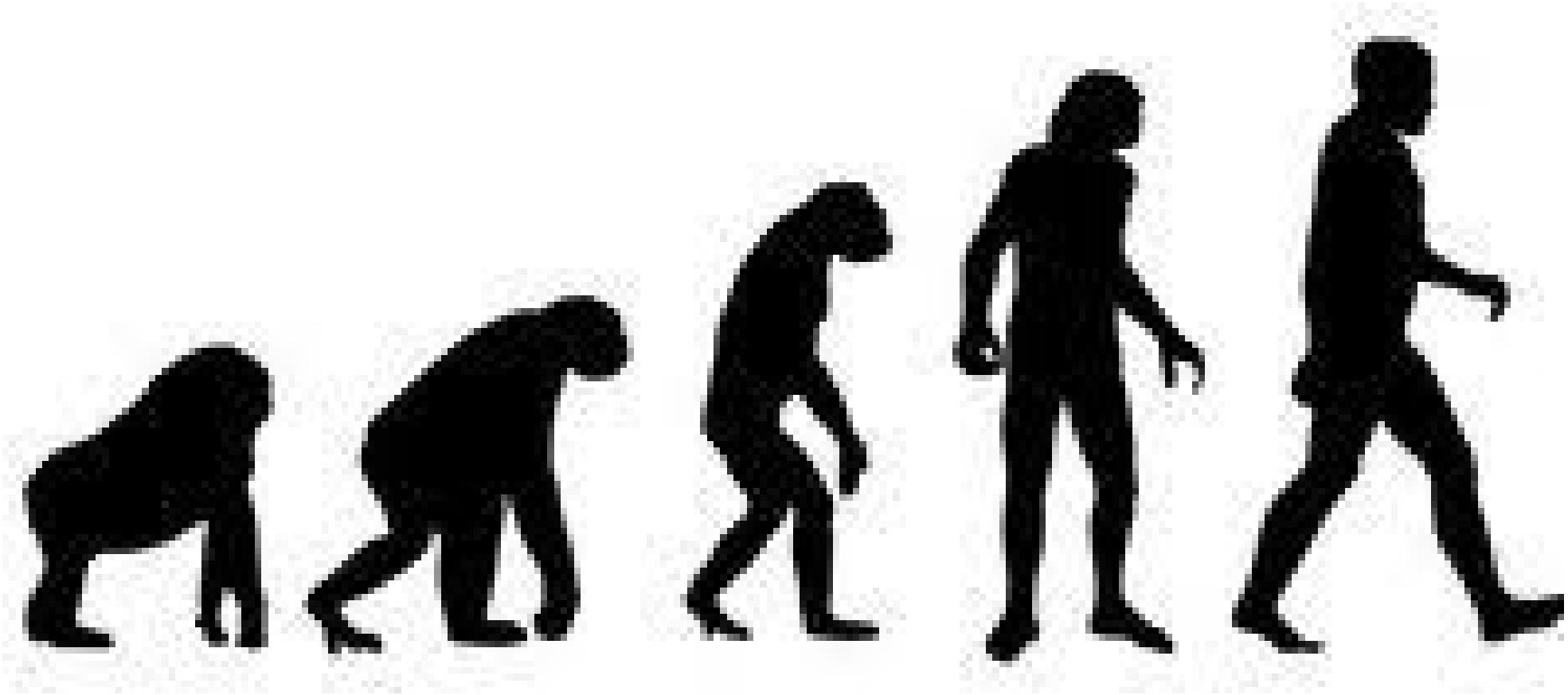
HEAT

POWER

***Plus*….**

- SMART system, optimized by AI and ML
- THERMAL energy storage
- ULTRA-EFFICIENT, near-zero emissions

CHP must evolve to stay relevant!



CHP*plus* – Product Value Drivers

(CLICK for 2’ video)

WHY CHP*plus*?

