



**HEAT X™: LOW-TEMPERATURE MANUFACTURING WORKSHOP**  
**FEBRUARY 3, 2021**



**HEAT X™ HAS REVOLUTIONIZED RESIDENTIAL, COMMERCIAL, INDUSTRIAL AND ELECTRIC VEHICLES (EV) HEAT GENERATION SYSTEMS BY DEVELOPING AFFORDABLE MAGNETOCALORIC / MAGNETIC INDUCTION TECHNOLOGIES TO MORE EFFICIENTLY AND SAFELY DISPLACE EXISTING ENERGY SOURCES. HEAT X™'S PATENTED TECHNOLOGY GREATLY REDUCES HEAT GENERATED CO<sub>2</sub> EMISSIONS AND IS EXPECTED TO ACHIEVE THE APPLICABLE NET ZERO GOAL WELL BEFORE 2050, WHILE PROVIDING TRIPLE BOTTOM LINE RESULTS.**

ORIGINAL MAGNETOCALORIC TECHNOLOGIES WERE DEVELOPED DECADES AGO FOR HEAT INDUCTION APPLICATIONS AND ARE RECOGNIZED BY THE DEPARTMENT OF ENERGY. HOWEVER, THIS INITIAL DEVELOPMENT REQUIRED EXPENSIVE, RARE EARTH MATERIALS LIMITING ITS COMMERCIAL VIABILITY. HEAT X™ HAS PIONEERED AN ENGINEERING BREAKTHROUGH TO USE ABUNDANT MATERIALS THEREBY (I) MAINTAINING COMPETITIVE OR REDUCED APPLIANCE / PRODUCT UNIT RETAIL PRICING AND (II) REDUCING MONTHLY UTILITY COSTS FOR ALL HOMEOWNERS AND BUSINESSES.



TRIPLE BOTTOM LINE TECHNOLOGY

## AIR-TO-AIR

FURNACES /  
DRYERS



## SURFACE

COOKING EQUIPMENT / OVENS/  
ELECTRIC VEHICLES



## FLUIDS

WATER HEATERS / BOILERS /  
WASHERS



EXISTING ELECTRIC EFFICIENCY

CURRENT HEAT X™ MAGNETOCALORIC BETTER  
THAN ELECTRIC (BTE) EFFICIENCY

IMPROVEMENT (%)

CURRENT MAXIMUM TEMPERATURE<sup>1</sup>

HEAT X™ MAGNETOCALORIC BTE EFFICIENCY  
NEXT 12-MONTH (NTM) PLAN

THEORETICAL MAXIMUM EFFICIENCY

0.96x - 0.98x

2.6x - 2.9x

265%

> 49°C / 120°F

3.5x

4.5x - 5.0x

0.96x - 0.98x

1.7x

175%

> 510°C / 950°F

2.0x

UNKNOWN

0.96x - 0.98x

1.3x

135%

> 121°C / 250°F

1.9x

UNKNOWN

<sup>1</sup> Currently accomplished temperatures; potential exists to exceed these temperatures in future applications

## VISION

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IMPROVING LIVES THROUGHOUT THE WORLD REQUIRES MORE CLEAN, EFFICIENT AND AFFORDABLE ENERGY TECHNOLOGIES. FROM 2014 - 2018, THE UNITED STATES DEPARTMENT OF ENERGY ACKNOWLEDGED THE DIRE NECESSITY FOR TRANSFORMATIVE CLEAN TECHNOLOGIES LIKE HEAT X™ TO COMBAT CLIMATE CHANGE. ANTONIO M. BOUZA AND AYYOUB M. MOMEN HELPED LEAD THIS NEW INITIATIVE FOR THE FUTURE OF OUR PLANET AND WE ARE EXTREMELY GRATEFUL FOR THEIR CONTRIBUTIONS AND LEADERSHIP

