50+ Expert Speakers on Mining and Energy

KEY MINING EXPERTS INCLUDE:

KEYNOTE SPEAKER
Hon. Bill Johnston
Minister for Mines and Petroleum
Government of Western Australia

Gerard Danckert
GM Product Group Strategy, Iron Ore
Rio Tinto

Glenn Neill
Study Lead South32

Richard Beazley
Interim Chief Operations Officer Sandfire Resources

Kirsten Rose
Head of Low Emissions Technology BHP

Justin Brown
Executive Director Montezuma Mining Company Ltd

James Koerting
Unit Manager: Electrical Operations, Australasia Gold Fields

Christian Claveria
Manager, Energy, Copper Strategy & Development BHP

Ray Chatfield
Senior Engineering Specialist Alcoa

Craig Bearsley
Associate Director - Renewables, Generation and Industrial AECOM

Bethwyn Cowcher
Legal Manager for Energy and Power Fortescue Metals Group

Nicole Roocke
Deputy Chief Executive Chamber of Minerals and Energy of Western Australia (CME)

John Welborn
Managing Director & CEO Resolute Mining

Greg Zooeff
Regional Energy Manager Nyrstar Australia Pty Ltd

Chris Davis
Director Australasian Institute of Mining and Metallurgy

Vincent Algar
Managing Director Australian Vanadium Limited

Neil Canby
Executive Director Sunrise Energy Group

Megan Joyce
Head of Loans & Specialised Finance, WA ANZ

Jo Garland
Special Counsel HFW Australia

Gerard Danckert
GM Product Group Strategy, Iron Ore Rio Tinto

John Welborn
Managing Director & CEO Resolute Mining

Megan Joyce
Head of Loans & Specialised Finance, WA ANZ

Jo Garland
Special Counsel HFW Australia

http://australia.energyandmines.com
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KEY RENEWABLES, FINANCE AND ENERGY EXPERTS:

- Ashley Manna, Manager Network Relations, ElectraNet
- Will Rayward-Smith, General Manager, SunSHIFT
- Charles Ho, Head of Wholesale Banking Australia, ING
- Lourens Jacobs, Principal Development Engineer, Woodside Energy
- Matthew Currie, Sector Manager – New Markets, Aggreko
- Tony Dixon, CEO, Australian Steel Institute
- Amiram Roth-Deblon, Head of Global Business Initiatives, juwi Renewable Energies
- Matthew Murphy, Global Head of Credit, Specialised Lending and Social & Environmental Risk, ANZ
- Louis Kent, Principal Consultant and Mining Sector Lead, Energetics
- Michel Carreau, Director Hybrid Power, Hatch
- Andrew Richards, CEO, Energy Users Association of Australia
- Matt Walden, Investment Director, Australian Renewable Energy Agency
- Michael Ottaviano, CEO and Managing Director, Carnegie Clean Energy
- Dermot Costello, Regional Adviser, WA Clean Energy Council
- Peter Kerr, Executive Manager, Growth, Western Power
I thought it was a great conference. The variety of presentations and styles of sessions was great. A good cross-section of attendees. Not all the usual suspects speaking which was good. The site visit was superb.

Australian Vanadium

The event not only met my expectations but surpassed them. There was a strong sense of being a witness of a shift, a sea change, a turning point at the conference. Congratulations!

Delegate, 2017

Thank you for organising such a well run and insightful event. It has helped me crystallise some thinking around how renewables can play a role in our power supply mix.

New Century Resources

It was a very good conference that covered a range of very topical issues. Looking forward to future installments.

Engeco

Really great conference and far more discussion about renewables than I had anticipated, which was great to see. The exhibition booths were great and opportunities to network were adequate. Thanks for a great event.

ARENA

The conference was well organised, engaging and enjoyable -- WELL DONE!

Thyssenkrupp Industrial Solutions

2018’S AGENDA FEATURES SENIOR MINING AND ENERGY LEADERS INCLUDING:
10 Key Topics to be Addressed in 2018

01 Why renewables — why now? Insights on the pricing, performance and business case

02 Energy risks for mining

03 Renewables for remote and grid-tied mines: cutting edge case studies

04 Evolving energy strategies for mid-tier mining leaders

05 The likely impacts of the National Energy Guarantee on energy choices for mines

06 Lessons learned from Chile on the benefits of renewables integration for grid-tied mines

07 How will the task force on climate-related disclosures impact mining’s energy decisions?

08 Energy innovation case studies from other key industrial sectors

09 Behind the meter vs. offtake agreements for grid-tied mines

10 Structuring the deal: Evolving finance models for renewables for mines
Sponsor and Exhibition Opportunities at Energy and Mines Australia Summit

Driven by high power costs, grid reliability concerns and carbon reduction targets, Australia’s mining industry is actively investing in renewable energy options. New and operating remote mines are assessing the cost savings and carbon reduction benefits renewables offer when integrated with diesel and gas-powered generators. While grid-tied sites are reviewing behind-the-meter renewables options to counteract rising electricity costs and grid instability challenges.

