



RECSiLICON

THIRD QUARTER  
**2018**

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PRESENTATION

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# Agenda

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Q2 Financial Results

Financial Overview

Market Outlook

Trade Update

Yulin JV Update

Market Development

Short Term Business Plan

Guidance

Q & A

# Highlights

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**Revenues:** \$43.7M  
**EBITDA:** (\$ 6.1M) Loss

## September 30, 2018 Cash Balance of \$41.0M

- Cash Decrease of (\$1.4M)
- Cash Outflows from Operations (\$1.7M)
- Working Capital Decrease of \$4.0M

## FBR Cash Cost of \$15.1/kg

- FBR Capacity Utilization Decreased to ~25% in June
- Lower Spending Due to Delay of Planned Maintenance

## Silicon Gas Sales Volumes

- Sales Volume of 865MT (5.8% Decrease)
- 1.3% Silane Gas Price Increase

## Yulin JV Start-up Progressing Well

- ~3,000MT Produced YTD
- FBR Solar Grade Quality Achieved
- Silane Units and FBR Reactors Have Achieved Design Capacity



# Key Metrics

## Polysilicon Sales Volume \*\*

Total	2,219MT
Inventory Increase	503MT

## FBR Production

Actual	1,170MT
Guidance*	1,200MT
Deviation	-2.5%

## FBR Cash Cost

Actual	\$15.1/kg
Guidance*	\$15.9/kg
Deviation	-5.0%

## Total Polysilicon Production

Actual	1,615MT
Guidance*	1,630MT
Deviation	-0.9%

## Semiconductor Production

Actual	296MT
Guidance*	300MT
Deviation	-1.4%

## Silicon Gases Sales Vol.

Actual	865MT
Guidance*	900MT
Deviation	-3.9%

\* Guidance Presented July 19, 2018

\*\* Excludes Fines and Powders



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## FINANCIAL REVIEW

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# Summary of Segments

(USD million)	Q3 2018		Q2 2018		YTD 2018	
	Revenues	EBITDA	Revenues	EBITDA	Revenues	EBITDA
<b>Solar Materials (Moses Lake)</b>	<b>6.2</b>	<b>(9.9)</b>	<b>20.4</b>	<b>(15.9)</b>	<b>59.3</b>	<b>(17.4)</b>
<b>Semiconductor Materials (Butte)</b>	<b>37.6</b>	<b>9.3</b>	<b>38.6</b>	<b>14.4</b>	<b>113.9</b>	<b>41.2</b>
<b>Other</b>	<b>-</b>	<b>(5.4)</b>	<b>-</b>	<b>(8.1)</b>	<b>-</b>	<b>(24.4)</b>
<b>Eliminations</b>	<b>-</b>	<b>-</b>	<b>(0.0)</b>	<b>(0.0)</b>	<b>(0.9)</b>	<b>(0.5)</b>
<b>REC Silicon Group</b>	<b>43.7</b>	<b>(6.1)</b>	<b>58.9</b>	<b>(9.6)</b>	<b>172.3</b>	<b>(1.1)</b>

# Key Financial Results

## Solar Materials

Revenues: \$6.2M (69.8% Decrease vs. Q2'18)

EBITDA Contribution: (\$9.9M) Loss

- › Polysilicon Sales Volumes 658MT (62.2% Decrease vs. Q2'18)
  - 20.5% Average Price Decrease vs. Q2'18
  - 27.1% Prime Grade Solar Price Decrease vs. Q2'18

## Semiconductor Materials

Revenues: \$37.6M (2.5% Decrease vs. Q2'18)

EBITDA Contribution: \$9.3M

- › Polysilicon Sales Volumes 455MT (35.8% Increase vs. Q2'18)
  - 16.9% Average Price Decrease vs. Q2'18
  - 4.6% Semiconductor Grade Price Decrease vs. Q2'18
- › Silicon Gas Sales Volumes 865MT (5.8% Decrease vs. Q2'18)
  - 1.3% Silane Price Increase vs. Q2'18