## MISSION

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HEAT X™ HAS ENHANCED ITS PATENTED PORTFOLIO OVER THE PAST THREE YEARS WITH PRIVATE INVESTMENTS AND SEEKS A PARTNER TO (I) BRING ITS MARKET OFFERING TO THE WORLD IN THE MOST TIMELY, EFFICIENT AND EFFECTIVE MANNER, (II) ENSURE THE PLANET'S CLIMATE FUTURE, (III) ACCELERATE DEVELOPMENT EFFICIENCIES TO REACH THEORETICAL LIMITS, WHICH TODAY APPROACHES LESS THAN 60% OF TARGET IN THE CASE OF AIR-TO-AIR AND (IV) LEVERAGE HEAT X™'S EXISTING MAGNETOCALORIC TECHNOLOGIES TO PURSUE COOLING SYSTEM GENERATION, WHICH IS SIMPLY THE INVERSE REACTION OF HEAT MAGNETOCALORIC THEORY

## ADVISORY BOARD

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KERRY DUGGAN – SUSTAINABILID LLC, FOUNDER AND PRINCIPAL: Ms. DUGGAN HAS SPENT HER CAREER AS A “CONNECTOR AND CHANGE AGENT” IN POLICY AND POLITICS, TAKING A PLACE-BASED APPROACH TO CLEAN ENERGY, ENVIRONMENTAL PROTECTION AND HELPING CITIES ACCELERATE SOLVING EQUITY-RELATED CHALLENGES



CHRISTINE HARADA (CURRENTLY ONBOARDING) – i(x) INVESTMENTS, PRESIDENT: Ms. HARADA SERVED AS THE FEDERAL CHIEF SUSTAINABILITY OFFICER FOR THE UNITED STATES DURING THE OBAMA ADMINISTRATION. IN THIS ROLE, SHE PROVIDED OVERSIGHT FOR ALL SUSTAINABILITY-RELATED INITIATIVES ACROSS THE FEDERAL GOVERNMENT IN ENERGY, FLEET, AND ACQUISITIONS-GAME-CHANGING IMPROVEMENTS THAT ADDED TO OUR NATION'S CLEAN ENERGY FUTURE



JIM SABER – NEXTENERGY, PRESIDENT AND CEO: Mr. SABER PREVIOUSLY LED THE BUSINESS AND TECHNOLOGY DEVELOPMENT AND DEMONSTRATION ACTIVITIES TO SUPPORT COMMERCIALIZATION AND BUSINESS GROWTH OF NEXTENERGY'S ADVANCED ENERGY CLIENTS AND STAKEHOLDERS



RESIDENTIAL



COMMERCIAL



INDUSTRIAL



TRANSPORTATION  
EV

**GREEN ALTERNATIVE  
TECHNOLOGY PORTFOLIO**

**READY TO COMMERCIALIZE** THE THEORY OF MAGNETOCALORIC TECHNOLOGY WAS FORMULATED BY THOMAS EDISON AND NIKOLA TESLA. NASA CONTINUED DEVELOPING THESE THEORIES AND HEAT X™'S GAME CHANGING ENGINEERING ACHIEVEMENTS HAVE RESULTED IN VIABLE COMMERCIALIZATION STRATEGIES.

**12 PROVISIONS / UTILITY PATENT APPLICATIONS** AND TRADE SECRETS SUPPORTED BY EXTENSIVE INTERNATIONAL R&D AND IP DESIGNS

**CLEAN & EFFICIENT**

**100% CLEAN.** NO FOSSIL FUEL, GAS OR ADDITIONAL EMISSIONS GENERATED

**+265% GREATER AIR-TO-AIR OUTPUT** THAN EXISTING SOLUTIONS, WITH INCREASING EFFICIENCY AS EXTERNAL TEMPERATURE DECREASES

**SURFACE AND FLUIDS** REPRESENT MORE RECENT BREAKTHROUGHS WITH HIGHER MAGNETOCALORIC EFFICIENCY DEVELOPMENT

**CURRENT HEAT X™ TECHNOLOGY** CAN BE FURTHER ADVANCED TO ACHIEVE THEORETICAL EFFICIENCIES

**SCALABLE, MODULAR &  
DECENTRALIZED**

**SCALABLE** APPLICATIONS WITH THE SAME CORE MAGNETOCALORIC TECHNOLOGY (PROOF CONCEPTS: 2.5 kW AND 5.0 kW AIR HEATERS, 1.5 kW COOKTOP AND 2.5 kW WATER HEATER)

