

### THIRD QUARTER 2020

PRESENTATION

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third quarter 2020

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### Agenda

Q3 Results	Tore Torvund
Financial Review	James A May II
Silicon Gases and Semiconductor Market Update	Kurt Levens
Trade and Non-Chinese Solar Value Chain	Francine Sullivan
PV Market Update	Chuck Sutton
Battery Update	Jeff Johnson
Financials for Moses Lake Restart	James A May II
Short-term Business Plan	Tore Torvund
Q&A	Tore Torvund



 Revenues:
 \$30.3M

 EBITDA:
 \$17.9M

#### September 30, 2020 cash balance of \$35.9M

- Cash increase of \$4.3M
- Cash inflows from operating activities of \$3.6M

#### Silicon gas sales

- Sales volume of 746MT (vs. 831MT in Q2'20)
- 3.4% Silane gas price increase vs. Q2'20

#### Semiconductor segment polysilicon silicon

- Semiconductor grade polysilicon sales volume of 174MT
- 9.0% Semiconductor grade polysilicon price increase vs. Q2'20

#### Tax examination by Norwegian Central Tax Office dropped

- Results in the reversal of \$22.5M tax liability and \$4.7M interest liability
- Increase of \$27.3M in Shareholders' Equity

#### Settlement of property tax dispute with Grant County, Washington

- Settlement includes payments of \$3M in Dec. 2020 plus 6 annual installments of \$1.8M
- Non-cash contribution to EBITDA of \$16M in Q3'20

### **Subsequent to Quarter End**

#### **Business cooperation agreements signed**

- Violet Power efforts to establish a non-Chinese Solar PV value Chain
- Group 14 construction of a silicon anode battery pilot plant in Moses Lake

### Private placement of equity successfully completed

- Completed on October 14, 2020
- Settlement to occur in 2 tranches
  - Received October 27, 2020 NOK 302 million in gross proceeds (27,982,000 shares at NOK 10.8)
  - Expected November 2020 NOK 698 million in gross proceeds (64,610,592 shares at NOK 10.8)



Polysilicon Sales Volume **		
Total	401MT	
Inventory Decrease	163MT	

Total Polysilicon I	Production	Semiconductor Pr	roduction	Silicon Gases Sale	es Vol
Actual	237MT	Actual	167MT	Actual	746
Prior Quarter*	234MT	Prior Quarter*	136MT	Prior Quarter*	831
Increase	1.5%	Increase	23.4%	Decrease	-10.

\* Second Quarter Results Released July 23, 2020

\*\* Excludes Fines and Powders

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### **Financial Review**

James A May II



(USD million)	Q3 2020		Q2 2020		2019	
	Revenues	EBITDA	Revenues	EBITDA	Revenues	EBITDA
Semiconductor Materials	30.3	7.3	30.7	9.4	126.7	37.8
Solar Materials	-	14.6	0.3	(2.3)	33.4	(26.6)
Other	0.0	(4.0)	0.0	(4.1)	0.0	(24.1)
Eliminations		<u> </u>	-	<u> </u>	0.0	0.0
REC Silicon Group	30.3	17.9	31.0	2.9	160.2	(12.9)



## Key Financial Results – Semiconductor Materials

#### \$40 M **Revenues: \$30.3M** (2.2% decrease vs. Q2'20) Polysilicon sales volumes 401MT \$30 M \$30.7 (24.2% increase vs. 323MT in Q2'20) \$30.0 \$29.7 - Semiconductor grade volumes 174MT (14.5% decrease vs. 203MT in Q2'20) \$24.5 (22.8%) Average price decrease vs. Q2'20 9.0% Semiconductor grade price increase vs. Q2'20 \$20 M Silicon gas sales volumes 746MT (10.2% decrease vs. 831MT in Q2'20) 3.4% Silane price increase vs. Q2'20 \$10 M \$9.4 EBITDA Contribution of \$7.3M \$8.2 \$8.0 Compared to Q2'20 EBITDA contribution of \$9.4M \$5.3 Lower silicon gas sales volumes \$0 M Q3 Q4 Q1 Q2 2019 2020 18% 33% 30% Margin: 28%