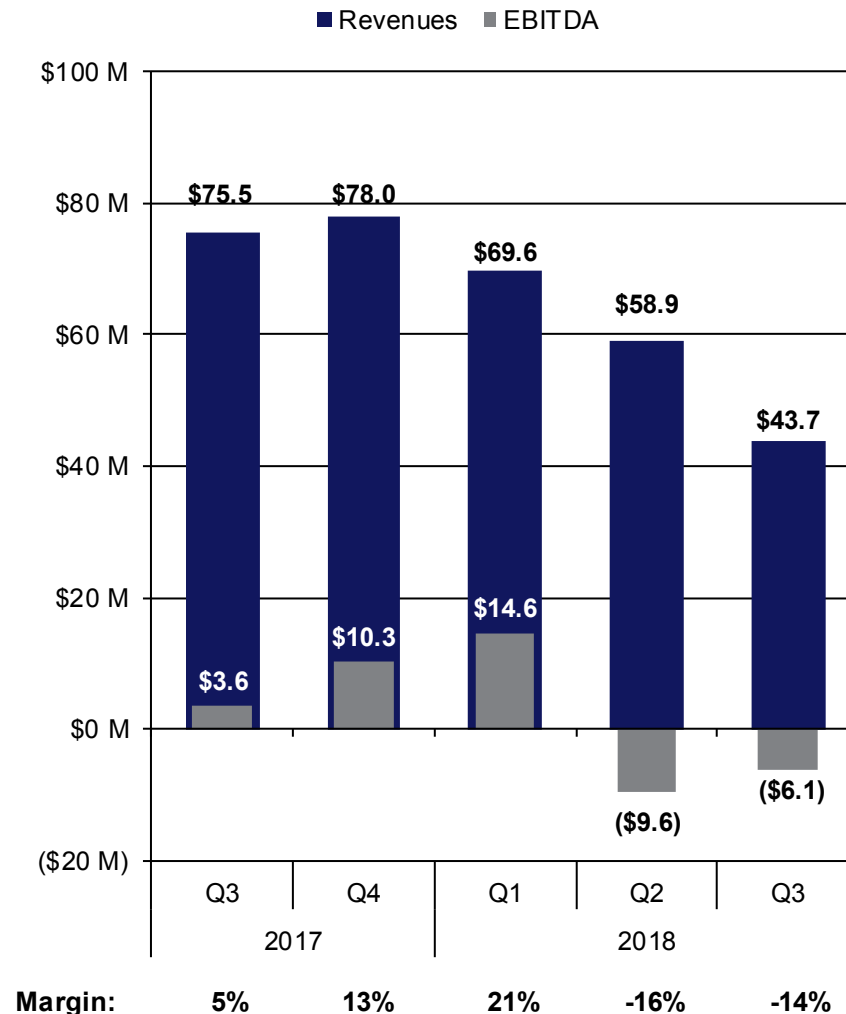
## Other and Eliminations

Net Cost: (\$5.4M) (33.3% Decrease vs. Q2'18)

- › Reflects Success of Costs Savings Initiatives
- › Includes \$0.7M Reimbursement of Expense by Yulin JV

## EBITDA Loss of (\$6.1M)

- › Low FBR Sales Volumes
- › Inventory Write-downs due to Decreases in Solar Grade Polysilicon Prices
- › Offset by Lower Spending (FBR Capacity Curtailment)





# Cash Flows

## Cash Outflows From Operating Activities (\$1.7M)

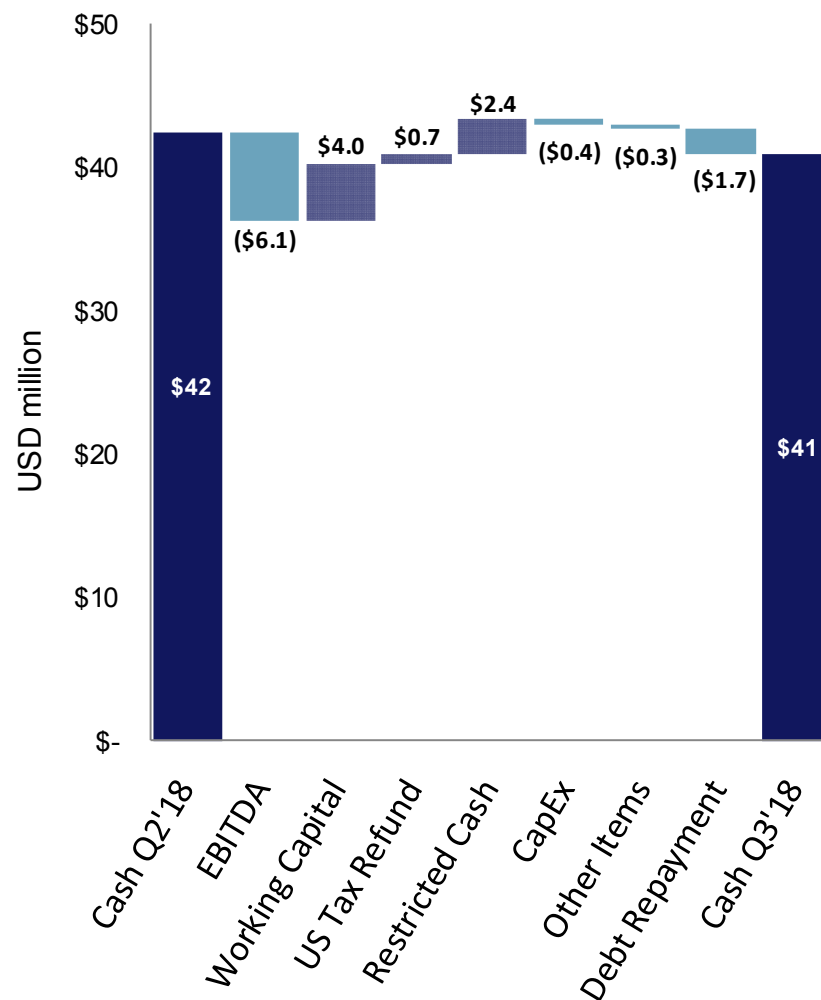
- › EBITDA - Loss of (\$6.1M)
- › Working Capital Decrease \$4.0M
  - Increase in Inventories (\$5.6M)
  - Decrease in Receivables \$5.5M
  - Increase in Payables \$4.2M
- › US Tax Refund \$0.7M
- › Other (\$0.2M)