**MODULAR** DESIGNS ADAPTIVE TO VARYING ENERGY REQUIREMENTS ABLE TO BE PLACED IN DESIRED LOCATIONS

**DECENTRALIZED HEAT X™** DESIGN DOES NOT REQUIRE PLACEMENT IN ONE LOCATION TO PROVIDE COMFORT IN MULTIPLE AREAS

**SAFE, AFFORDABLE &  
COMPLEMENTARY**

**PEACE OF MIND.** 100% SAFE TECHNOLOGIES WITH NO GAS EMISSIONS OR RISK OF GAS EXPLOSIONS AND POISON EXPOSURE

**COMPETITIVE RETAIL PRICE** FOR HEAT GENERATING APPLIANCES AND OTHER PRODUCTS WITH COST SAVINGS IN ENERGY DELIVERY, MANUFACTURING, REPAIR AND INSTALLATION DUE TO LESS REQUIRED COMPONENTRY

**LOWER UTILITY EXPENSE** COMPARED TO EXISTING MARKET TECHNOLOGIES

**COMPLEMENTARY** TECHNOLOGY WORKS WITH EXISTING SYSTEMS

Energy Source	Affordable	Clean	Sustainable	Energy Efficient	Safe	Modular & Decentralized	Applications		
							Air	Surface	Fluids
Gas	✓								
Electric	✓	✓	✓						
Induction		✓	✓	✓	✓	✓			
MC / MI <b>HEAT X™</b>	<b>HX™</b>	<b>HX™</b>	<b>HX™</b>	<b>HX™</b>	<b>HX™</b>	<b>HX™</b>			

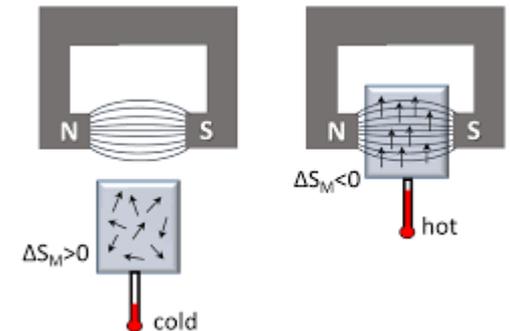
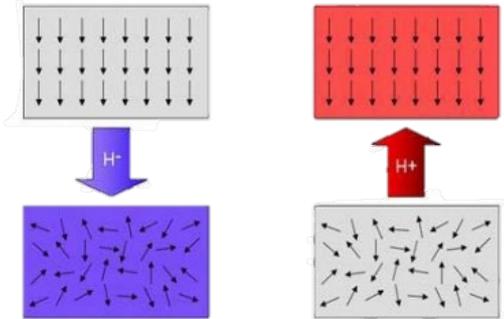
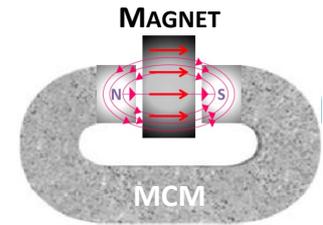
MAGNETOCALORIC TECHNOLOGIES HAVE BEEN RESEARCHED AS A PROMISING ALTERNATIVE TO EXISTING REFRIGERATION, HEAT PUMPING, AIR CONDITIONING, AND EVEN POWER GENERATION TECHNOLOGIES.