Revenues EBITDA



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\$30.3

\$7.3

Q3

24%

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### Key Financial Results – Solar Materials and Other

\$20 M \$10 M EBITDA Contribution: \$14.6M \$14.6 \$6.6 - Includes \$16.0M Non-cash settlement of property tax from \$0.3 \$0.2 \$1.7 \$0 M Net Expense of \$1.4M excluding property tax (\$2.3) (\$2.8) (\$3.8) (\$4.0) Includes \$0.8M YTD adjustment for estimated current (\$6.1) (\$4.1) (\$4.1) (\$4.5) (\$10 M) (\$7.7)(\$20 M) Q3 Q4 Q1 Q2 Q3 2019 2020

Revenues

EBITDA (Solar Materials)

#### Other and Eliminations

property taxes

years 2012 to 2015

Solar Materials

>

Net cost: (\$4.0M) (compared to \$4.1M in Q2'20) >

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EBITDA (Other & Eliminations)

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# EBITDA of \$17.9M

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Cash Flows

- Non-cash effect of property tax settlement Included in EBITDA (\$16.0M)
- Working capital decrease \$3.3M

Cash inflows from operating

Decrease in inventories \$3.9M

activities \$3.6M

- Increase in receivables (\$1.3M)
- Increase in payables and accruals \$0.7M
- Interest paid (\$1.4M) )
- US pension plan contributions (\$0.7M)
- Currency gain of \$0.5M (Weaker USD vs. NOK)

### Cash inflows from investing activities \$1.0M

- Capex (\$0.3M)
- Maturity of municipal bonds \$1.3M

### Cash outflows from financing activities \$0.3M

Payment of lease liabilities (\$0.3M) >



million

USD



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## Nominal debt - \$221.5M

- Increase of \$11.1M in Q3'20
  - \$9.9M Note payable property tax settlement
  - \$0.7M Increase in Lease Liabilities (IFRS 16)
    - \$0.8M Increase due to deferral of payments
    - \$0.2M Increase due to lease modifications
    - (\$0.3M) Repayment of lease liabilities
  - \$0.6M Increase due to a weaker USD vs. NOK

# Nominal net debt - \$185.6M

- > Increase of \$6.8M in Q3'20
  - Increase in cash of (\$4.3M)
  - Increase in nominal debt of \$11.1M

# **Contingent Liabilities**

- > Reassessment of tax Resolved
- > 2012 2015 Property tax dispute Resolved
- > Indemnity loan \$21.1M

#### Debt maturity profile

### **USD** Million



-Sil ICI





# Silicon Gases and Semiconductor

Kurt Levens

### Butte plant divestment no longer under consideration Attractive investments will improve profitability

### THIRD QUARTER 2020

**REC Silicon is the clear market leader with lowest cost** 

#### Stronger financial position unlocks business opportunities

- New equity allows preferred retention of Butte in REC Silicon
- > Limited investment will create business opportunities

#### Butte plant is important for REC Silicon

- Strong commercial, technology and operational synergies between Butte and Moses Lake
- Serve the same market, new energy and battery opportunities
- > Largest producer and distributor of silicon gas
- Butte and Moses Lake 32,000 MT capacity to support strong market growth
- Very limited competition, Butte and Moses Lake are the two largest silicon gas plants outside of China





- Semiconductor grade polysilicon sales
  - 174MT in Q3'20 vs. 203MT in Q2'20
  - 9.0% Semiconductor grade average price increase vs. Q2'20
- > Q4'20 in line with Q3'20
  - Close out stronger H2 2020
  - Preliminary forecasts are for growth to accelerate H2 2021
- Focus on high end float zone polysilicon
  - 2 producers of float zone
  - Product mix optimized for highest value creation

### REC Shipments - Semiconductor Polysilicon





### Butte is the only large capacity silicon gas provider

Largest module fleet globally (30x closest competitor) with established distribution infrastructure

Silicon Gas Advantages

- Largest producer and distributor of Silane Gas
  - Unmatched experience and safety record
  - Recognized product quality and reliability
  - Supplier to all the global top 10 integrated circuit producers
  - World class established and secure channel partners
  - Available capacity to support market growth