## Cash Flows From Investing Activities \$2.0M

- › Capex (\$0.4M)
- › Release of Restricted Cash \$2.4M

## Cash Outflows From Financing Activities (\$1.7M)

- › (\$1.5M) Repurchase of USD Convertible
- › (\$0.2M) Fees Associated with Bond Issue



# Liquidity

## Nominal Debt - \$134.5M

- › Decrease of \$1.6M in Q3'18
  - (\$1.5M) Repayment of USD Convertible
  - (\$0.1M) Due to Stronger USD Relative to NOK

## Nominal Net Debt - \$93.5M

- › Decrease of \$0.1M in Q3'18
  - Decrease in Cash of \$1.4M
  - Decrease in Nominal Debt of (\$1.6M)

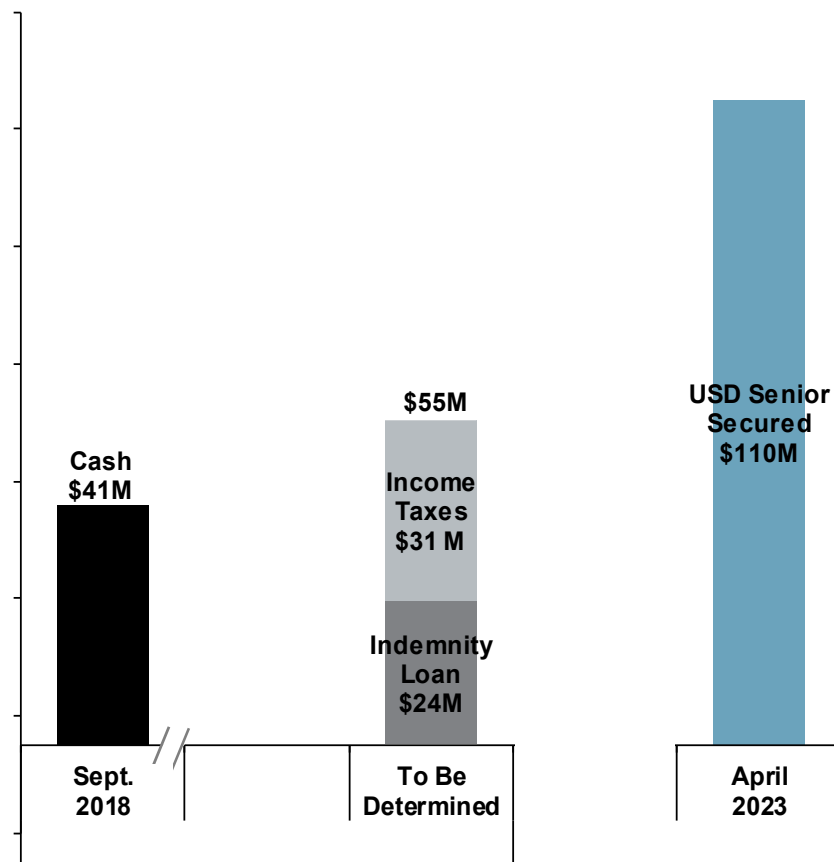
## Indemnity Loan - \$24M

- › Callable Beginning in February 2016
- › Has not Been Called
- › Due Date is Uncertain