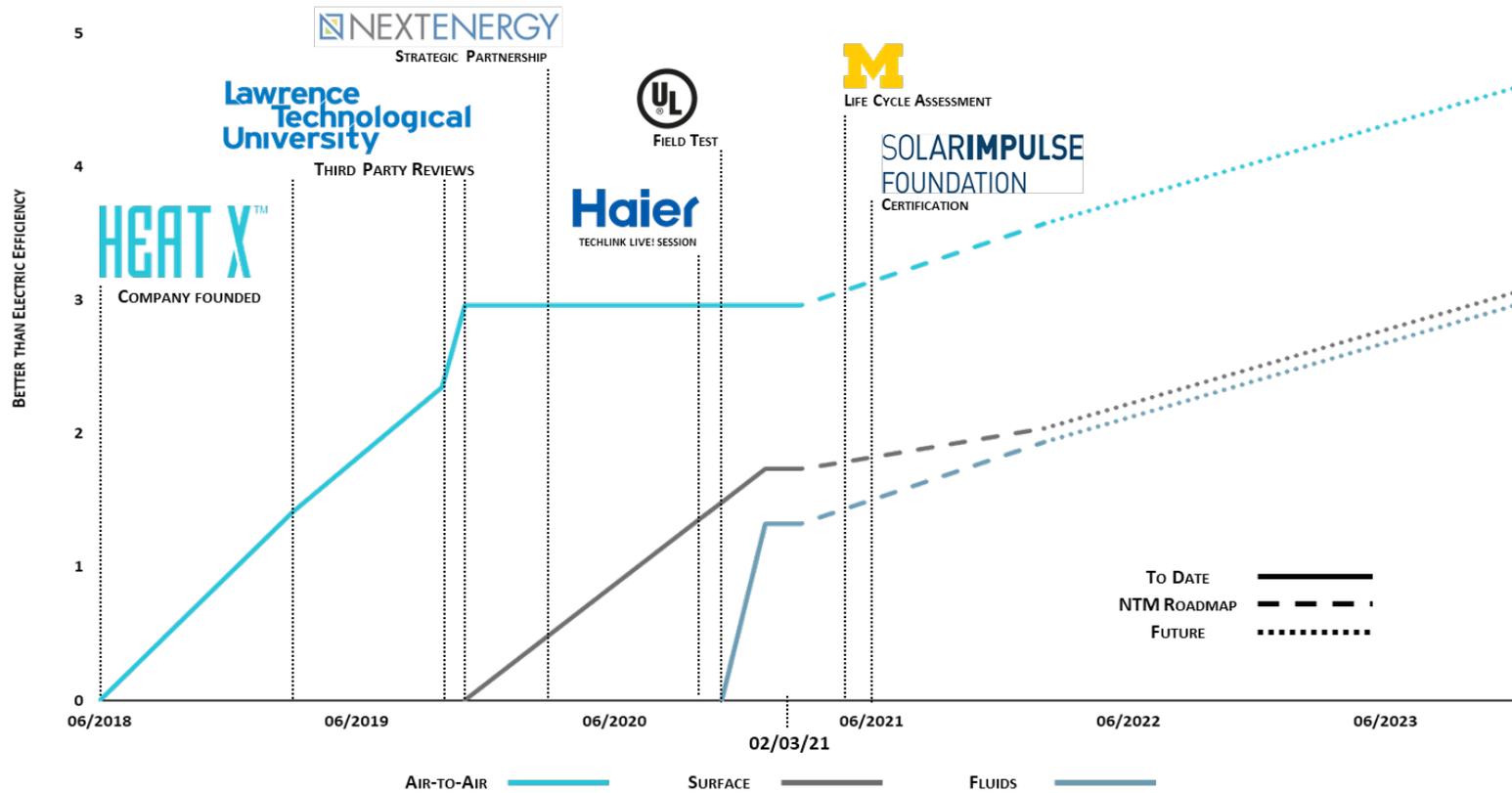
A MAGNETIC HEATING / COOLING SYSTEM APPLIES A MAGNETIC FIELD TO A MAGNETOCALORIC MATERIAL (MCM). THE RESULT OF THIS PROCESS IS CALLED THE MAGNETOCALORIC EFFECT (MCE). THE MCE IMPLIES THE TEMPERATURE OF SUITABLE MATERIALS INCREASES WHEN EXPOSED TO A MAGNETIC FIELD AND DECREASES WHEN REMOVED. AS A RESULT, THE EFFECT IS REVERSIBLE AND ALMOST INSTANTANEOUS.