#### DCS

- Driven by technology adoption in 3D NAND and Logic
- 20% growth forecasted over mid term
- Need additional capacity to meet customer growth
- DiSilane >
  - Current capacity constrained
  - Increased producer adoption driven by technology and performance advantages in advanced fabrication
  - Need additional capacity to meet customer growth



#### Silicon Gases



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# Butte silicon products have unique position

Positive outlook and high barriers

Silicon gases	Silicon gases Silane gas market share	<ul> <li>7,200 MT silane capacity</li> <li>240 MT DCS capacity</li> <li>300 MT MCS capacity</li> <li>2.4 MT DiSilane capacity</li> <li>Dominant outside of China</li> <li>Largest supplier inside of China</li> <li>Highest quality consistent supplier</li> <li>Multiple redundancy and value-added services</li> <li>DCS: Increased gross margin of \$7.5 MM per year at full ramp</li> <li>DiSilane: Increased gross margin of \$1.7 MM per year at full ramp</li> </ul>	Prior 12-month EBITDA contribution
Electronic grade polysilicon	Float Zone – Highest Purity Float Zone sells at a significant premium over EG polysilicon	<ul> <li>REC is one of only two companies manufacturing FZ</li> <li>&gt;30 years of experience producing FZ product</li> <li>Customers are global top 3 semiconductor wafer producers</li> <li>REC produces the highest purity polysilicon in the world</li> <li>Price is a multiple of chunk polysilicon</li> <li>Possible investment for larger rod diameter</li> </ul>	\$30M



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### RECSIDEEN

Trade and Non-Chinese Solar Value Chain

Francine Sullivan

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### US currently dependent on China for imported solar panels 2020

18

16

14

12

10

8

6

2

- US polysilicon production can currently support 18 – 20 GW of installations
  - REC Silicon: 5 GW
  - Hemlock 7-8 GW
  - Wacker: 6-7 GW
- Despite adequate polysilicon production, US remains dependent on China for wafers, cells and modules
- In 2019, >90% of solar panels installed in the US were imported from mostly Chinese-owned companies located outside China to avoid US tariffs



Annual U.S. solar photovoltaic shipments, by country of origin (2013–2019) million peak kilowatts





Source: U.S. Energy Information Administration, Annual Solar Photovoltaic Module Shipments Report



### Momentum building to re-establish non-Chinese supply chain In US and Europe

- Re-shoring/self-reliance dynamic growing support for "Made in USA"
  - Push to re-shore semiconductor
  - Clean energy dependence on China is not acceptable
  - Solar energy manufacturing provides high tech manufacturing jobs
- Re-shoring of high-tech manufacturing likely to benefit from stimulus package
- Concentration of solar supply chain in Xinjiang under scrutiny in the US
  - Environmental Social Governance (ESG) investment impact potential
- > China's Phase 1 commitments intact
  - US Government recognition of strategic importance of US polysilicon
- The European Commission Green Agenda over the next decade calls for:
  - 340 Billion Euro in solar and wind investment
  - 120 GW of renewable capacity
  - Re-shore manufacturing to Europe





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### **PV Market Outlook**

**Chuck Sutton** 

## Strong PV demand expected in the next years

- Global demand expected to > rebound with solid growth
  - **FU Green Deal** -
  - Annual US installation ~18 GW
  - China installations remain steady ~40 GW per year
  - APAC and MEA increased PV installation
- Levelized Cost of Electricity > (LCOE) dropping faster than forecasted improves competitiveness
- Focus on reducing CO<sub>2</sub> leads > to demand growth
- 2022 Installation forecasted to > be 140-177 GW



Figure 1: PV new build, historical and forecast



Low

Source: BloombergNEF. Note: Full, updated data here.