1. **SMART OPERATION** vs. 24/7 traditional CHP duty cycle
2. **THERMAL STORAGE, PEAK MANAGEMENT, DEMAND RESPONSE**
3. **90^{+}% TOTAL EFFICIENCY** vs. 40% Centralized Power
4. **50% LESS CO_2** vs. Current utility peaker-plants
5. **ENABLES RENEWABLES** vs. Battery expense, footprint, and safety issues

MicroEra Technologies

90+% total efficiency

150-400 kW modules

GRANTED PATENTS
Combustion and aftertreatment

Optional **FUEL CELL**
(patented combined cycle)

DC Electricity

Heat

H_2

Heat

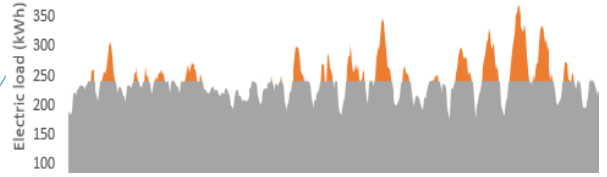
THERMAL STORAGE
Hot or Chilled Water, or
Phase Change Materials

Natural gas

AC Electricity

Heat

Cold



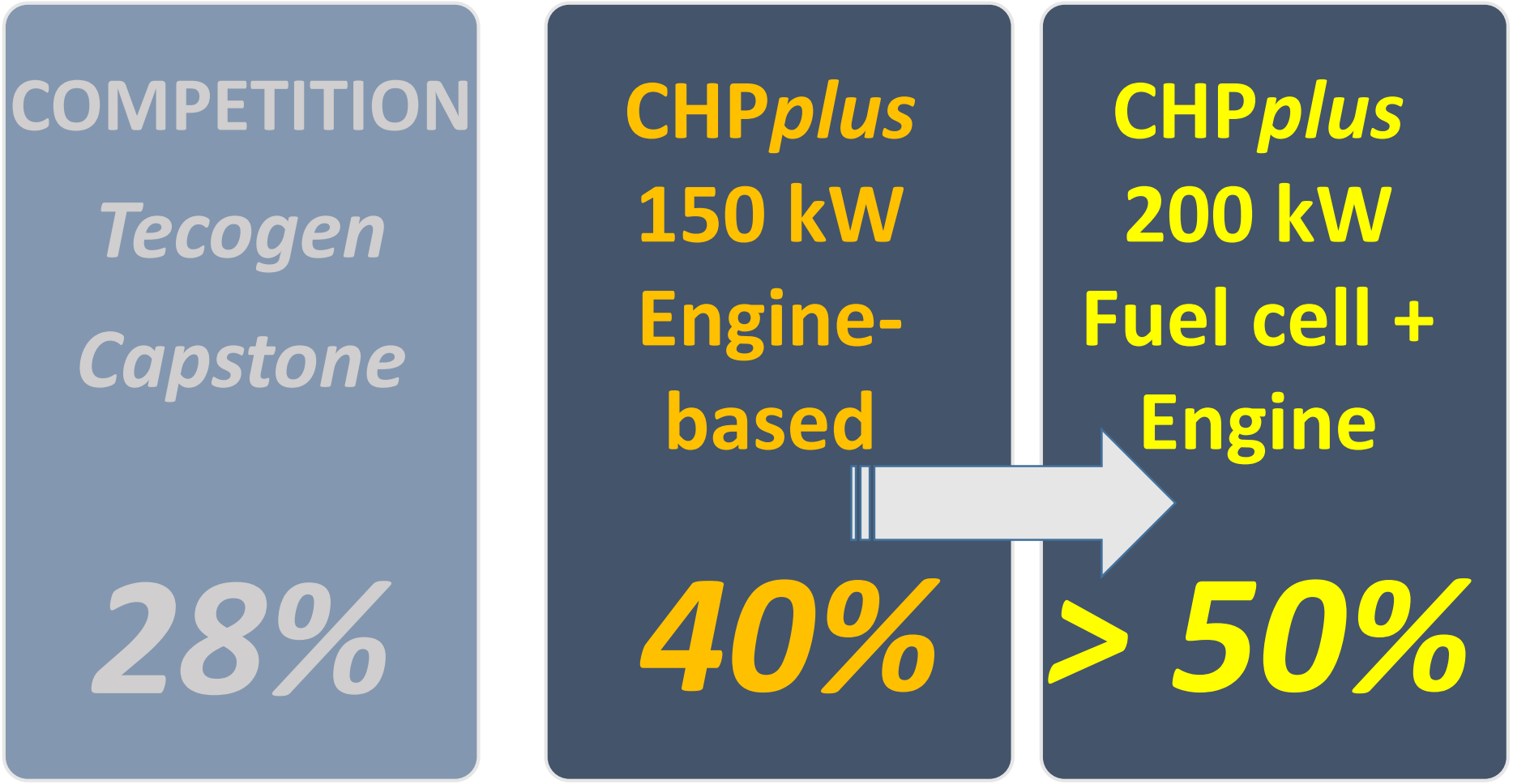
ENHANCED Natural Gas INTERNAL COMBUSTION ENGINE