Energy and Mines works collaboratively with our sponsors to create marketing, lead-generation and thought-leadership solutions that helps you connect with the mining companies looking to develop energy partnerships. We save you time and money by connecting you with this audience. We are delighted that as a result of sponsoring last year’s event, at least three companies won mine energy projects.

In response to demand following last year’s inaugural, sell-out event, we have enlarged the size of the Summit trade show and created more networking time for sponsors and exhibitors.

As we move to add renewables into our energy mix, it is essential that the mining industry collaborates with the energy sector to develop and implement competitive solutions.

Fortescue Metals Group

For information on sponsorship, exhibition, thought-leadership and branding opportunities at the Australia Summit 2018 contact

John Hodgkins
Sales Director
john.hodgkins@energyandmines.com
Tel: +44 7516 113339
Attendee Breakdown and Event Features

**Attendee Breakdown**

- **37%** Renewable Energy Developers, Suppliers & Consultants
- **32%** Senior Mining Energy Decision-Makers
- **10%** Infrastructure and Engineering Experts
- **11%** Government, Finance & Legal
- **5%** Mining Suppliers
- **5%** Other (Media, Industry Associations, Academics)

**2017 Attendee Breakdown**

**Event Features**

**World Class Agenda**

Energy and Mines spends months speaking with the mining and renewables communities to understand the most critical areas of interest, the latest case studies and the key people to invite. An agenda is created that reflects the key concerns in the marketplace showcasing new and innovative examples of alternative energy use in the mining sector.

**Breakfasts, Lunches, Breaks, Receptions and Dinner**

The Summit features formal and informal occasions to meet and network with prospective clients. The functions can be hosted and sponsored by companies to provide the opportunity for brand awareness and thought leadership. Successful sponsor led functions in the past have included the gala dinner, a mine and VIP reception, breakfast briefings, boardroom meetings, hosted luncheons and branded breaks.

**New for 2018: Expanded Exhibition**

The Pan Pacific is a self-contained network of rooms and meeting spaces at the heart of which is the exhibit area. The exhibit is located outside the main conference, lunch and meeting rooms. It is the location for registration, breaks, lunches and the reception. 2018’s Summit features an expanded exhibition area to meet with current and prospective clients.

**1-1 meeting service**

For our major sponsors we arranged private 1-1 meetings with key pre-screened mines. The meetings take place in relaxed, private, catered meeting spaces that enable dialogue and interaction between potential project partners. This is a key feature for our leading sponsors as it provides direct access to key mine decision-makers.

**Event App**

The Summit is enhanced by a networking app that allows participants to interact and connect with each other, the sponsors and the speakers. The app also facilitates the real-time sharing of thoughts, ideas and experiences.
We are excited to be working with Energy Developments and ARENA to offer a site visit to take place on June 25th. The site visit starts and finishes in Adelaide.

**Project Details**

The renewable hybrid project at Coober Pedy involves a hybrid combination of 4MW wind, 1MW solar, and a 1MW/500kWh battery with the support of various enabling technologies to integrate the renewables and existing (3.9MW) diesel generators. It is anticipated that the project will provide Coober Pedy with at least 70% renewable energy over the 20 year life of the project.

The project, developed by Energy Developments, received funding support from the Australian Renewable Energy Agency (ARENA), which agreed to provide funding of up to $18.4m for the development and construction.

Following last year’s successful site visit to the Degrussa solar project, this year’s visit will once again provide a unique, hands-on, opportunity to view a hybrid project in operation. The site visit will provide an understanding of scope, complexity, detail and nuance of such projects.

**Preliminary Site Visit Details, June 25th**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>10.00 am</td>
<td>Attendees meet at Adelaide Airport and board a chartered flight to the site</td>
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<tr>
<td>12.00 pm</td>
<td>Site visit and presentation from key staff</td>
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<tr>
<td>04.00 pm</td>
<td>Coober Pedy Town Visit</td>
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<tr>
<td>06.00 pm</td>
<td>Return to Adelaide</td>
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</table>

(exact details subject to confirmation)
Scheduled to take place on June 26th at the Pan Pacific Perth, the aim of this workshop is to provide energy professionals with a comprehensive understanding of the mining industry. Participants will learn about the fundamentals of the operational practices pivotal to the mining industry. Participants will be taught essential terminology and be provided with a clear understanding of the key concepts involved. Mining professionals will also benefit from having a broader understanding of the mine energy issues and how these relate to larger changes across the energy landscape.

