HPQ – SILICON RESOURCES

The Emerging Low Cost **Silicon Metal Producer**

AGM JUNE 2019

DISCLAIMERS

HPQ – SILICON RESOURCES

This presentation includes certain

"FORWARD-LOOKING STATEMENTS"

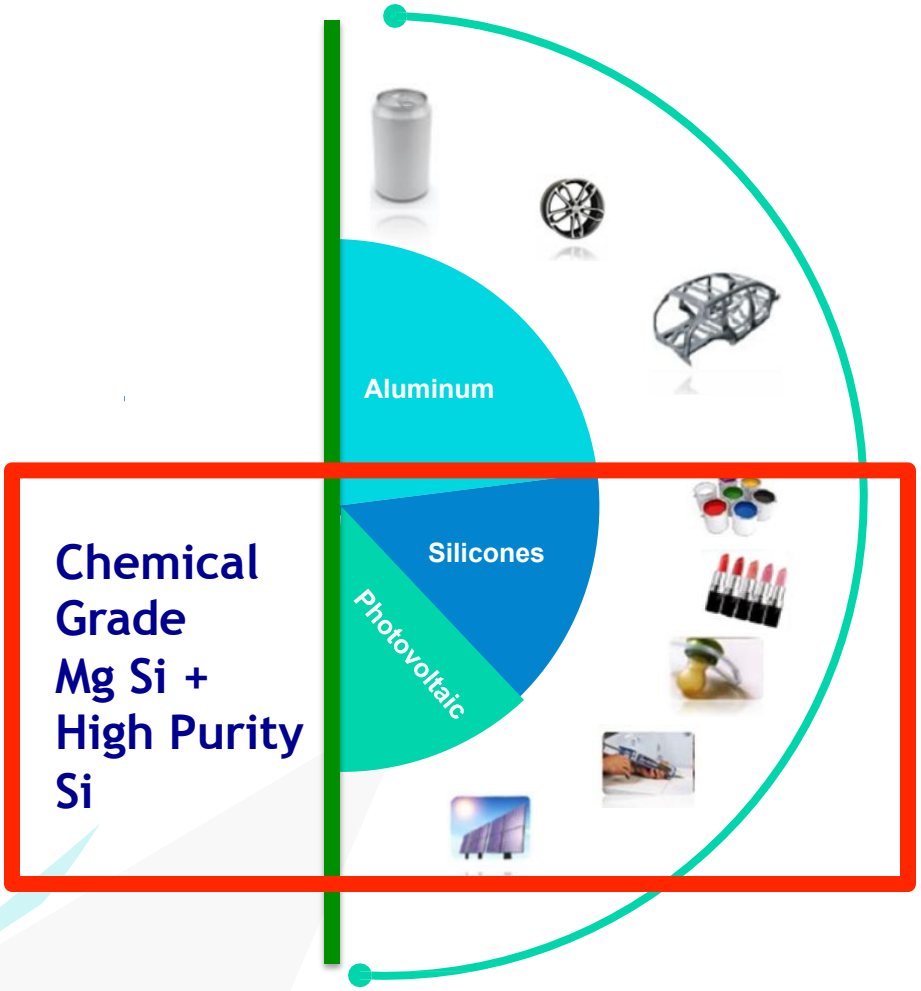
All statements, other than statements of historical fact, included herein, including, without limitation, statements regarding future plans and objectives of the company, are forward-looking statements that involve various risks, assumptions, estimates and uncertainties, and any or all of these future plans and objectives may not be achieved.

The term Metallurgical Silicon Metal, Mg Si, and Silicon are used interchangeably and refer to high purity silicon between 98.0% Si and 99.5% Si. The terms SoG Si, Solar Grade Silicon and Polysilicon are used interchangeably and refer to high purity silicon used to produce solar cells for solar panel. Depending on the production method used, chemical or metallurgical, the purity ranges from 5N+ (99.999% Si) purity for Si produce metallurgically to 6N and 9N for Si produce via the chemical route.

These statements reflect the current expectations or beliefs of HPQ-Silicon Resources Inc. ("the Company") and are based on information currently available to the Company. There can be no assurance that such statements will prove to be accurate, and actual results and future events could differ materially from those anticipated in such statements. All of the forward looking statements contained in this presentation are qualified by these cautionary statements and the risk factors described above. Furthermore, all such statements are made as of the date this presentation is given.

An investment in the Company is speculative due to the nature of the its business. The ability of the Company to carry out its plans as described in this confidential presentation is depending on obtaining the required capital. There is no assurance that the Company will be able to successfully raise the capital required or to complete each of the growth initiatives described. Investors must rely upon the ability, expertise, judgment, discretion, integrity and good faith of the management and Board of the Company.

Silicon Metal End Markets



Silicon Metal

- **Typical Composition:** >98.5% Si
- **Primary End Markets:** Aluminum(40-45%), Silicones (35-40%), Solar cells (20-25%)

Global Megatrends Driving Increase Silicon Metal

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Megatrends	Implications	End Customer Product
Population Growth	Growing middle class China and India: consumption economy	• Silicones: healthcare, cosmetics, packaging
Urbanization	India, Brazil, and other emerging markets: infrastructure build	• Silicon: aluminum for cars, housing growth • Silicon: Silicone sealants for construction applications
Energy Efficiency	Lightweighting of vehicles Electric vehicles	• Silicon as alloying agent for aluminum to replace steel in vehicles • Prospects for silicon alloys in batteries
Alternative Energy & Sustainability	Growing demand for solar, and other sources of renewable energy	• Higher consumption of silicon for polysilicon used to make solar panels • Prospects for silicon Base Energy Storage

SILICON METAL (Si) NEEDED FOR ELECTRIC CARS

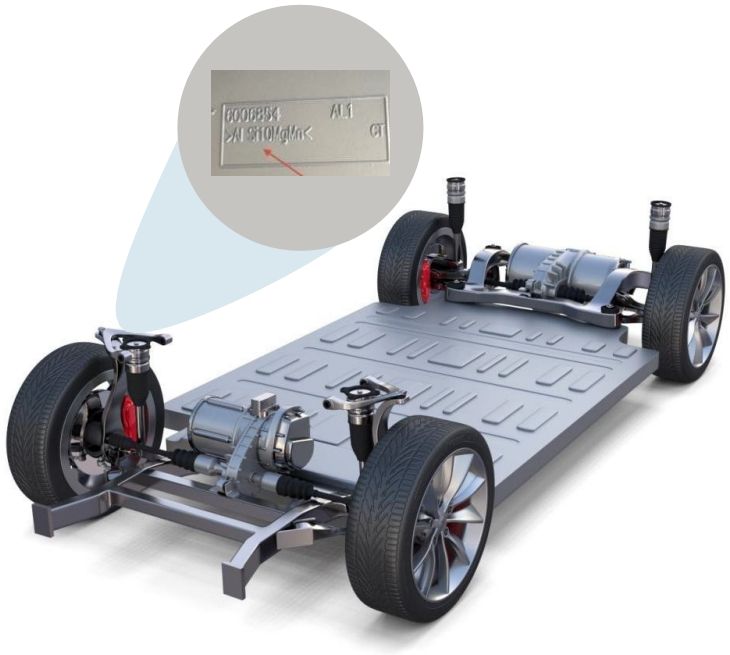
A HISTORY OF SUCCESSFUL RESULTS

The aluminum alloy chassis of Tesla car is 10% Silicon!