## Reassessment of Tax - \$31M

- › Uncertain Timing and Outcome

USD Million





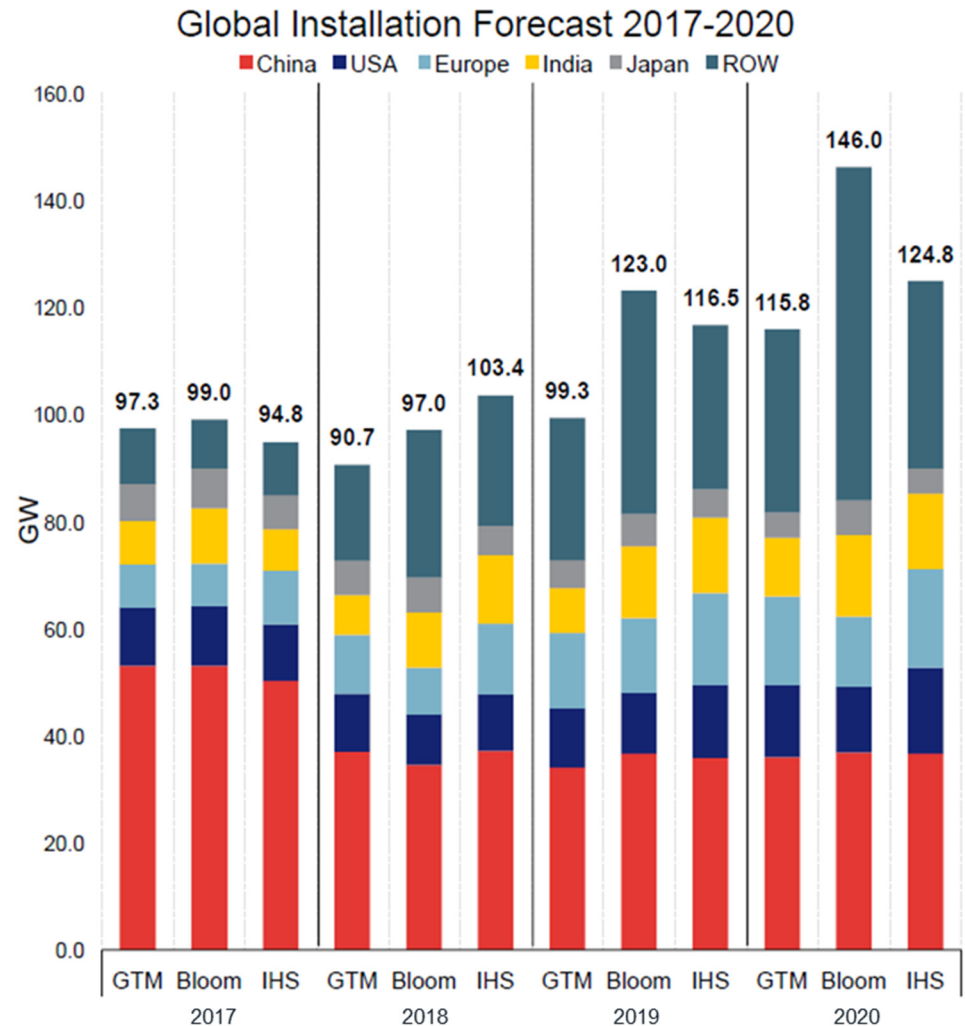
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MARKET  
OUTLOOK

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# Global Installation Forecast

- › PV Market Development
  - ~5-10% Decline 2017-2018
  - ~10-20% Growth 2018-2020
  
- › PV Modules at \$0.25/W
  - Efficiency and Size of the Industry
  - Increased Watt/Module
  - Strong Competition
  
- › PV Approaching Grid Parity
  - Increase in Electricity Prices
  - Higher Natural Gas Prices
  - Higher Coal Prices
  - Co2 Taxes

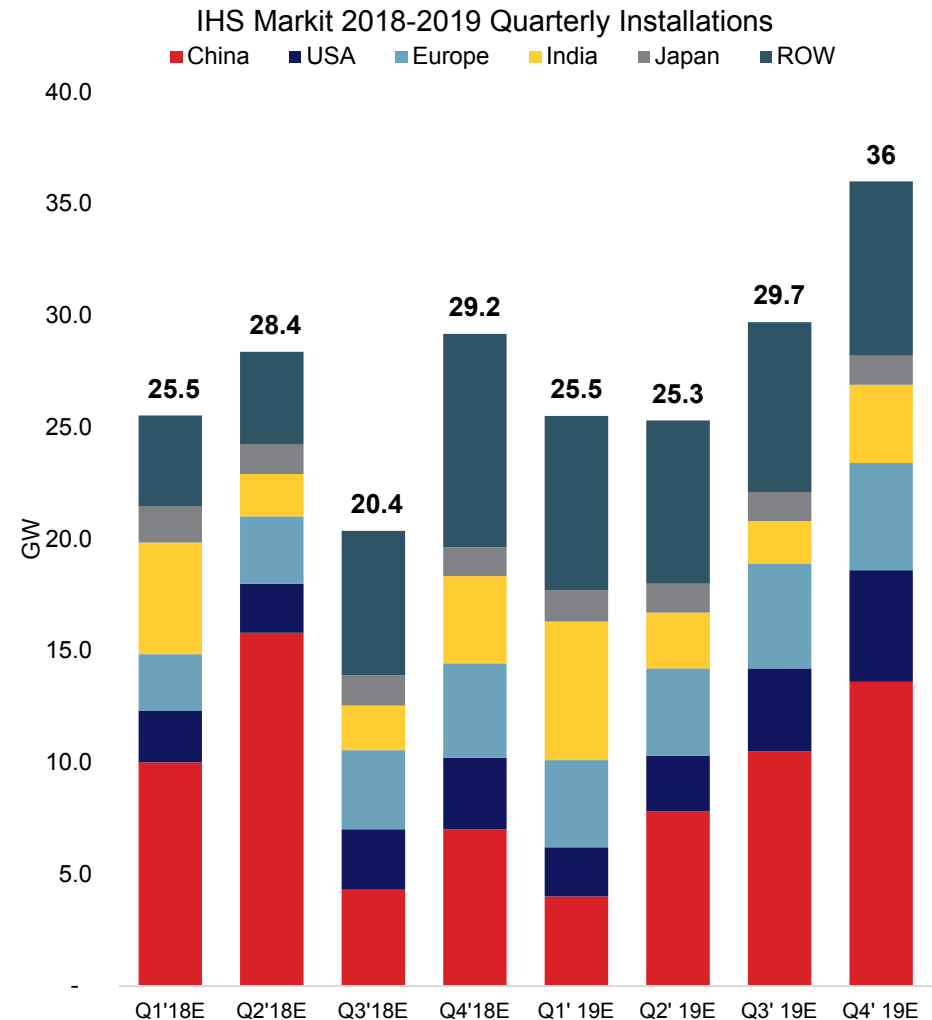


GTM PV Pulse October 2018. Bloomberg PV Market Outlook, Q3 Dated August 2018. 'IHS Markit PV Installations Tracker - Q3 2018 September 17, 2018