BASED ON THE RESEARCH OF ANTONIO BOUZA, CALORIC EFFECTS ARE MAXIMIZED WHEN A MATERIAL IS SWITCHED FROM A DISORDERED INTO AN ORDERED STATE, AND / OR FROM ONE ORDERED STATE TO ANOTHER. THE BENEFITS OFFERED BY CALORIC HEATING / COOLING INCLUDE SCALABILITY, POTENTIAL ENERGY-EFFICIENCY AND CLEANER AIR.

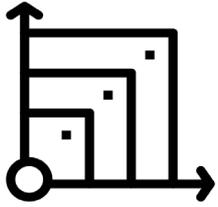
AS ILLUSTRATED IN THE DIAGRAMS, HEAT AND COOL ENERGY GENERATION REPRESENT OPPOSITE, YET RELATED RESULTS OF THE MCE. HEAT X™'S UNDERSTANDING OF HEAT ENERGY GENERATION CAN TRANSLATE TO THE EVENTUAL DEVELOPMENT OF COOLING SYSTEM GENERATION.

THE MAGNETIC HEATING SYSTEM DOES NOT USE ANY NATURAL GAS OR CO<sub>2</sub>. IT ALSO HAS A COEFFICIENT OF PERFORMANCE (COP) PROPORTIONALLY TO THE MAGNITUDE OF THE CALORIC EFFECTS AND INVERSELY PROPORTIONATE TO THE STRENGTH OF THE DRIVING FIELD. THESE TECHNOLOGIES BRING THE POSSIBILITY FOR IMPROVEMENTS IN ENERGY EFFICIENCY, COMPACTNESS, NOISE LEVEL, AS WELL AS A REDUCTION IN ENVIRONMENTAL IMPACTS, AND WILL ACT AS A SUSTAINABLE REPLACEMENT FOR CURRENT TECHNOLOGIES.



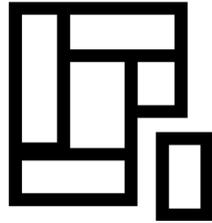


HEAT X™ HAS ACCOMPLISHED THIS MAGNETOCALORIC TECHNOLOGY BREAKTHROUGH ON A SHOE-STRING BUDGET USING “OFF THE SHELF” MAGNETS AND OTHER MATERIALS. THE COMPANY IS CONFIDENT OF ITS NEXT TWELVE-MONTH EFFICIENCIES UNDER CURRENT CONDITIONS AND BELIEVES AN INVESTOR WITH ACCESS TO MORE RESOURCES CAN MORE RAPIDLY ACHIEVE THEORETICAL LIMITS OF THIS TECHNOLOGY. AS THE TIMELINE REVEALS, HEAT X™ HAS FOCUSED ITS EFFORTS ON MAGNETOCALORIC HEAT GENERATION SOURCES, NAMELY, AIR, SURFACE AND MOST RECENTLY FLUIDS. THE COMPANY LOOKS FORWARD TO PURSUING COOL ENERGY GENERATION WHICH REPRESENTS SIMILAR, BUT OPPOSITE, MAGNETOCALORIC THEORY.