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High

# Solar market divided into four major markets

US, Europe & China + Rest of the World

- > China 2020 ~40 GW
  - 2060 carbon neutral pledge
- > US 2020 ~18 GW
  - Federal and state support
  - Corporate carbon targets
  - Residential market strength
  - ESG preferences
- > Europe 2020 ~20 GW
  - Low carbon focus
  - Green hydrogen support
  - Covid-19 stimulus investments
- > ROW 2020 ~ 40 GW
  - Lowest cost alternative
  - Power infrastructure not available
  - Renewable targets



#### Source: PV InfoLink, REC Silicon Market Research

#### U.S. PV installation forecast, 2010-2025E



Source: Wood Mackenzie



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# QUARTER Several initiatives to build a Non-Chinese PV value chain 2020

- NorSun is the major non-Chinese ingot and wafer producer
  - <1% of total capacity</p>
- Several non-Chinese solar initiatives have emerged recently
- New capacity is coming online enabling US and Europe to be self-reliant
- Ultra Low-Carbon Solar
   Alliance to promote ultra-low
   carbon PV in the US





- ~140,000 MT
   polysilicon available
   supporting ~40 GW
- Market price of ~\$15/kg for polysilicon in US/EU
- REC produced polysilicon has low cash cost and CO<sub>2</sub> footprint
  - FBR technology
  - Hydroelectric power supply



Source: CSIA and REC market research June 2020. \*Assuming 100% utilization. Based on 2018 numbers (~60% utilization), REC had a variable cost including SG&A of USD ~10/kg

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# Corporations & regulators push for low carbon footprint

Module carbon footprint using French CRE standard



Combined carbon footprint

#### Moses Lake FBR has substantially less carbon emissions

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- France & South Korea have established programs to incentivize solar with low-carbon footprint.
  - Significant advantages non-Chinese collaboration
- > Similar programs expected to become widespread in mature markets
  - EU talking carbon border tax
  - Japan, Australia consider similar measures
  - Large Company focus on ESG and carbon reduction (Microsoft, Facebook, Amazon, Google)
- Solar ingots made in Norway provide a significant carbon footprint reduction due to hydroelectric power and cooling water
- Siemens polysilicon combined with coal-fired power is the primary contributor to carbon emissions for panels
  - Limited opportunities to change carbon footprint overall in downstream processes





### Battery Opportunities

Jeff Johnson

### Use of silicon in the anode unlocks fast charge & increased range

#### Silane SiH4 in Next Generation Advanced Anode Material

- Next generation silicon anode materials using silane achieving 20%-30% increased performance
  - > ~50% performance increase within time
  - > Will provide better value than graphite
- Next generation silicon anode technologies require high purity silicon from silane
- Advantages: Improves energy density, reduces battery weight and costs, unlocks cathode capacity, increases the power acceptance allowing faster charging and longer range

Advanced silicon anode material utilizing silane is "drop in" solution to replace graphite = 20% - 50% performance improvement and commensurate cost reduction levels

#### Tesla Battery Day September 2020

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- > Tesla is currently using silicon in its batteries
  - > In the form of silicon oxide
- Tesla's next generation battery will use powdered silicon
  - > Expected in 2-3 years
  - Appears to be lower performance than silanebased silicon anode materials and incrementatal improvement to current technology





# Cooperation with leading silicon anode companies

Drives battery development and growth of EVs



#### Group14 Partnership

- Group14 Technologies (Group14) pilot plant for advanced silicon anode material ongoing at REC in Moses Lake
- REC Silicon and Group14 partnership to build 12,000MT nameplate capacity advanced silicon anode manufacturing plant co-located at REC's facility in Moses Lake
  - > Expected to break ground in 2021
  - > REC Silicon to supply silane via pipeline
  - > REC Silicon and Group14 to develop pipeline infrastructure
- > First commercial scale silicon anode manufacturing plant globally
- Industry-leading investors include BASF, ATL, Showa Denko, Cabot, & OVP Venture Partners









Group14 anticipate entry to the EV market in 2023, overtaking less advanced silicon anodes by 2024 High performance silicon anode batteries facilitate cost competitiveness of EVs with ICEs

#### Market Leading Si Anode Makers

- REC Silicon supplying silane to several silane anode industry leaders, including those partnering with leading car companies
- Large quantities of silane forecasted for battery & EV demands