Aluminum silicon alloy makes the aluminum lighter and stronger

Silicon also found in the battery anode

Silicon in the windshield



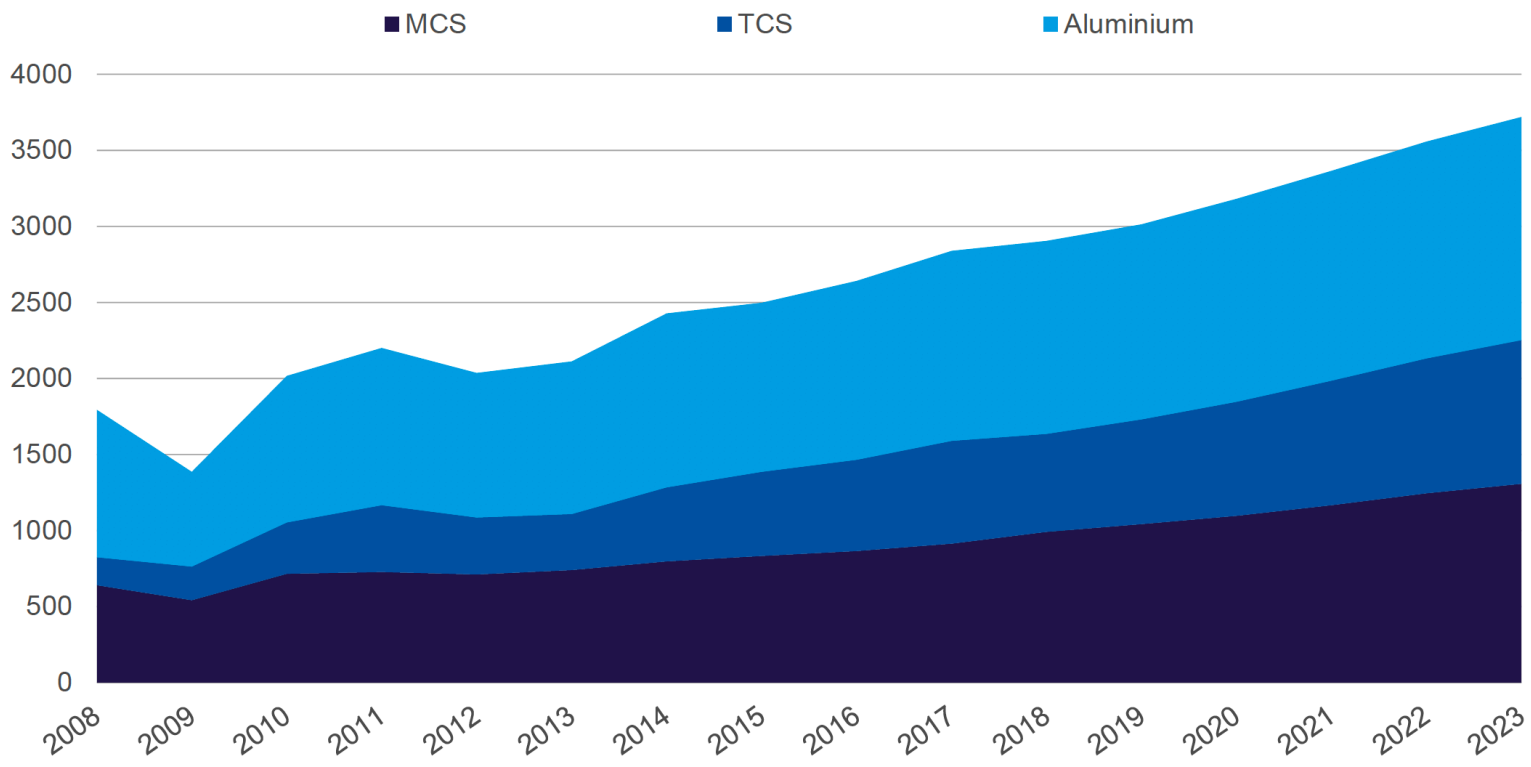
PLUG- IN EV SALES
(annual)

Mg Si Addressable Markets

CRU Silicon market outlook

Silicon demand continues to be driven by chemical sector

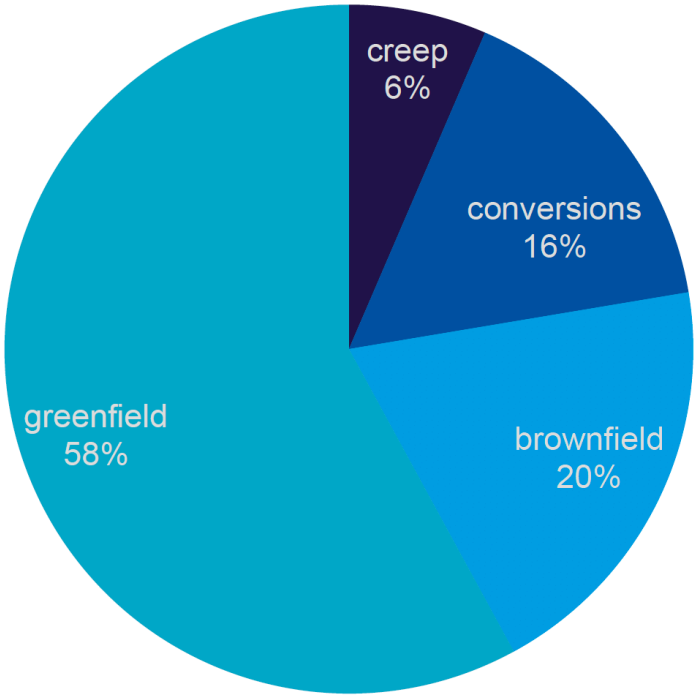
Silicon consumption by intermediate end-use, '000 t



CRU Silicon market outlook

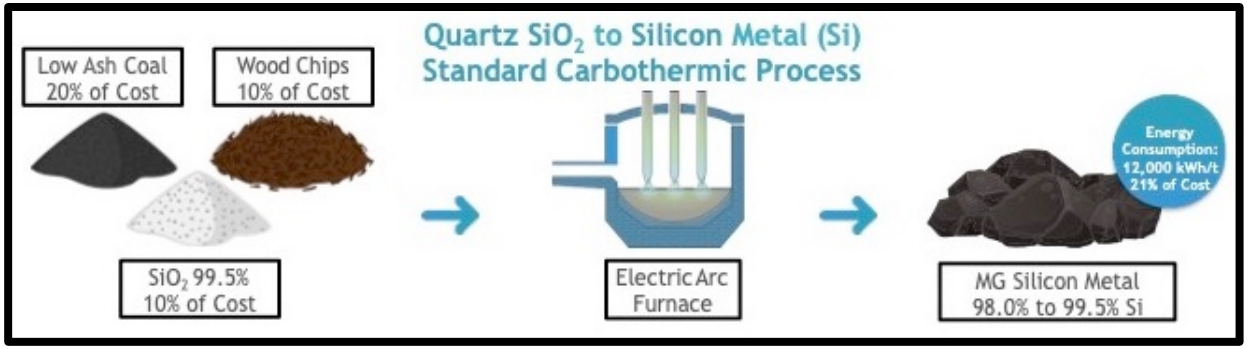
Greenfield plants will provide the majority of new capacity

Contribution to the expected growth in annual production capacity outside China and the CIS between 2010 and 2020, %

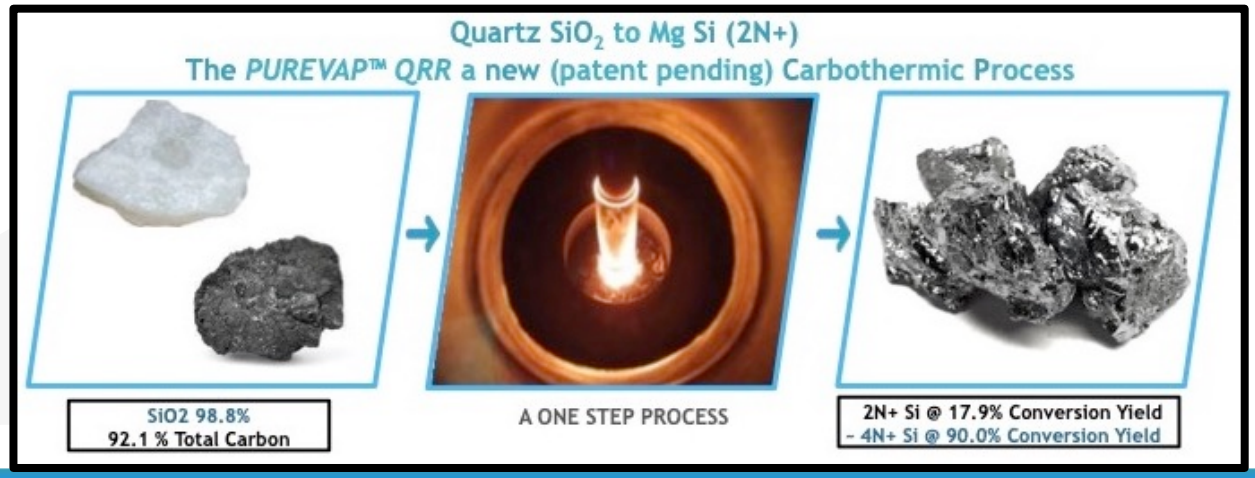


HPQ SOLUTION TO MEET Mg Si DEMAND:

- **New Greenfield plants needed to meet anticipated demand requires scale (> 30,000 MTY):**
  - Capex Cost range between US$8 to US$9 per Kg of annual capacity or US$ 240M to US$ 270M investments[1]
  - OPEX are high with little cost control options (70% of Operating Cost are process driven and variable)



- **New HPQ PUREVAP™ plants maximum scale efficiency reached at 5,000 MTY**
  - Capex Cost between US$8.59 for 2.5K plant down to US$5.93 per Kg of annual capacity at 5k MT per year[2]
  - Representing investment between US$ 21M to US$ 30M investments
  - Lowest operating cost process with capacity to control OPEX cost



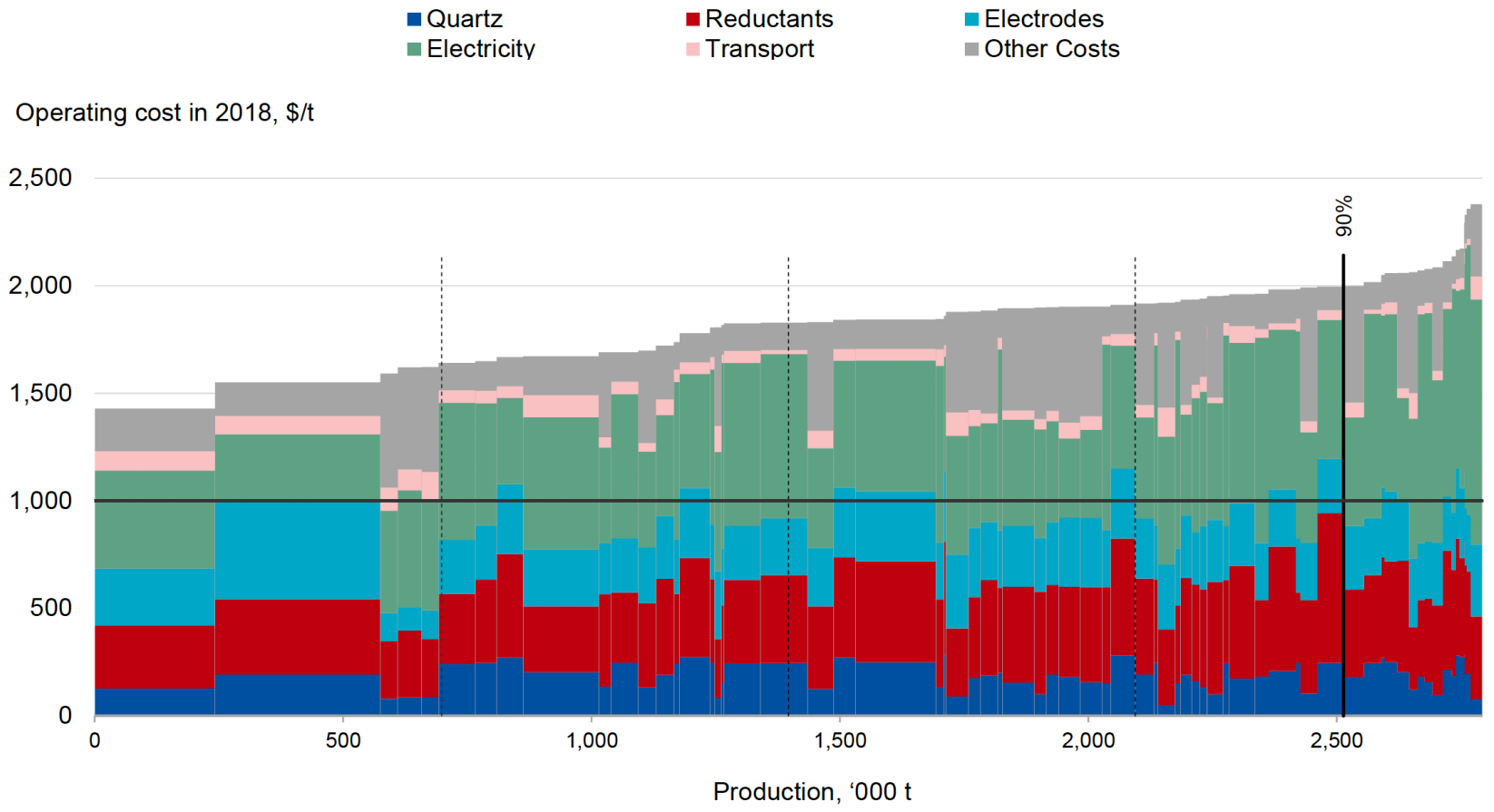
1- Source Ferroglobe, Viridis.iq, GmbM, Bloomberg, PCC se and Iceland Project
2- Source Budgetary Studies PyroGenesis Canada Inc.

Mg Si Addressable Markets

CRU

Silicon market outlook

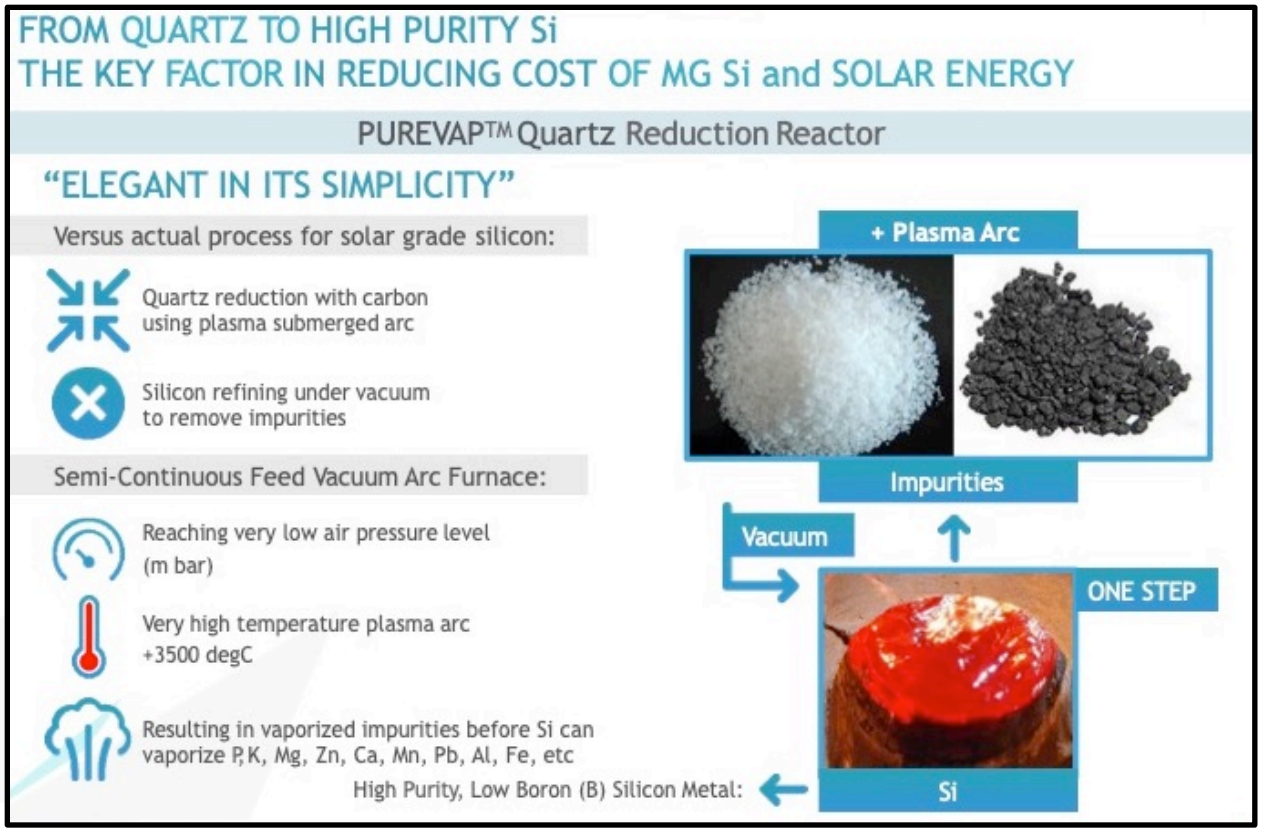
Global silicon cost curve is relatively flat