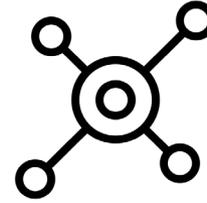
### SCALABLE

APPLICATIONS OF HEAT X™ TECHNOLOGIES ARE SCALABLE AROUND THE SAME CORE MAGNETOCALORIC TECHNOLOGY



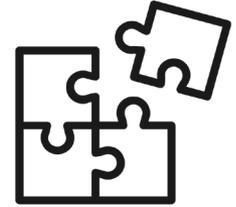
### MODULAR

MODULAR SETTINGS INCREASE ENERGY OUTPUT AND APPLICATION SCENARIOS



### DECENTRALIZED

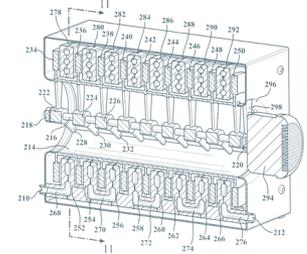
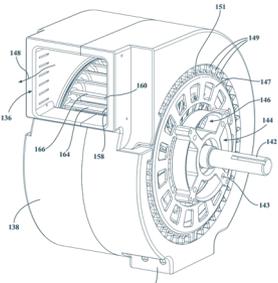
HEAT X™ TECHNOLOGIES DO NOT NEED TO BE IN A SINGULAR OR SPECIFIC LOCATION TO PROVIDE COMFORT IN MULTIPLE AREAS



### COMPLEMENTARY

HEAT X™ TECHNOLOGIES MIRROR EXISTING APPLICATION DIMENSIONS AND DO NOT REQUIRE MAJOR REMODELING

HEAT X™ HAS DEVELOPED THE WORLD'S LARGEST PATENT PORTFOLIO FOR MAGNETOCALORIC HEATING TECHNOLOGIES  
12 PATENTS & 6 PCT INTERNATIONAL APPLICATIONS



FUTURE APPLICATIONS OF HEAT X™ TECHNOLOGIES WILL DISRUPT THE RESIDENTIAL AND INDUSTRIAL GAS APPLIANCE INDUSTRIES, DISPLACE CURRENT ELECTRIC AND GAS SURFACE HEATING EQUIPMENT AND TRANSFORM COMMERCIAL, INDUSTRIAL HEATING AND TRANSPORTATION WITH SAFE AND ENVIRONMENTALLY FRIENDLY SOLUTIONS FOR FUTURE GENERATIONS

INCENTIVES AND TAXATION POLICIES HELP ENCOURAGE THE TRANSITION TO CLEAN ENERGY SOLUTIONS SOONER RATHER THAN LATER

## U.S. AVERAGE HEAT GENERATING APPLIANCES



EXIST. RETAIL PRICES	GAS	ELECTRIC
WASHER	\$ N/A	\$363
DRYER	375	300
HEATER / FURNACE	3,000	2,000
WATER HEATER	700	500
DISHWASHER	N/A	550
OVEN / STOVE	1,358	2,050
<b>TOTAL</b>	<b>\$ 6,346<sup>1</sup></b>	<b>\$ 5,763</b>

EXIST. MONTHLY COSTS	GAS <sup>2</sup>	ELECTRIC <sup>2</sup>
WASHER	\$ N/A	\$0.49
DRYER	0.28	4.89
HEATER / FURNACE	20.26	15.91
WATER HEATER	7.75	14.73
DISHWASHER	N/A	0.61
OVEN / STOVE	0.86	1.54
<b>TOTAL</b>	<b>\$29.24</b>	<b>\$38.16</b>



EST. RETAIL PRICES	CURRENT HEAT X™	NTM HEAT X™
WASHER	\$468	\$468
DRYER	365	365
HEATER / FURNACE	2,250	2,250
WATER HEATER	605	605
DISHWASHER	665	665
OVEN / STOVE	2,260	2,260
<b>TOTAL</b>	<b>\$6,613</b>	<b>\$6,613</b>