PREDICTIVE/ADAPTIVE CONTROLS (with ML/AI)

Optional **CHILLER TECHNOLOGIES**

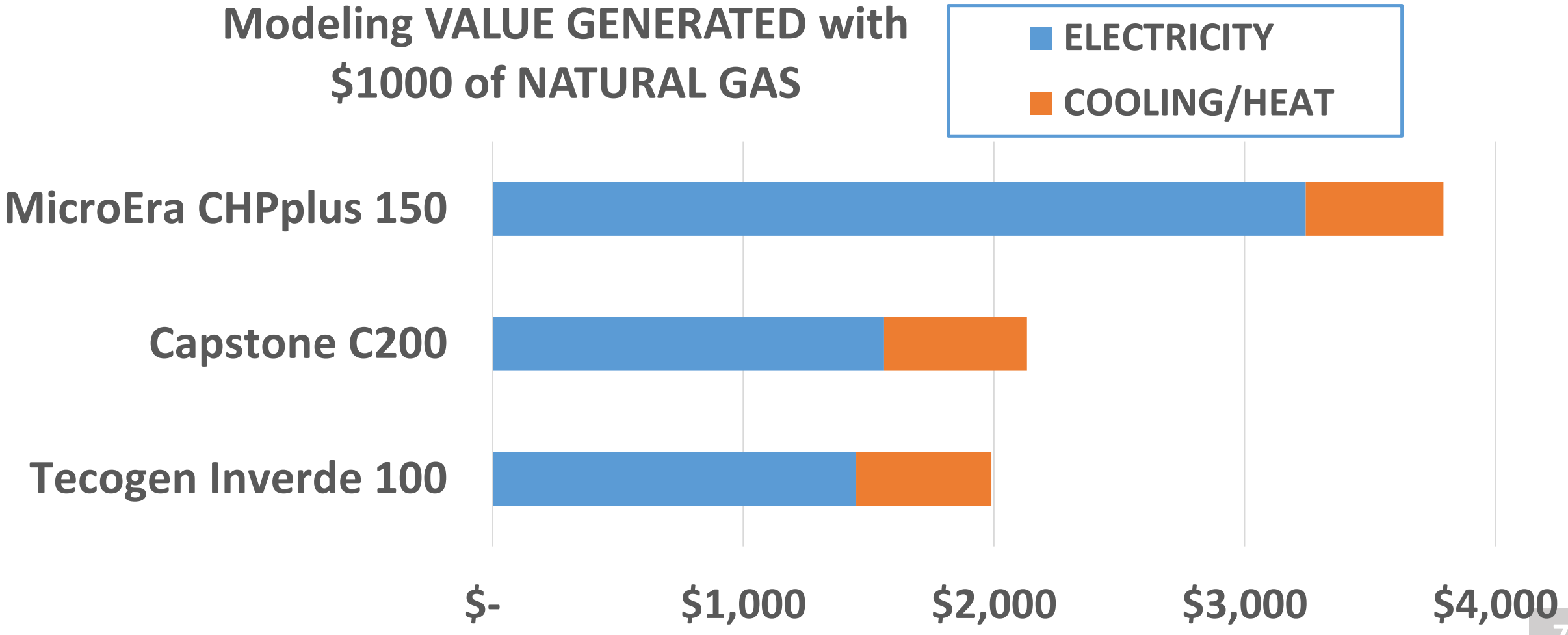
IP-PROTECTED ROADMAP

Comparing fuel-to-electric efficiency



Tecogen & Capstone analysis per NYSERDA CHP Data-Base, Field Performance. CHP*plus* Validated modeled results.