HPQ Business Approach

HPQ intend to maximize the proprietary advantages of its PUREVAP™ process with the following two prong strategy:

- Near – term cash flow niche market silicon metal applications (Chemical Grade Si, batteries,…), and
- High Purity silicon for advanced PV applications

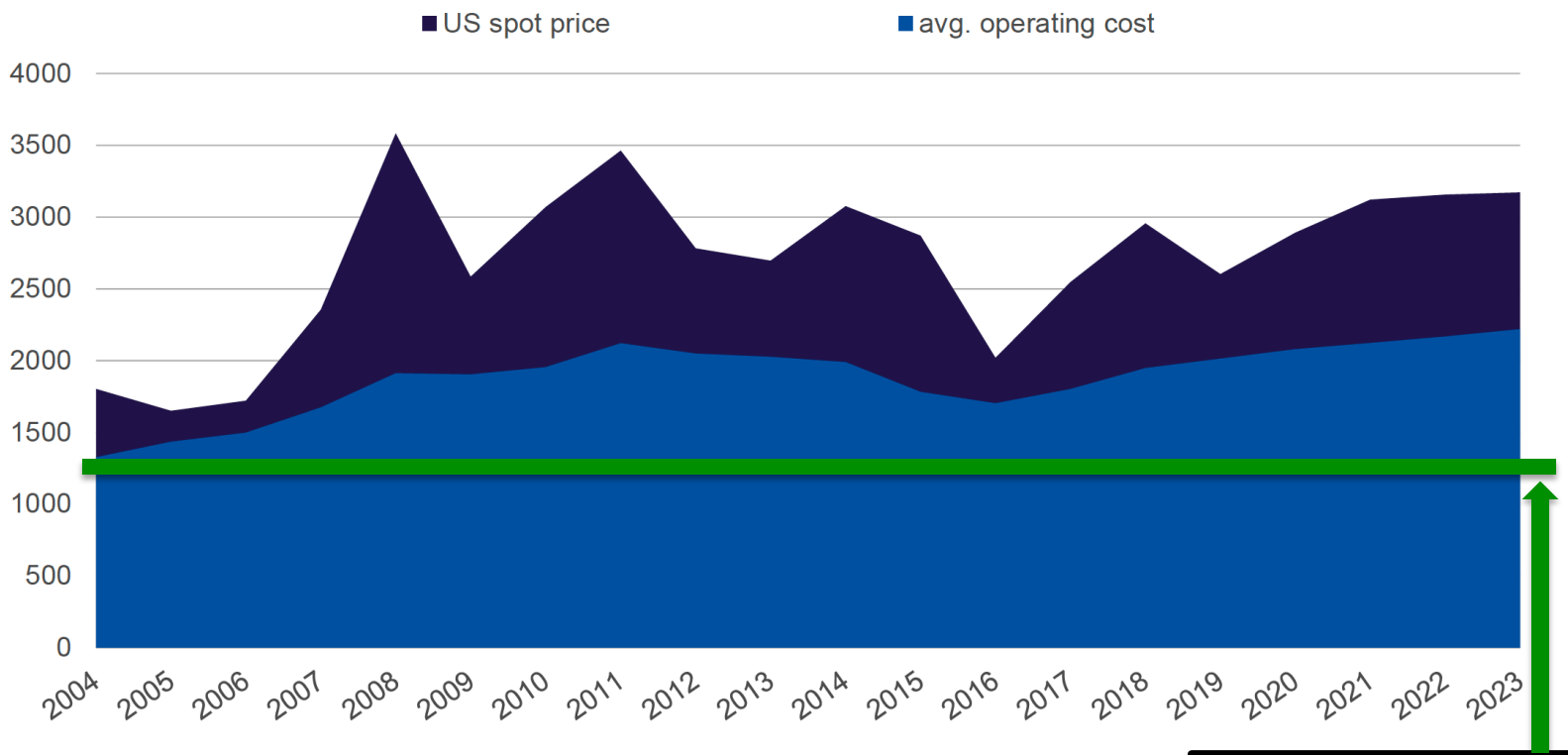


Mg Si Addressable Markets

CRU | Silicon market outlook

Silicon prices will support greenfield investment after 2019

US spot price 5.5.3 grade silicon vs. avg. operating cost at plants outside China and the CIS, $/t



HPQ GLOBALLY RENOWNED TECHNICAL PARTNERS

HPQ – SILICON RESOURCES

PYROGENESIS Plasma Expertise: One of the largest in the World

+25 years of experience & > 70 employees

>60 Patents worldwide (issued or pending)

40,900 ft² Manufacturing facility

The inventors of Plasma Atomization (Gold Standard)

World Leader In Advanced Plasma Processes

Technology Sold To US Navy For Use On Aircraft Carriers

Technology Tested and Validated By DARPA

Leaders in High Purity Spherical Metal Powders for Industrial 3D printing

Developer of PUREVAP One-Step Process To Produce High Purity Low Boron Silicon Metal

Developer of DROSRITE™: a Green Aluminum Recovery from Dross process

Agreements With Global Manufacturers and Trading Houses

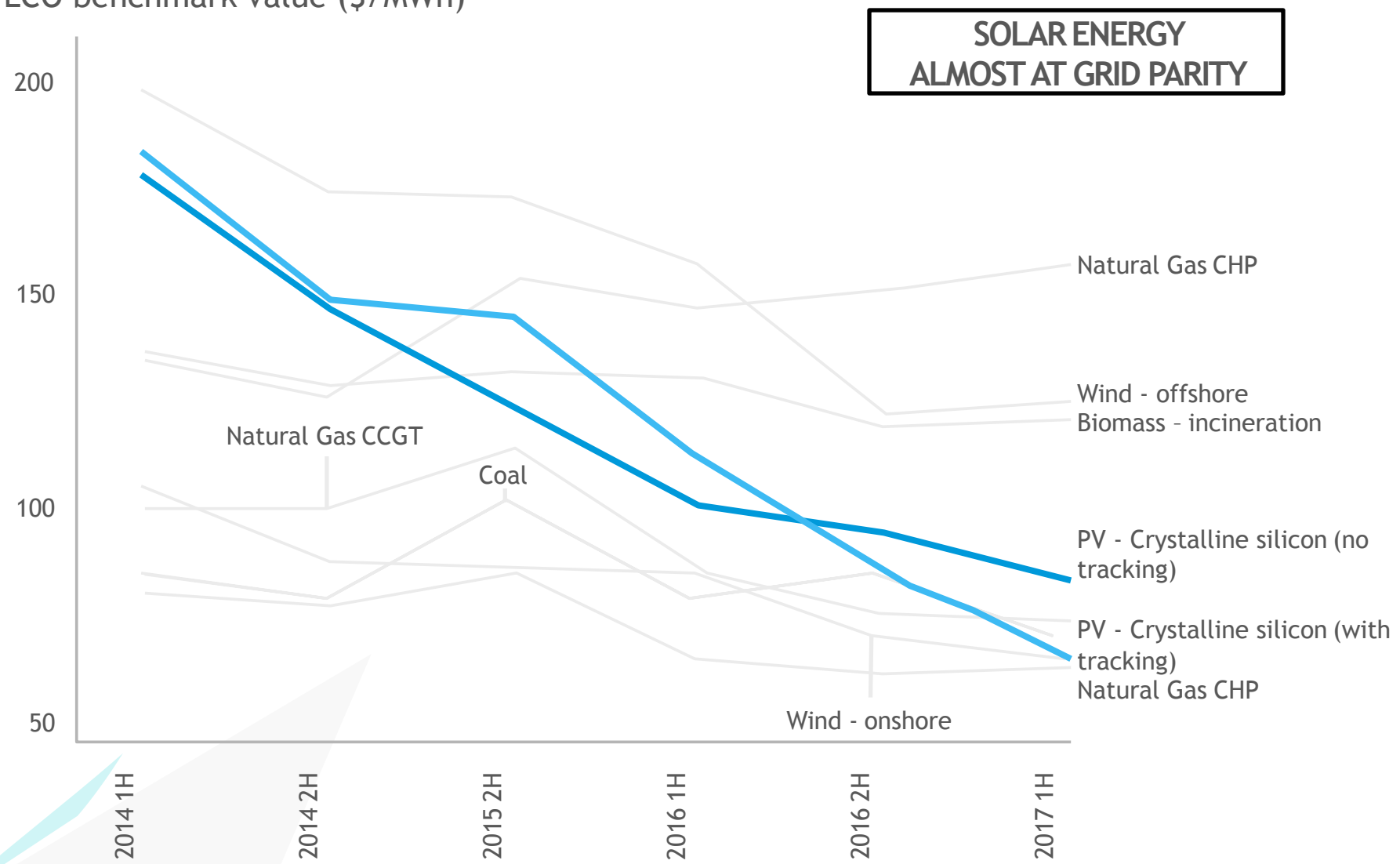
SOLAR SUB-MARKET OF MG SI
LARGE US$ MARKET THAT IS GROWING!