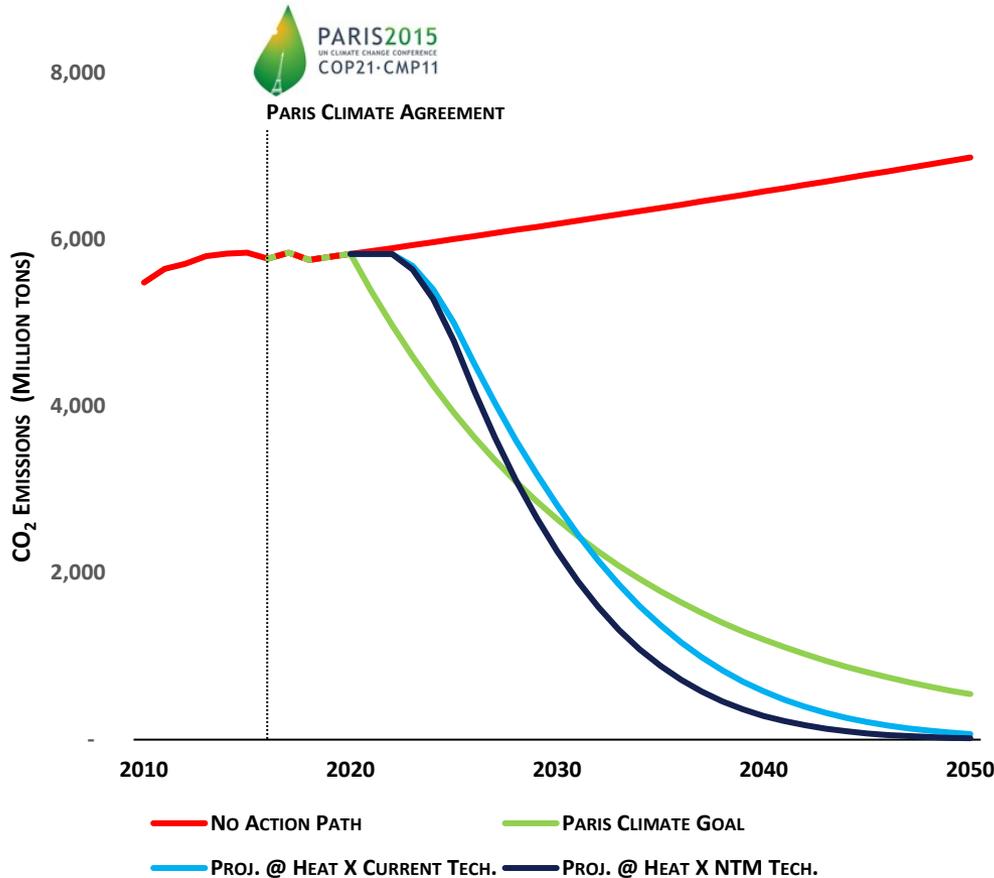
EST. MONTHLY UTILITY	CURRENT HEAT X™	NTM HEAT X™
WASHER	\$0.37	\$0.26
DRYER	1.84	1.40
HEATER / FURNACE	6.00	4.55
WATER HEATER	11.33	7.75
DISHWASHER	0.47	0.32
OVEN / STOVE	0.91	0.77
<b>TOTAL</b>	<b>\$20.93</b>	<b>\$15.04</b>

<sup>1</sup>Total assumes cost of electric washer and dishwasher for comparative purposes

<sup>2</sup>Utility costs based on most recent 5-year averages from U.S. EIA database

**WITHOUT THE INTRODUCTION OF GAME CHANGING TECHNOLOGIES, GLOBAL EMISSIONS WILL LIKELY RISE THROUGH 2030 AND BEYOND. REVOLUTIONARY CLEAN ENERGY SOLUTIONS LIKE HEAT X™ ARE VITAL TO REACH NET ZERO.**