# Quarterly Installation Forecast

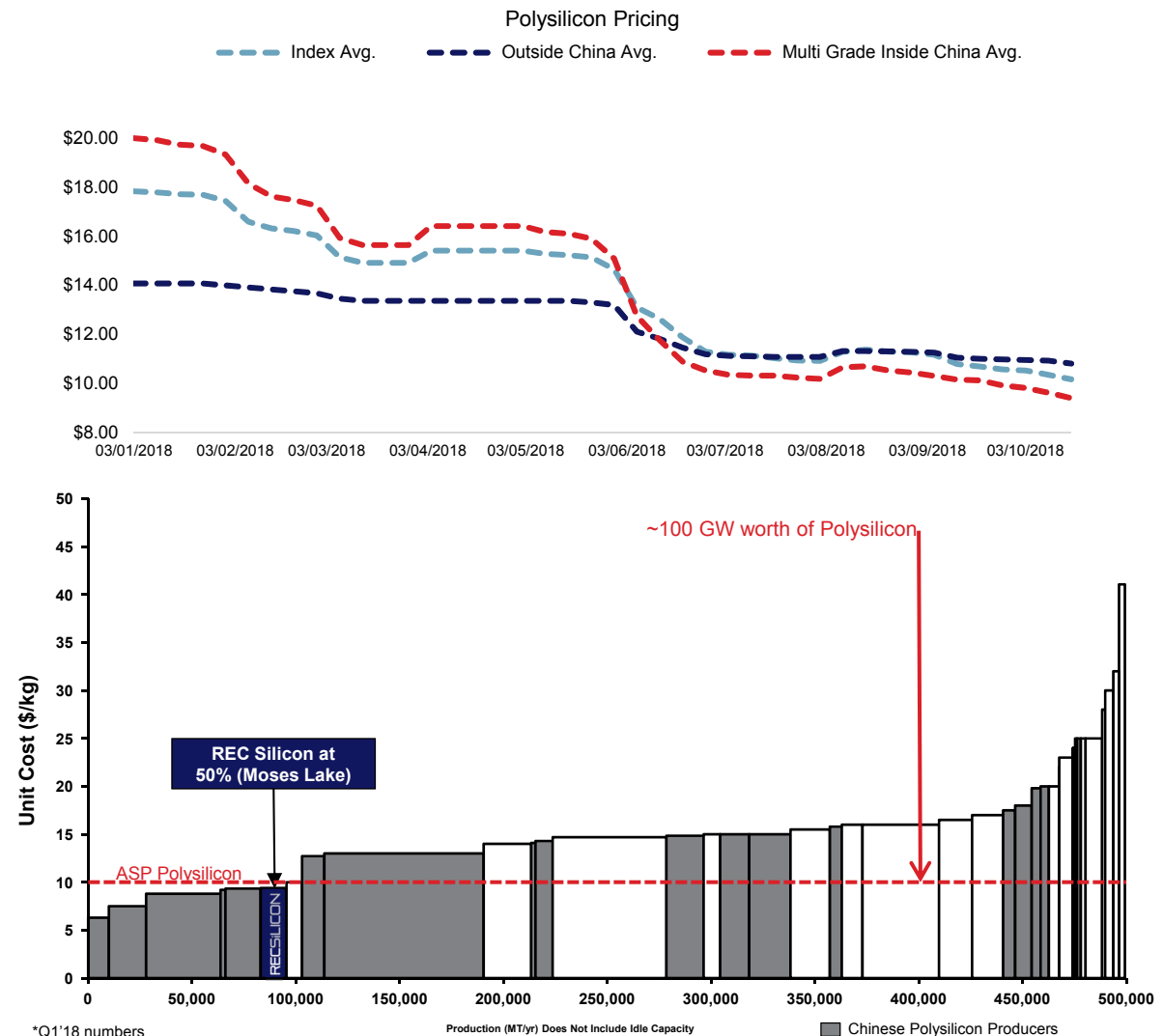
- › Low Inventory Growth in Q3 2018 Across The Value Chain
  - Reduction in Capacity Utilization
- › Q4 2018 Forecast to Outperform Q3 2018
- › First Half of 2019 Forecast to be Relatively Flat
  - Chinese Stimulus May Increase Demand
- › Demand Growth Forecast in Second Half of 2019



IHS Markit PV Installations Tracker - Q3 2018 September 17, 2018

# Polysilicon Below Industry Cash Cost

- Polysilicon ASP Below Cash Cost For the Industry
- Curtailment and Postponement of New Capacity
- REC to Sell Below Market Price Due to Trade War



The image features the national flags of China and the United States waving against a clear blue sky. The Chinese flag is positioned higher and further back than the American flag. A yellow diagonal line runs across the bottom of the image, separating the blue sky from the white background of the slide.