Renewable solar energies:

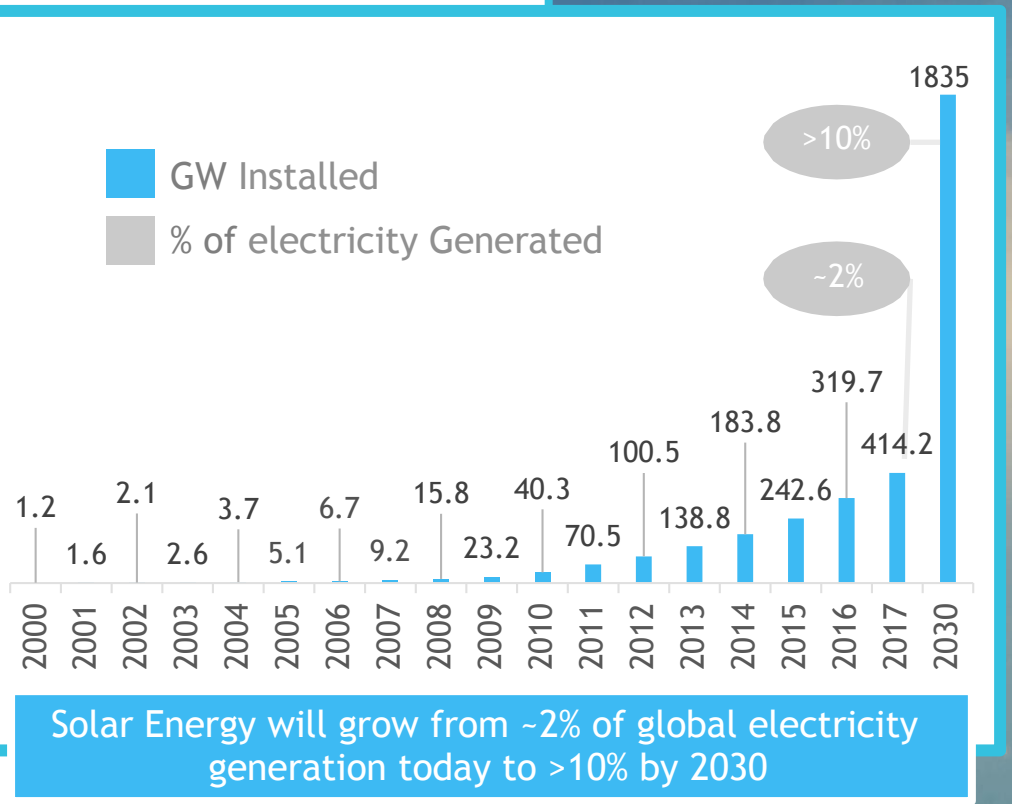
Solar Grade Si market:
US$ 7.1 B in 2018
- to exceed -
US$ 11.8 B by 2028

(Source: Deutsche Bank, Future Market Insights report titled, "Polysilicon Market: Global Industry Analysis 2013-2017 and Opportunity Assessment 2018-2028".)

SOLAR ON THE VERGE OF A PARADIGM SHIFT!



DEMAND READY TO EXPLODE!

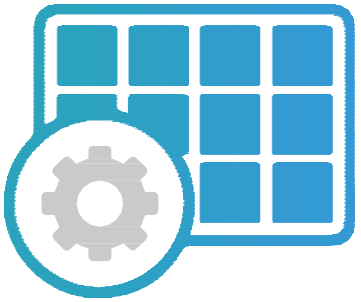


Solar Energy will grow from ~2% of global electricity generation today to >10% by 2030

(Source: Canadian Solar)

AT THE CUSP… BUT…

Solar power is at the cusp of fulfilling its renewable energy potential



But process improvements to produce Solar Grade Silicon Metal (SoG Si) have plateaued, creating a **“Catch 22”**

HPQ PUREVAP™

THE SOLUTION TO THE SOLAR INDUSTRY'S "CATCH 22"

> Technological innovation is needed to lower per unit costs, but the High Capex & Low Margins increase the degree of difficulty of executing an innovation-oriented business plan

Source: The capital intensity of photovoltaics manufacturing: barrier to scale and opportunity for innovation† (Energy Environ. Sci., 2015, 8, 3395)

HPQ SOLAR SOLUTION START WITH

The PUREVAP™ QRR, a new proprietary (patent pending) carbothermic process:

SiO_2 **98.5+%** Carbon

That will bring about

↓ SoG Si Capex **60% - 86%**

↓ SoG SI Cash Cost **30% - 60%**

↓ CO_2 Release by Up to **96%**

4N + Si with low boron **<1 ppm**

A ONE STEP PROCESS

HPQ GLOBALLY RENOWNED TECHNICAL PARTNERS

APOLLON SOLAR
UN MONDE D'ENERGIES INFINIES - A WORLD OF INFINITE ENERGIES

A French Company fully dedicated to the field of energy transition

Created in 2001 by a team of engineers and scientists with longstanding expertise in Silicon Purification and Crystallisation - Solar Silicon - Photovoltaic Cells - Photovoltaic Modules

Now Part of YRIEL Group, active in Fine Chemistry, Aromatic and Renewable Energies

23 Patents to their name

Obtained, an independently confirmed,world record conversion efficiency of 21.1% with monocrystalline ingots, for a solar cell made with 100% “SoG Si UMG”

HPQ TECHNOLOGICAL SOLUTION

FROM QUARTZ TO SOLAR WAFERS

How HPQ will implement its technological solution

By Combined Expertise In Three Critical Steps:

The PUREVAP™ technology of PyroGenesis transforms Quartz (SiO_2) to High Purity Silicon Metal (4N+ Si < 1 ppm B) in one step – "PUREVAP™ Si"