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### REC well positioned to supply global market with silicon gases 2020

#### **REC Silicon Moses Lake**



#### **REC Silicon Butte**

- Largest producer and distributor of Silane
   Gas
  - > Unmatched experience and safety record
  - > Recognized product quality and reliability
  - > ~70% Semiconductor market share
- > Infrastructure to protect market share
  - > Large module fleet
  - > Secure distribution channels
  - Available capacity to support market growth

Moses Lake and Butte are the only existing silane plants in the US and Europe. Total capacity of 32,000 MT silane which is enough silicon for batteries for 2.5M EVs at current silane-based silicon anode performance. Reduces to ~1M EVs as silicon content increases in the battery.





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Financials for Moses Lake Restart

122220

James A May II



	Moses Lake Ambitions
	(per annum)
FBR Sales Volumes	6,900 MT
Silane Gas Sales Volume	7,700 MT
Annual Revenues	\$225M
Silane Capacity Utilization	75%
Moses Lake EBITDA Contribution	> \$100M

> Estimated polysilicon production cash cost < \$10/kg at 75% utilization

- Lowest production cost outside China
- Higher volumes will leverage per unit production costs lower
- > Moses Lake expected to contribute >\$100M of EBITDA per year at 75% utilization



# Equity raise provides liquidity and financial flexibility

#### Liquidity development through June 2022 (USD million) \$160 \$104.3 \$140 \$0.7 \$120 (\$8.5) (\$4.7) \$13.0 (\$0.3) (\$3.7) \$100 \$80 (\$31.6) (\$23.5) \$124 \$60 **USD** million (\$11.9) \$40 \$70 \$20 \$36 \$-Cash September 20 Other Oberating activities Nequity Settlement Other Operating activities Investing activities Cash December 20 huesting activities Debt<sup>reduction</sup> Debt<sup>reduction</sup> Gesh une 22 Equity raise Interest Interest

- > NOK 1 billion equity raise provides financial flexibility
  - \$13.3M for business development
    - \$5.0M DCS expansion
    - \$2.7M DiSilane expansion
    - \$4.6M to prepare for Moses Lake Restart
- \$36.7M general use
  - Meet operating cash flow requirements
  - Maintain facilities and capabilities
    - Meet debt service obligations (inter alia)

### > Estimated investment of ~\$60M needed to restart Moses Lake

- CAPEX: ~\$25M
- Incremental Expense ~\$10M
- Working capital: ~\$25M

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### Short Term Business Plan

### New partnerships for Moses Lake

Silicon anode batteries and non-Chinese solar value chain

#### **Group 14 Partnership**

- Group14 pilot plant testing on-going at REC Moses Lake
- REC Silicon & Group14 partnership collaboration regarding Group14's planned 12,000MT nameplate capacity silicon carbon anode production facility colocated with REC Silicon in Moses Lake
- > REC Silicon to supply silane via pipeline
- First commercial scale advanced anode material production facility globally

**GROUP14** 

#### **Violet Power Partnership**

- Violet Power solar cell & module production colocated with REC Silicon in Moses Lake
- Violet Power 500 MW in 2021, scaling to 5 GW, leading IBC technology
- REC Silicon to supply low carbon high quality FBR polysilicon
- REC Silicon & Violet Power to collaborate on non-China ingot & wafer solution
- REC Silicon & Violet Power to build out US solar supply chain, including ingot/wafer located in the United States



REC Silicon to become leading provider US produced silane and polysilicon to US solar supply chain & battery supply chain



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# Fourth quarter 2020 business plan for REC Silicon

- Stronger financial position creates business opportunities
  - Allows preferred retention of Butte in REC Silicon
  - Implement previously identified business opportunities with limited investment and high return
- Focus efforts on restart of the Moses Lake plant pursuing the following opportunities:
  - Development of a non-Chinese PV value chain
  - Agreement with silicon anode battery companies for pilot testing and industrial scale production of silicon anode materials
  - Compliance by China with Phase 1 Trade Agreement commitments













### Q4 2020 Reporting February 2021

recsilicon.com