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## TRADE WAR UPDATE

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# US & China Solar Trade Situation Complicated

## Section 201

- › Affects all Imported Cells & Modules into US From all Countries
- › 4 Year Remedy Announced Effective in Early February 2018
  - 30% Tariff on Cells & Modules, Stepdown to 5% Over 4 Years, 2.5 GW Cell Quota

## Section 301, 25% Tariff Now Applicable

- › Chinese Solar Cells & Modules Named on Recent Section 301 List

## Overall Tariffs in Excess of 90% for Chinese Cells and Modules

- › Existing AD/CVDs on Chinese & Taiwanese Cells and Modules + Section 201 Tariffs + Section 301 Tariff
- › Chinese Solar Cell & Modules Now Less Than 1% of Total US Solar Product Imports (in 2018)

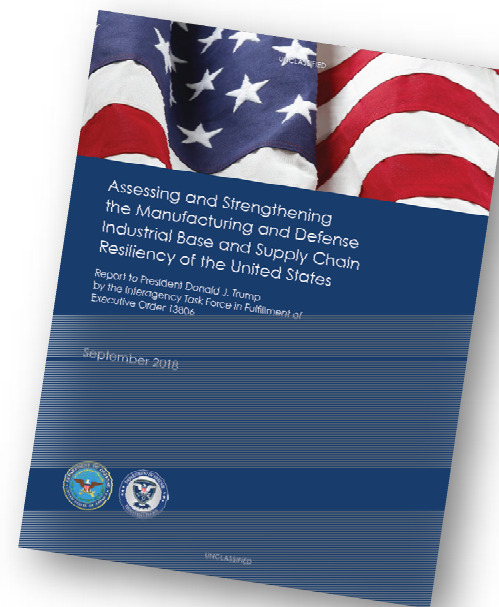
## 5 Year Sunset Reviews in Coming Months for AD/CVDs on Both US Polysilicon & Chinese Solar Cells (Original Orders)

- › Unlikely To Result in a Change To The Status Quo Without a Change in Broader US & China Trade Relationship



# However Upside for REC Exists in Political Environment 2018

- › A Trade Deal Is An Important Priority For Both US & China
  - Increasing Internal Pressure On Both Countries To Resolve, USG Have Been Very Open That It Is Seeking A Negotiation & Deal, China Has Its Own Multi Layered Internal Pressures To Resolve
- › US Polysilicon is Well Positioned To Form Part Of A Trade Deal
  - The Adverse Impacts To The US Polysilicon Industry Are Directly Caused By An Unfair Trade Retaliation By China
  - President Trump Public Commitment To Pursue Settlement For US Polysilicon
    - Section 201 Announcement “The U.S. Trade Representative Will Engage in Discussions...that could lead to positive resolution of the separate antidumping and countervailing duty measures currently imposed on Chinese solar products and U.S. polysilicon...”
- › New USG is Focused on Value of Advanced Materials Including US Polysilicon industry
  - Trump Government Focused On Strengthening US Manufacturing, Internalizing And Supporting Supply Chains – “It’s A Key Issue Of National Security”
  - USG Focused On Countering China’s Industrial Policy/Planned Dominance In Batteries
  - This Is A Very Favorable Climate To Seek Support For Companies Like REC In The US



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## YULIN JV UPDATE

# Good Progress in The Start Up of Yulin JV

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*youser* RECSiLICON 天瑞硅材料

## Fluid Bed Reactor Status:

- › ~3000 MT Granular Polysilicon Produced
- › 8 Reactors Operational as of End of Q3
- › Remaining FBR Reactors Start in Q4
- › Solar Grade Quality
- › First Commercial Sale

## Silane Unit Status:


- › Silane 10 Unit Running: Capacity Ramping To Meet FBR Reactor Demand
- › Silane 20 Unit Conducting Maintenance Turnaround

## Siemens Reactor Status:

- › Siemens Reactors Operational
- › Commercial CZ Production Per Plan
- › FZ Production Trials Underway







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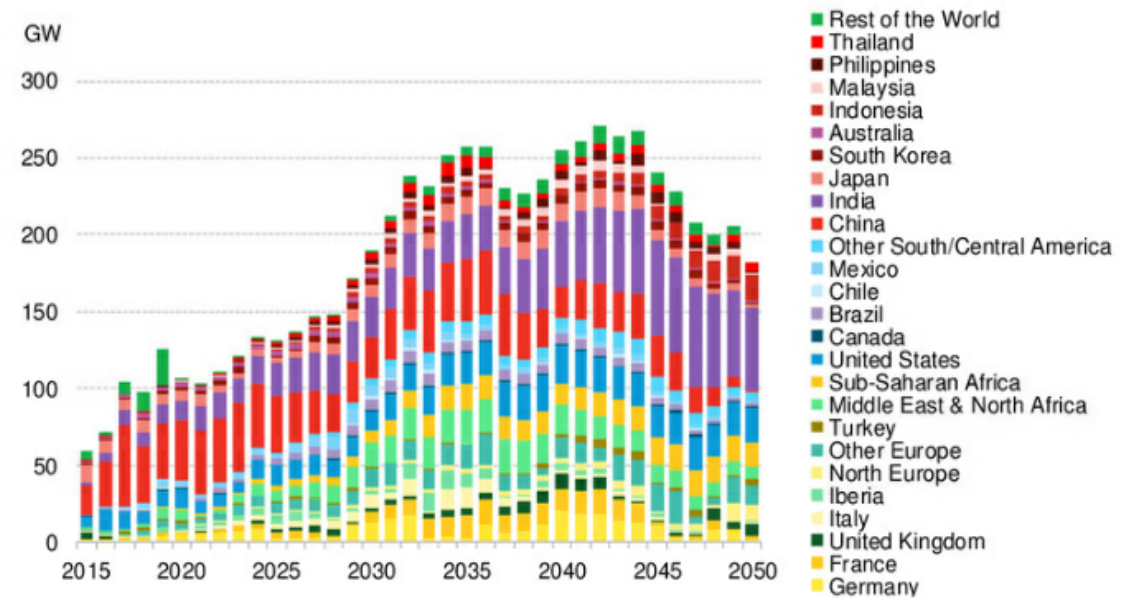
## REC SILICON MARKET DEVELOPMENT