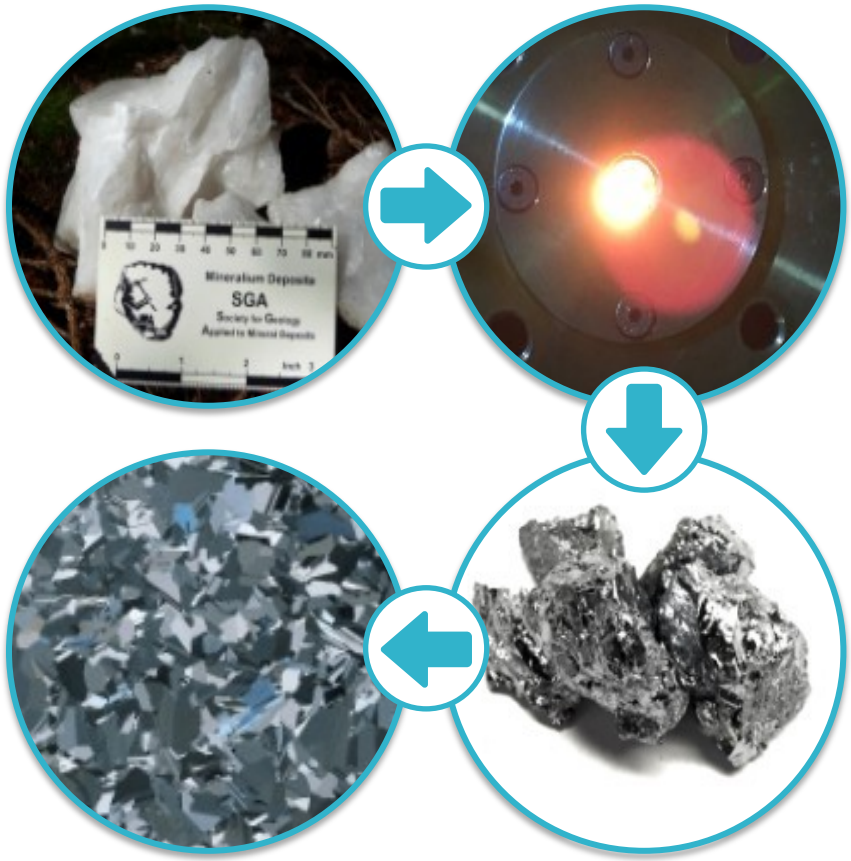
PUREVAP™ SI

PyroGenesis and Apollon Solar experts are developing a streamlined metallurgical pathway (UMG) for upgrading the "PUREVAP™ Si" to HPQ Solar Grade Silicon Metal (SoG Si)

Apollon Solar has the expertise to transform HPQ SoG Si into high performance multi-crystalline and monocrystalline solar cells: "wafers"