High efficiency & smart innovations drive faster payback



$75 Billion CHP Target Market*

*U.S. @ 150-400 kW scale, over ten years

2016 SOURCE: U.S. DOE CHP Technical Potential in U.S.

APPLICATIONS

INITIAL

Commercial:
Hotel, Multifamily,
Office, Warehouse

Food & Beverage:
Processing, Storage,
Retail, Indoor agriculture

FUTURE

Electrified
transportation

Data
centers

Go to Market via Energy as a Service (EaaS)

Accelerate sales and increase recurring revenue

COMPARING YEAR 5 PROJECTIONS	*Equipment Sales*	*Energy as a Service*
Revenue:	*$24 M*	*$134 M*
Profit:	*$6 M*	*$45 M*
Assets:	*minimal*	*$270 M*

VERSUS

MANAGEMENT

ELLIE RUSLING

CEO,
Co-founder

microEra Power
DISTRIBUTED GENERATION SOLUTIONS

JAMES GRIEVE

CTO,
Co-founder

DELPHI GM

ISAI POCHTAR

Development
& Finance

Prudential Financial

KIM KEEFER

Sales &
Partnerships

Carrier

ADVISORS

JOHN CLENDENIN	PUC Commission, HBS
TERRY PAHLS	CHP, Detroit Edison
VIC SALERNO	CEO, O'Connell Electric
JIM ZIZELMAN	VP Engineering, APTIV

JOHN CANOSA	IoT, Serial Entrepreneur
MARTY ST. GERMAINE	Software systems
MIKE STRAIGHT	Clean Energy Visionary
XXXXX XXXXXX	GM, CHP supplier

TEAM ACCOMPLISHMENTS

2015 – Founders

microEra Power
DISTRIBUTED GENERATION SOLUTIONS

Delphi IP Licensed

R·I·T venture creations

2016 – Friends & Family

HIGH TECH ROCHESTER
innovate. incubate. grow.

The Entrepreneurs Network

Rochester Venture Challenge

CLEAN TECH OPEN

2017 – Incubator support

nyserda
Energy. Innovation. Solutions.