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# PV Market Will Double Within The Next 5-10 Years

- › PV Will Gradually be Competitive Without Subsidies
- › Electricity Storage Solutions
- › Strong Focus on Clean Energy Due to Local Pollution and Climate Change Regulations
- › 90% of PV Modules are Based on Polysilicon



Source: Bloomberg NEF

# Silicon Gas and Semiconductor Markets Continue to Grow

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2018

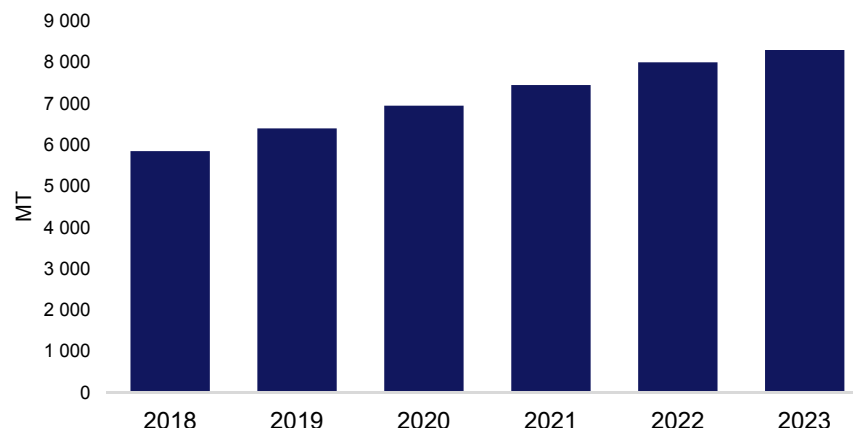
## Silicon Gas

- › More Deposition Steps
  - PV Cell Technologies and Volume
  - Advanced Semiconductor Technologies
- › New Flat Panel Display and Semiconductor Manufacturing Facilities Coming Online

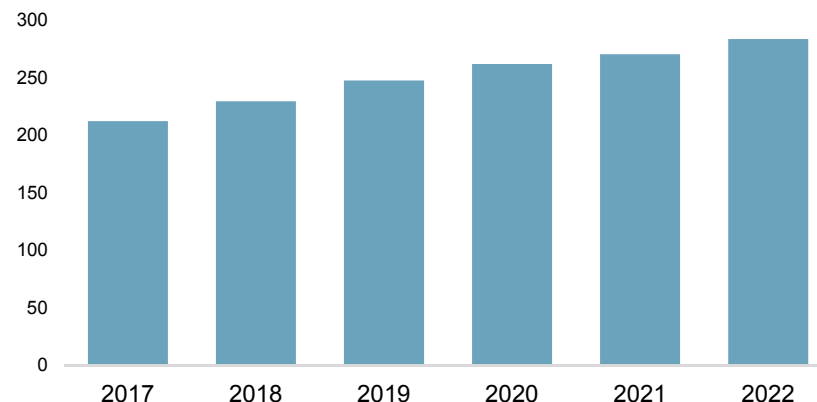
## Semiconductor Polysilicon

- › Industry to Continue at ~6% CAGR
- › IoT Technologies Drive Growth
  - Wearable Technologies
  - Mobile Phones / Tablets
- › Electric Vehicle Markets Require More Electronic Grade Polysilicon

Total Available Market for Silane



IC Industry Wafer Capacity Forecast  
(200mm-equivalents)