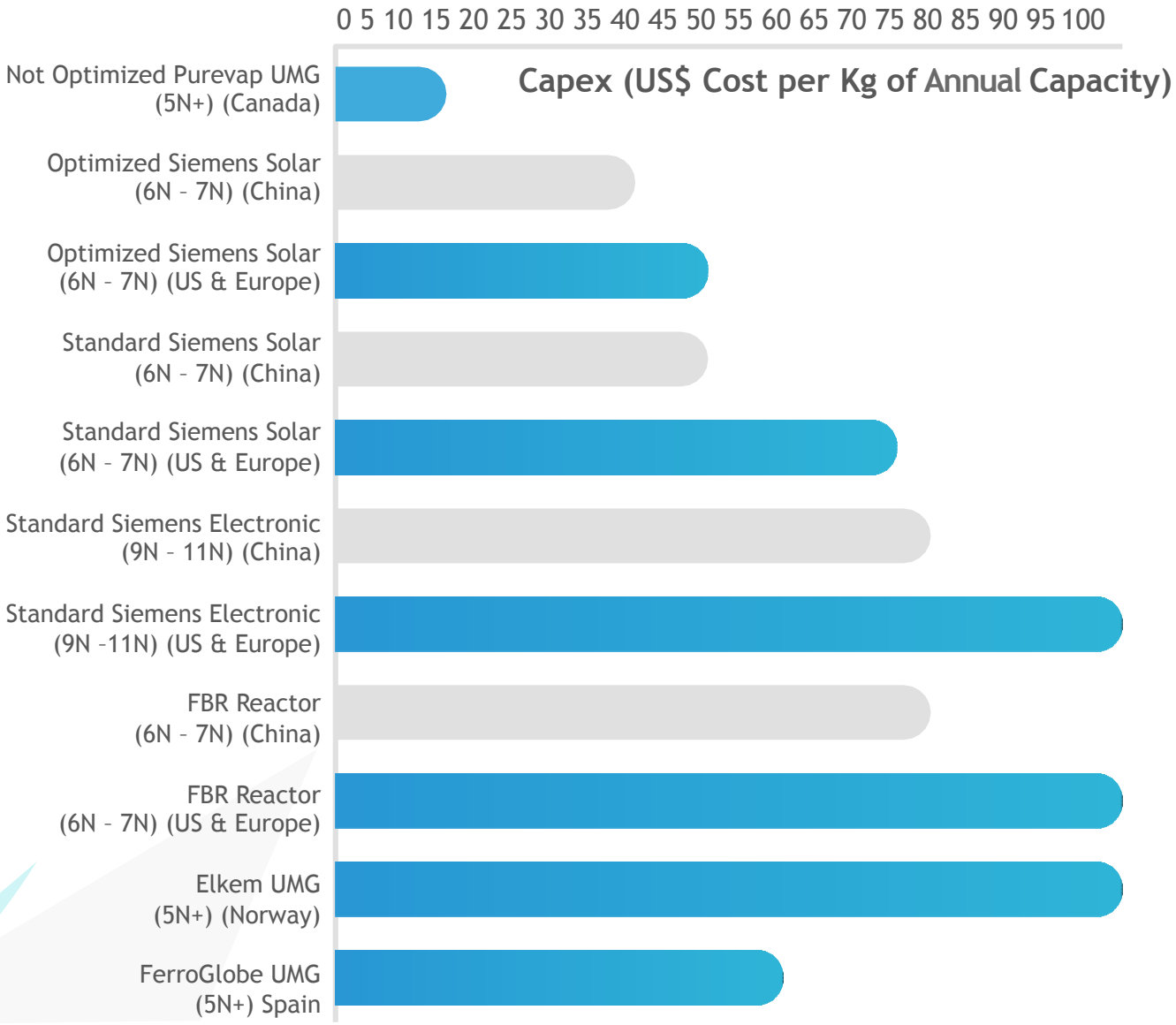
HPQ QUARTZ

PYROGENESIS' PUREVAP™ PROCESS



SoG Si TO WAFER WITH APOLLON

PUREVAP™ UMG CAPEX DISRUPTIVE POTENTIAL



PUREVAP™ UMG OPEX DISRUPTIVE POTENTIAL

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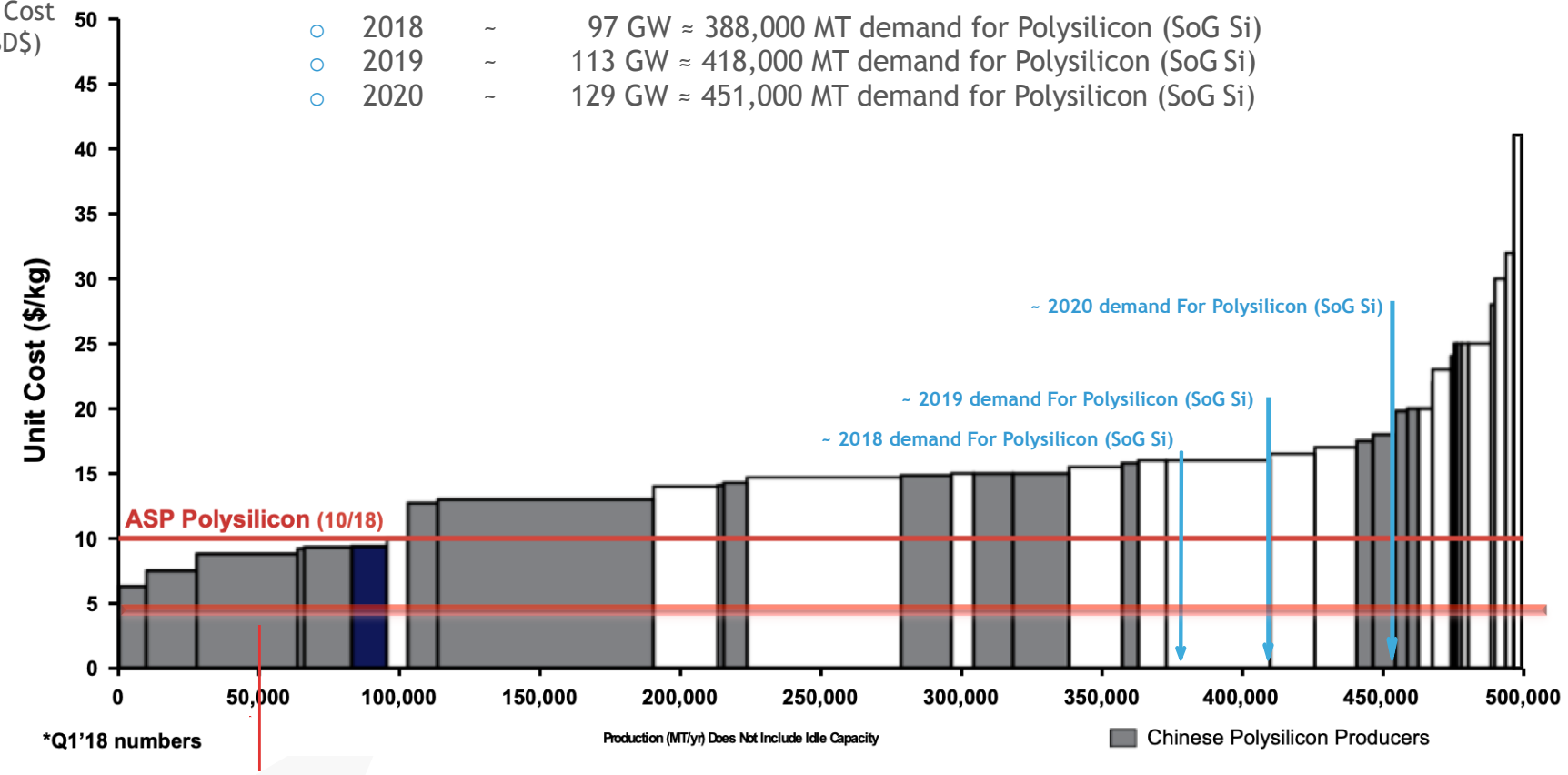
Global Solar Installation Demand Forecast (GW): (Average of GTW-Bloomberg-HIS projections)

- 2018 ~ 97 GW ≈ 388,000 MT demand for Polysilicon (SoG Si)
- 2019 ~ 113 GW ≈ 418,000 MT demand for Polysilicon (SoG Si)
- 2020 ~ 129 GW ≈ 451,000 MT demand for Polysilicon (SoG Si)



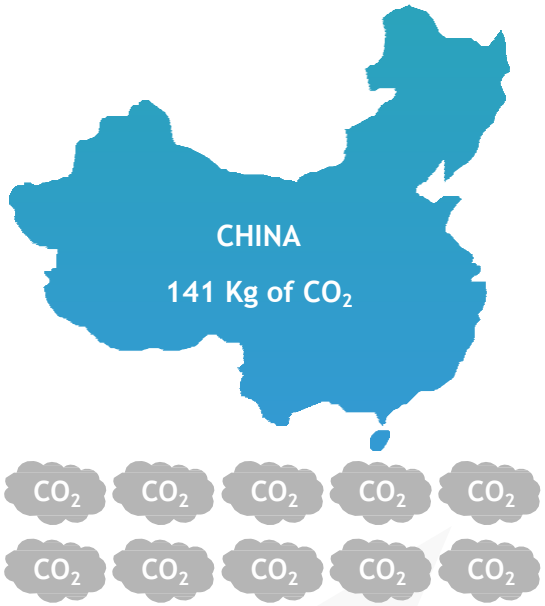
PUREVAP™ QRR + UMG Process Not-optimized Potential Cash Cost Range *

* Estimates will be firm up after Pilot plant phase

HPQ PUREVAP™ GHG DISRUPTIVE POTENTIAL

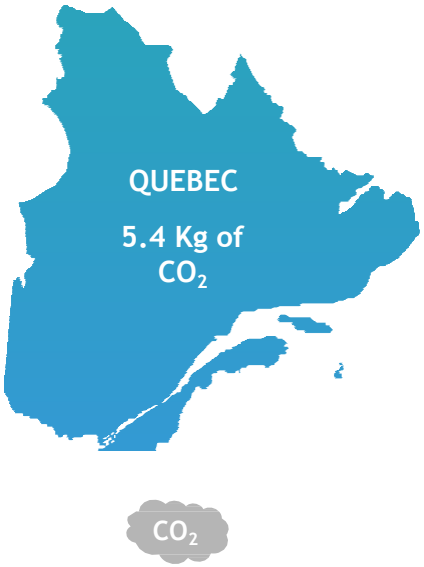
70% of the GHG generated by any solar project comes from the production of SoG Si
(source: Energy Policy, February 2014, Pages 229-244)

HPQ's SoG Si is poised to produce the lowest carbon footprint



SoG Si in **CHINA**, world's largest producer, generates 141 Kg of CO_2 per Kg of SoG Si

SoG Si in **GERMANY** using the same process, generates 87 Kg of CO_2 per Kg of SoG Si



SoG Si in **QUEBEC** with the PUREVAPTM expected to produce 5.4 Kg of CO_2 per Kg of SoG Si

SILICON METAL REQUIRED FOR BATTERIES

Silicon anode lithium-ion batteries

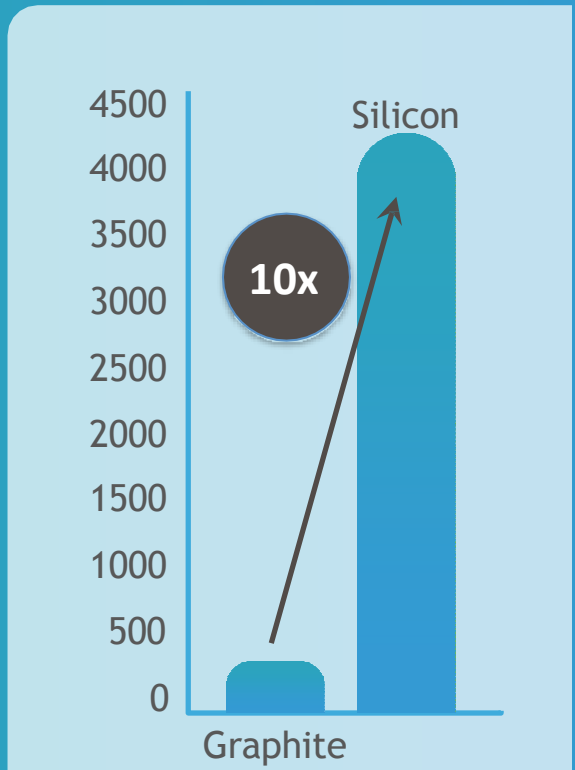
Greater energy storage capabilities

Allows for smaller sizes batteries for electronic devises and electric cars

Energy storage for renewable energy sources

Replacing graphite with silicon, the anode capacity can increase battery charge 10X

Anode Chemistry Option



HPQ Si FOR BATTERIES: AN UNEXPECTED POSITIVE

HPQ – SILICON RESOURCES

A By-Product of PUREVAP™ is production of Si with application in the battery market

Replacing graphite with Silicon Metal (2N+)
↑ Anode battery charge 10X

Silicon Anode market for Lithium Ion batteries ↑ 43.6% CAGR between 2016 to 2022

Silicon Anode market for Lithium Ion batteries to exceed the US $ 1 billion mark by 2022

(Source: marketsandmarkets.com)

NANOSIZE HIGH PURITY Si POWDERS FOR LI-ION BATTERIES

- R&D being done to develop to produce porous nanoparticles of Si
- Combining HPQ Purevap 2N+ Si and PyroGenesis Powders expertise to produce amorphous nanoparticles of Si

INDICATION OF POTENTIAL VALUE OF HPQ SI-P NANOSIZE SI POWDER

Paraclete Energy's standard silicon metal products:

Contact Us for Production Quantity Pricing

nSiO – Nanoparticle silicon metal with oxide on the surface.