Technology Road Map

nexus-ny

NEW YORK STATE OF OPPORTUNITY. 76West

2018 VC/Grant

Columbia University Energy Symposium

QUAKE CAPITAL

Lair East

EXTREME TECH CHALLENGE 2019

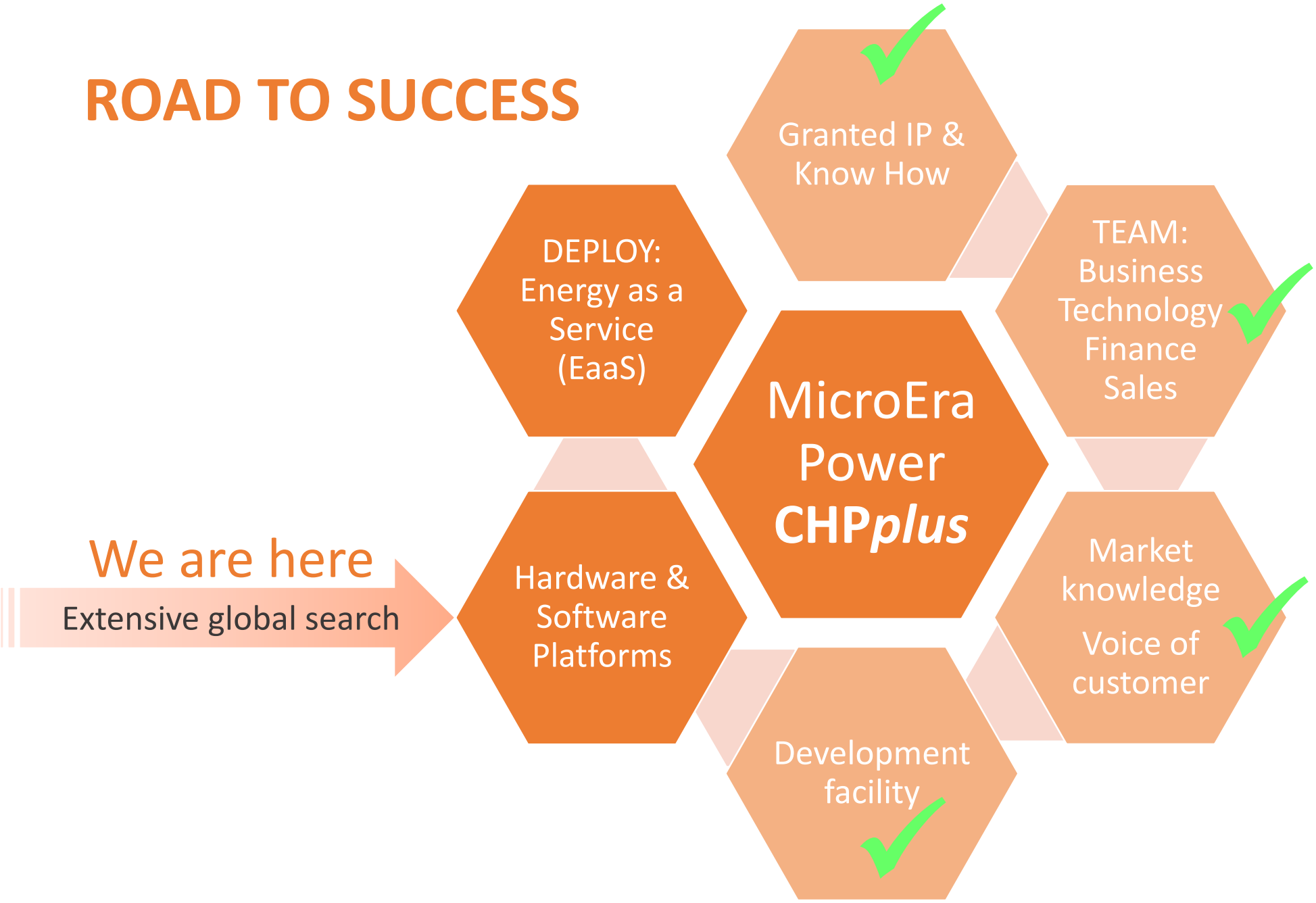
FUZEHUB

"MicroEra Power's valuable combination of high efficiency CHP with Demand Response and Peak Shaving supports the electric grid reliability and resiliency." – Dr. Dana Levy, Manager of CHP, NYSERDA

"Best innovation is taking things that are proven, and combining them to create a paradigm shift, which is what you are doing. The integration is the invention." – T. Spino, Pres., E2E Bsns Forum, KC

"HOST Hotels is always looking at innovative ways to generate return on their investments, profits, reducing costs and our carbon footprint." – Laura Lojas, Dir. of Finance, Marriott Denver West

ROAD TO SUCCESS



SYNERGY: 1 + 1 = 5

MicroEra + “Platform Partner” = Running faster and better together

MicroEra Power – Innovation

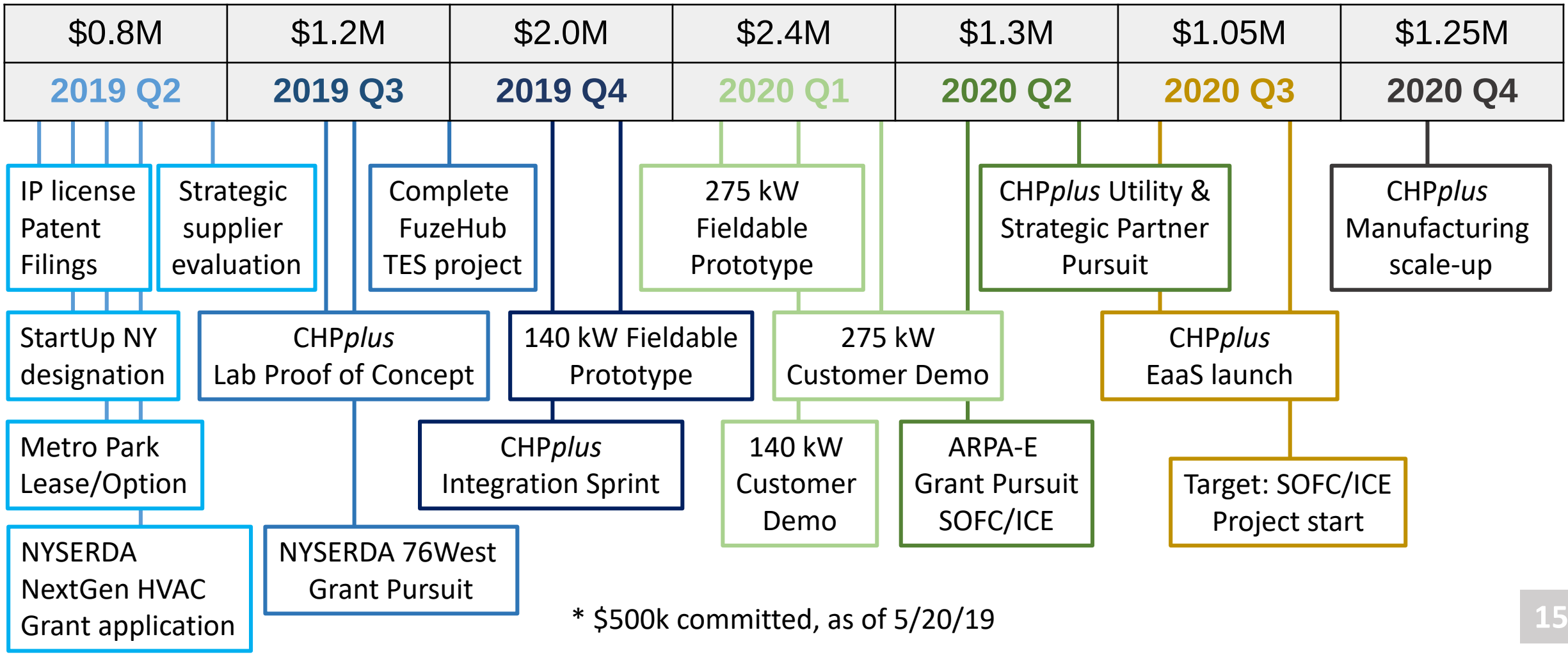
- Roadmap to higher efficiency, higher value, lower CO_2 products
- Unique patented IP, licensed from Delphi + additional differentiating inventions (patents and trade secrets)
- Low cost access to State-of-the-Art commercialization facility
- Experienced Management team
- Ambition to grow the business