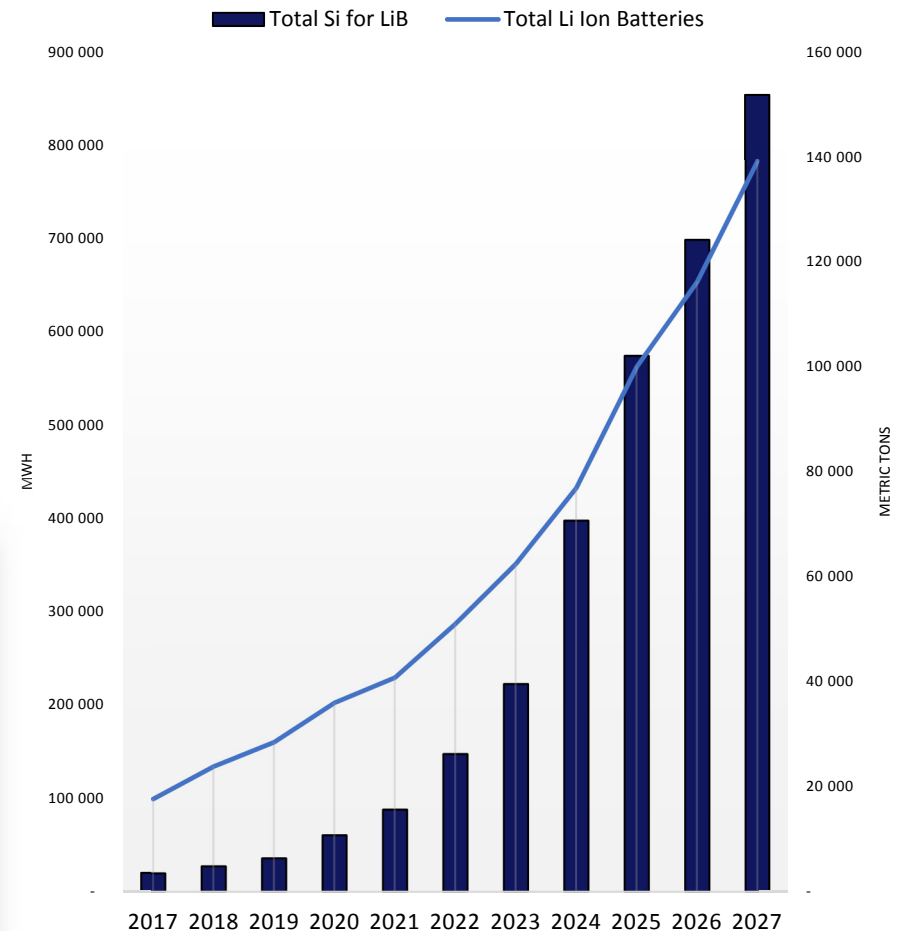


# The Battery Market Will be an Important Market for Silane and Polysilicon

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2018

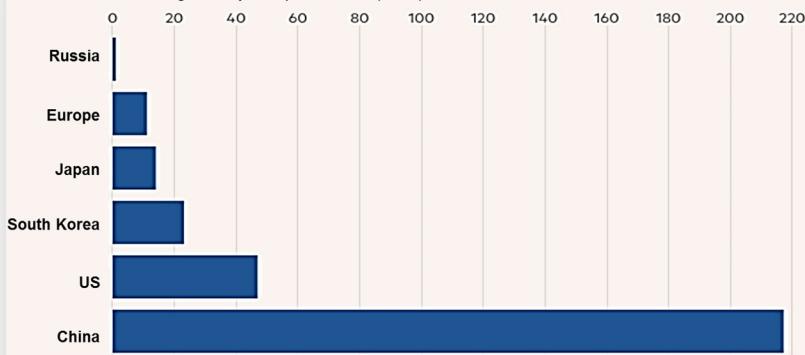
- › Industry Tests indicate an Increased battery Capacity by **4 times** by using Silicon Instead of Graphite in the Anodes, and Improved **recharging speed**
- › 5,000-10,000 MT Used Today, By Major Battery Makers Like Tesla, Samsung, Panasonic, LG
- › Market Could Exceed 100,000 MT
- › Strong Focus in the US and EU to Build a Battery Industry

Global Growth Forecast of Li Ion Battery Market and Silicon for LiB Industry



## China Dominates Global Battery Production

Planned and existing battery cell production (Gwh)



Source: Bloomberg  
© FT



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## SHORT TERM BUSINESS PLAN

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# Short Term Business Plan

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## Actions Taken:

- › Reduced FBR Utilization
  - Operating at ~25% Capacity
  - Manage Inventory Levels
- › Reviewing All Costs
  - Reduce Expenditure Levels
  - Renegotiate Supply Contract Terms
- › Customer Relationships
  - Explore Long-term Agreements with Existing Customers

## Next Steps:

- › US/China Solar Trade War Resolution
- › Maintain Cash Balance Above \$15M Through 2019
  - Assumes Current Capacity Utilization
- › Increase FBR Sales
  - Increase the FBR Blend Ratio
  - Offer Discount Compared to Market Price
- › Be Well Positioned When Polysilicon Demand Recovers





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GUIDANCE

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# Updated 2018 Guidance

FBR Production	
Q4	1,190MT
2018	7,565MT

FBR Cash Cost	
Q4	\$15.3/kg
2018	\$12.3/kg

Total Polysilicon Production	
Q4	1,660MT
2018	9,276MT

Semiconductor Production	
Q4	340MT
2018	1,153MT

Silicon Gas Sales	
Q4	850MT
2018	3,530MT

2018 CapEx *	
Maintenance	\$3M

\* Additions to Property Plant and Equipment





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Q4 2018 Reporting  
February 12, 2019

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