≥99.5%	100g	$250

nSiH – Nanoparticle silicon metal with hydrogen on the surface.

≥99.5%	100g	$500

nSi – Raw silicon metal with substantially <0.5% impurities metals basis. This product is highly reactive to air.

≥99.5%	100g	Contact us for details

nSi/C – Nanoparticle silicon metal with carbon on the surface.

≥99.5%	100g	$700

nSi/Cg – A composite of nanoparticle silicon metal with graphene on the surface.

≥99.5%	100g	$800

nSi/Cg/P – A composite of nanoparticle silicon metal with graphene and polymer on the surface.

≥99.5%	100g	$900

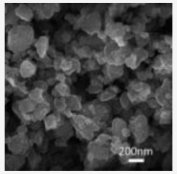
SM-Silicon™ – Nanoparticle silicon metal with a proprietary **S**urface **M**odifier that acts as artificial SEI for cycle stability. *

≥99.5%	100g	Contact us for details

SM-Silicon/C™ – Nanoparticle silicon metal with a custom **S**urface **M**odifier optimized to the customer's application, binder, electrolyte, and cathode system.

The following characteristics for all of PE's silicon*:

Type/Form = Crystalline Powder
Purity = ≥99.5%
Surface Purity = 0% SiO_2, air stable (except nSi)
Total Metals Impurities = <0.5%
APS = 150nm (For PSD other than D50 150nm – Contact PE for a quote.)
BET / SSA = 30 m^2/g
Tap Density = 0.8 g/cm^3
Color = Gray to dark gray (except nSiO: yellowish brown)
Morphology = Non spherical
mp = 1414° C



SEM image of R&D Products

* The composition would change by the specific surface modifier so identified for each respective product, (**SM-Silicon™, SM-Silicon/C™, SM-Silicon/PL™**, nSi/C, nSi/Cg, nSi/Cg/P, nSiO, nSiH) be it custom SM for our **SM-Silicon™** or C, graphene, polymer or oxygen for the other R&D products.

PILOT PLANT FULLY FINANCED

ADVANCING TO PRODUCTION

Pilot Plant Commissioning and Commercial Production

- Output capacity of 50 tonnes per year; Operational Q4 2019
- First demonstration Solar Cell from HPQ UMG SoG Si expected mid 2020
- Improving Process, Scaling, Seeking Mg Si Customers Using Gen2, Preparing For Commercialization
- Order of first 2,500 tonnes per year commercial plant planned in 2021
- Using Gen3 50 TPA pilot plant to produce and sell Mg Si Powders for the Silicon Anode market for Lithium Ion batteries by 2020

WHY INVEST IN HPQ?

HPQ PUREVAP™

The successful innovation that will reduce the cost barriers to renewable energy

Advances from bench testing confirms cost savings potential and set the stage for Pilot Plant testing, with a new focus on Mg Si, SoG Si at commercial production, and the battery industry

WHY INVEST IN HPQ?

Successful Gen 1 & 2 Bench Test (2016-2019) Validated the process

Gen 3 Pilot Plant Testing Operational Q4 2019

Sales of Gen3 Si Expected 2020 Commercial Plant Order - 2021

PUREVAP™ PROCESS

VERSUS TRADITIONAL SILICON METAL PROCESS:

Low purity feedstock → High Purity Silicon Metal
98.5% SiO_2 + Reactive Carbon → (99.73%Si)R (99.99+% Si) A

THE ONLY 1-STEP PROCESS WORDWIDE

↓ 35% Capex
↓ 20% Opex
Vs. Traditional Mg Si Smelters

Traditional Metallurgical Silicon Metal Plant that NEED:

High purity feedstock ($99.5\%SiO_2$) + Low Ash Carbon → Metallurgical Silicon Metal From 98.0% Si to 99.5% Si

VERSUS ACTUAL PROCESS FOR SOLAR GRADE SILICON:

- Disruptive technology for Solar Energy
- ↓60% (China – Lowest) to 86% Capex
- ↓30% (China – Lowest) to 60% Opex
- Reduce the use of aggressive chemicals
- Reduce production of dangerous by-products during refining
- ↓ 96% Energy Carbon Footprint

MANAGEMENT AND BOARD SUMMARY

HPQ – SILICON RESOURCES

Management

Bernard J Tourillon, BAA, MBA
Chairman, President, CEO and Director

Patrick Levasseur
Vice-President, COO and Director

Noelle Drapeau, LLL, MBA, PMP
Corporate Secretary and Director

Francois Rivard
CFO

Independent Director (*)

Richard Mimeau, B.Sc.
Director

Peter Smith, PhD, P. Eng.
Director

Robert Robitaille, B.A., L. Ph.
Director

Daryl Hodges H. BSc, M.Sc..
Director

Major Investors

Management & Board	≅ 9.7%	≅ 10.5% (FD)
PyroGenesis	≅ 9.7%	≅ 12.1% (FD)
Investissement Quebec		≅ 8.8% (FD)
Strategic Investors	≅ 2.8%	≅ 6.2% (FD)
Key Investors	≅ 18.8%	≅ 21.2% (FD)

Consultants/ Technical Advisors

Marcel Drapeau, BA, BSC. Comm, LLL

PyroGenesis Canada

Apollon Solar SA

Marc Richer-Lafleche, P, Geo, PhD

Transfer Agent

Computershares

Auditors

Raymond Chabot Grant Thornton

CONTACT

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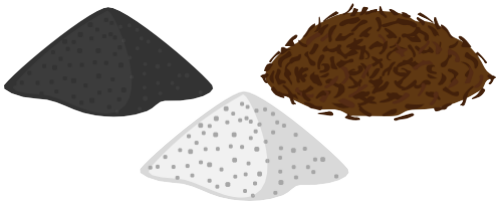
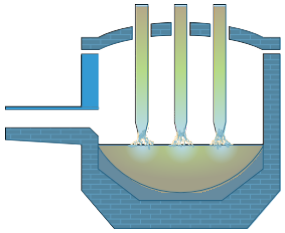
APPENDIX

LEGACY PROCESS

Present Carbothermic process
Quartz to silicon metal (Si)



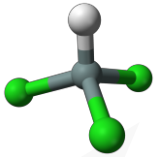
SiO_2 99.5% + Low Ash
Coal + Wood Chips



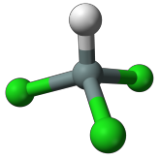
Electric Arc
Furnace

Energy Consumption:
12,000 kWh/t

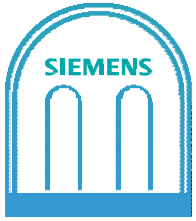
Present Chemical process
MG-Si to SoG-Si



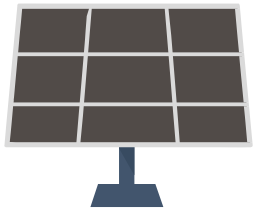
MG Silicon Metal Is Dissolved In Hydrochloric Acid To Form Trichlorosilane (HSiCl3)



Trichlorosilane (HSiCl3)
is Further Refined



SIEMENS
Reactor



Solar Grade Silicon Metal
Polysilicon 99.9999+% Si

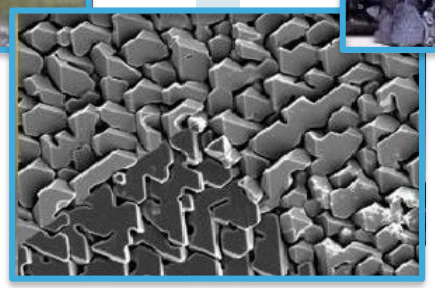
Energy Consumption: between 72,000 to 120,000 kWh/t

LEGACY PROCESS

Present Metallurgical Process Used By Elkem Solar and Ferroglobe

Elkem Ferroglobe

Mg Si → Slag Treatment → Leaching → Solidification → Post Treatment



98,5% to 99.0% Si — TO — 5N+ SoG Si