Workshop Outcomes

This course is essential for energy professionals currently involved, or who would like to be involved, in energy for mining projects. The workshop has been enjoyed by a cross-section of professionals involved in energy and mining.

At the completion of this course participants will be able to:

• Appreciate the significance of energy in the mining industry (grid tied & off grid)
• Understand frequently used terminology
• Describe the use of energy for open pit and underground mining methods
• Understand the principles of mine design, planning, operation and closure
• Understand the impact of energy on social (CSR) and environmental considerations
• Understand the production chain of mining from processing to extractive metallurgy and from pit to port
• Figure out and develop specific solutions based on benchmarking processes linked to relevant case studies
• International network development with other professionals and former attendees of the 7 previous workshops

Testimonials

“Arnoldus brings great insight into the world of mining and renewables and his workshop addresses key metrics of both areas while connecting mining and renewable energy specialists”
Juwi renewable energies

“Arnold’s workshop in Perth, Australia provided members of SunSHIFT’s engineering and business development teams with a comprehensive overview of the mining cycle in an open and collaborative environment. The workshop was well-structured and well-delivered to a mixed group of mining and renewables professionals. With an enhanced understanding of performance metrics in the mining industry, SunSHIFT can now better articulate its offering to mining companies at all stages of the mining cycle.”
SunShift

“What you presented was a very sophisticated yet practical review of the mining industry.”
Barrick Gold

“Your presentation was delightfully informative and relevant in describing the diverse mining processes and how they best integrate with renewable energy as well as supporting the clear business case for renewables in mining - the presentation opened my eyes to both the barriers and possibilities of renewables in mining and reinvigorated my motivation towards global carbon reduction - much appreciated.”
Carbon War Room

Workshop Leader

Dr. Arnoldus M. van den Hurk is a trainer in technical and financial mining education for energy professionals. He has a Ph.D. in Geology from Barcelona and Tubingen Universities and MBA from Madrid – Shanghai. He is the General Manager of r4mining and Director of REMIO (Renewable Energies and Mining International Observatory). For 30 years, Arnold has been an adviser and professional in geo-mining, renewable energy, and financial analysis. He has worked in Europe, South America, the Caribbean, Africa and China. He has wide knowledge and experience in the renewables and mining sectors. He is passionate about connecting these two sectors to improve the triple bottom line efficiency of mining, reducing uncertainties and risks and mitigating climate change. He also has extensive training experience in universities, business schools and companies around the world.
# Pre-Summit Workshop, June 26, 2018

**AN ESSENTIAL INTRODUCTION TO MINING FOR RENEWABLES PROFESSIONALS**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Topics</th>
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<tbody>
<tr>
<td>08:30</td>
<td>Coffee &amp; Registration</td>
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<tr>
<td></td>
<td>Session 1</td>
<td>Mining exploration, Mine planning, Mining operation, The mining Cycle</td>
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<td>Session 2</td>
<td>Open pit mining energy use, Subsurface mining energy use, Off-grid/on-grid power demand, Fuel &amp; Power in Mining Transport</td>
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<td></td>
<td>Session 3</td>
<td>Environmental responsibility in mining, Social aspects in mining, Mine closure and reclamation, Mining carbon footprint and renewables, Social &amp; Environmental</td>
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<td>05:00</td>
<td>Close and drinks</td>
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</table>
Day 1: June 27, 2018

AM

8:00  Coffee & Registration
8:20  Chair’s Opening Remarks
      Adrienne Baker, Director, Energy and Mines

8:30  Introduction
      Will Rayward-Smith, General Manager, SunSHIFT

8:45  Opening Keynote
      Hon. Bill Johnston, Minister for Mines and Petroleum, Government of Western Australia

KEYNOTE PANEL: WHY RENEWABLES FOR MINES --- WHY NOW?

9:05  Keynote Panel: Why Renewables for Mines --- Why Now?
      Session Leader: HFW
      This keynote session will bring together senior mining executives to discuss why renewable energy integration makes business sense for their operations today. How are these technologies fitting as part of the solution towards affordable, reliable and low-carbon energy for mines? This discussion will also provide insight on the most common barriers renewables projects are encountering.
      • Why does renewable energy integration make business sense today - what are the main drivers?
      • What types of renewables solutions are advancing and what makes these projects work?
      • What key criteria go into assessing the business case for renewables and storage investments?
      • What barriers and internal hurdles are renewables projects continuing to encounter?
      • Has the commercial value of renewables been clearly communicated and demonstrated?
      • How do renewables fit with broader sustainability and energy goals across mining operations?
      • How do mining leaders see the energy transition of mines developing?
      Chair: Jo Garland, Special Counsel, HFW Australia
      Kirsten Rose, Head of Low Emissions Technology, BHP
      Richard Beazley, Interim Chief Operations Officer, Sandfire Resources
      Bethwyn Cowcher, Legal Manager for Energy and Power, Fortescue Metals Group
      Gerard Danckert, GM Product Group Strategy, Iron Ore, Rio Tinto