## GLOBAL<sup>1</sup> HOUSEHOLD CO<sub>2</sub> EMISSIONS FROM HEAT GENERATION



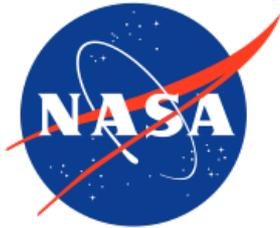
## HEAT X™ GLOBAL IMPACT

-  CO<sub>2</sub> ACCOUNTS FOR NEARLY 75% OF THE EARTH'S GREENHOUSE GAS EMISSIONS
-  HOUSEHOLD HEAT GENERATION ACCOUNTS FOR APPROXIMATELY 16% OF ALL CO<sub>2</sub> RELEASED INTO THE ATMOSPHERE
-  HEAT X™ CURRENT TECHNOLOGIES REQUIRE LESS THAN 52% OF ELECTRICAL CONSUMPTION COMPARED TO EXISTING ELECTRIC APPLIANCES
-  HEAT X'S NEXT TWELVE-MONTH (NTM) MAGNETOCALORIC EFFICIENCIES ARE CONSERVATIVELY EXPECTED TO FURTHER REDUCE ELECTRICAL CONSUMPTION TO 37% COMPARED WITH EXISTING ELECTRIC APPLIANCES
-  HEAT X™'S PROJECTED COMMERCIALIZATION ASSUMES A 20% MARKET PENETRATION RATE BY YEAR FIVE WITH CONSERVATIVE GRADUAL INCREASES TO 45% BY 2050 USING EXISTING MAGNETOCALORIC EFFICIENCIES
-  DUE TO LACK OF AVAILABLE DATA, THIS ANALYSIS EXCLUDES THE CONTRIBUTION OF COMMERCIAL, INDUSTRIAL AND EV CO<sub>2</sub> EMISSIONS, WHICH IF INCLUDED WOULD FURTHER IMPACT THE NET ZERO TIMELINE

<sup>1</sup>Global Household CO<sub>2</sub> Emissions from Heat Generation is extrapolated from the proportion of heat related emissions produced in the U.S. extrapolated to Total Global CO<sub>2</sub> emissions. Of note, Global Electricity & Heat emissions as a percentage of Total Global emissions for 2017 equates to 40.9% compared to 38.5% for U.S. Electricity & Heat emissions as a percentage of Total U.S. emissions during the same period.

IN RECENT YEARS, SPACE EXPLORATION HAS BECOME A SERIOUS TOPIC OF DISCUSSION IN THE SCIENTIFIC COMMUNITY. OVER THE PAST 50 YEARS, NASA HAS PATENTED NUMEROUS HEAT PUMP DESIGNS TO PROVIDE A RELIABLE AND EFFICIENT HEAT SOURCE THAT CAN BE IMPLEMENTED IN MULTIPLE ESSENTIAL APPLICATIONS AND SPACE MISSIONS.

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HEAT X™

***“OUR DREAM IS TO RAPIDLY COMMERCIALIZE MAGNETOCALORIC/MAGNETIC INDUCTION HEATING TECHNOLOGY GLOBALLY, SO THAT WE CAN MAKE A SUBSTANTIAL, POSITIVE IMPACT ON THE WORLD AND BEYOND.” – HEAT X™ TEAM***

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ONE OF THE BIGGEST ISSUES FACING FUTURE SPACE PROGRAMS IS THE EXTREME COLD TEMPERATURES OF OUTER SPACE. ON AVERAGE, THE TEMPERATURE ON MARS IS ABOUT  $-80^{\circ}\text{F}$  ( $-60^{\circ}\text{C}$ ). IN WINTER, NEAR THE POLES, TEMPERATURES CAN GET DOWN TO  $-195^{\circ}\text{F}$  ( $-125^{\circ}\text{C}$ ). A SUMMER DAY ON MARS MAY GET UP TO  $70^{\circ}\text{F}$  ( $20^{\circ}\text{C}$ ) NEAR THE EQUATOR, BUT AT NIGHT THE TEMPERATURE CAN PLUMMET TO ABOUT  $-100^{\circ}\text{F}$  ( $-73^{\circ}\text{C}$ ). EXISTING HEATING TECHNOLOGIES BECOME PRACTICALLY USELESS IN THESE HARSH COLD TEMPERATURES DUE TO THE DRAMATIC DROP IN EFFICIENCY AND DISSIPATION COMPARED TO AIR OR FLUID. HEAT X™ TECHNOLOGIES OPERATE MORE EFFICIENTLY THE COLDER THE TEMPERATURE.

## WE CANNOT ACHIEVE OUR GOALS ALONE

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THESE ARE GREAT ENDEAVORS AND TIME IS OF THE ESSENCE. OUR TEAM IS SURROUNDING ITSELF WITH INDIVIDUALS LIKE KERRY DUGGAN, CHRISTINE HARADA, JIM SABER AND PEOPLE LIKE YOU TO BRING AWARENESS AND, MORE IMPORTANTLY, ACTION ON THIS ONCE IN A LIFETIME OPPORTUNITY