Platform Partner – Foundation

- Full team (R&D, engineering, finance, purchasing, manufacturing, sales, etc.)
- Distribution in multiple countries
- Product line: commercial & industrial (150kW to 1 MW)
- Proprietary System Software
- Proprietary Cloud Software
- Established catalogs, documentation, parts ordering

Funds and Milestones 2019-2020

$2 M, Current raise * **$6-8 M**, System integration, EaaS launch



* $500k committed, as of 5/20/19

CHP*plus* SUSTAINABILITY

PEOPLE

Urban green jobs

Energy security

Social responsibility

PROFIT

CAGR

44% EaaS

7% CHP

PLANET

Enable renewables

Ultra-efficient

Roadmap to carbon-free fuels

microEra Power

CHP*plus*

BUSINESS FRIENDLY – UTILITY FRIENDLY – CLIMATE FRIENDLY

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STRONG IP – TALENT – FACILITY ACCESS

3 New Inventions
2 Trade Secrets

Exclusive rights to
6 Delphi Patents
1 Arthur D. Little Patent

Talent & AHEAD Energy Facility
Rochester, NY

START-UP NEW YORK $10M facility
AHEAD Energy in partnership with Alfred University

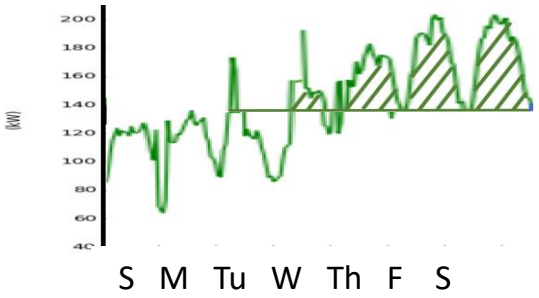
CHP*plus* – WIN-WIN-WIN

microEra Power
DISTRIBUTED GENERATION SOLUTIONS

Business

Reliable backup

Cost savings



Utility

Demand Response

Business = Revenue Center	Utility = Avoided Costs

Climate

Integrates with renewables

Low-carbon

Near-zero emissions

CHP*plus*

Reliability, savings, & high efficiency

- ☑ Reliable Backup power
- ☑ Smart Peak Shaving, Demand Response
- ☑ CHP/CCHP with Thermal Storage (Hot and Cold)
- ☑ Responsive power-on-demand supports Solar/Wind
- ☑ Fuel-flexible (Natural Gas / Propane / Biofuels → Carbon-free fuels)

Product Concept Video ☝