9:45  Q&A with Session Speakers
9:55  Networking Break

ENERGY RISK IN THE AUSTRALIAN INDUSTRIAL SECTOR

10:25  Session 1: Energy Risk in the Australian Industrial Sector
      Energy risk is significantly impacting the competitiveness and, in some cases, production of large industrial users in Australia. Rising and volatile fuel costs for remote industrial users, and extremely high electricity prices and power disruptions for grid-connected users, have elevated energy to a top strategic concern. This session will outline the impacts of energy risk on large industrial users in Australia and the solutions being explored to deliver affordable and reliable power.
      • How are energy pricing and security concerns impacting different industrial sectors in Australia?
Day 1: June 27, 2018

AM

- What has been the direct impact of energy risk on the competitiveness of these sectors?
- What is the current expectation in terms of energy price increases for large industrial users --- both remote and grid tied?
- How are individual companies and sector associations responding to these particular energy challenges?
- What is the latest update on policy developments, both state and federal, to address energy concerns?
- How have energy price and security concerns changed strategic energy goals for industrial users?
- What solutions are industries exploring to move towards affordable and reliable power supplies?
- How do industry experts see the power profiles of large industrial users changing?
- Beyond energy pricing and reliability, what additional energy concerns do large-industrial users have?

Chris Davis, Director, Australasian Institute of Mining and Metallurgy (AusIMM)
Dermot Costello, Regional Adviser, WA, Clean Energy Council
Nicole Roocke, Deputy Chief Executive, Chamber of Minerals and Energy of Western Australia (CME)
Tony Dixon, CEO, Australian Steel Institute
Andrew Richards, CEO, Energy Users Association of Australia

11:05 Q&A with Session Speakers

11:15 DECARBONISING OFF-GRID MINES: PROGRESS AND NEXT STEPS

Decarbonising Off-Grid Mines: Progress and Next Steps
- Highlights from ARENA’s recently published renewables and mining handbook
- Current opportunities and barriers for further uptake of renewables for off-grid mines
- Next steps in supporting energy productivity and renewables applications for energy-intensive industries

Matt Walden, Investment Director, Australian Renewable Energy Agency (ARENA)

11:25 RENEWABLES FOR MINES: NEW CASE STUDIES FROM MINING LEADERS

Session 2: Renewables for Mines: New Case Studies from Mining Leaders
With energy accounting for around 30% of the operating costs of mines relying on diesel or gas-fired generators, it’s clear why mines are seeking to reduce their dependency on these fuel sources by integrating renewables. The price variability of diesel and gas, transportation challenges, and carbon emissions further underline the business case for renewables for remote mines. This session will showcase the latest case studies and assessments of renewables for off-grid mines.

Case Study: Exploring Renewables to Address Energy Cost and Supply Challenges
Bethwyn Cowcher, Legal Manager for Energy and Power, Fortescue Metals Group

Joint Case Study: Offsetting Gas Consumption with Solar
Working with SunSHIFT, South32 is integrating a 3 MW solar farm at its Cannington Mine to offset gas fuel costs and deliver a reduction in carbon emissions.
- Key updates on this project which will be the second largest solar project for a remote off-grid Australian mine
- Details on integrating solar with a gas-fired power station and ensuring power reliability
- Client drivers behind the technology selection, including operational flexibility and single point accountability for power

Will Rayward-Smith, General Manager, SunSHIFT
Glenn Neill, Study Lead, South32
## Addressing Power Constraints for Mines in the Eastern Goldfields

### Session 3: Addressing Power Constraints for Mines in the Eastern Goldfields

Many mines in Western Australia’s Eastern Goldfields are facing major power constraints. With state and local government currently exploring the potential for renewables to address power challenges in the region, this session will bring together key stakeholders to discuss evolving solutions for mines in the Eastern Goldfields.

### Keynote Presentation:

**Hon. Alannah MacTiernan MLC**, Minister for Regional Development; Agriculture and Food; Government of Western Australia

### Panel Discussion: Addressing Power Constraints for Mines in the Eastern Goldfields

Many mines in Western Australia’s Eastern Goldfields are facing major power constraints. With state and local government currently exploring the potential for renewables to address power challenges in the region, this session will bring together key stakeholders to discuss evolving solutions for mines in the Eastern Goldfields.

- How are current energy constraints impacting business strategies for mines in the region?
- What solutions are miners evaluating to address power challenges for operations in the area?
- What options are state and local governments exploring to address energy constraints for industry?
- What role does the local utility see for renewables in addressing current power challenges for energy-intensive industries in the region?
- What are the key benefits and potential challenges of having renewables as part of the energy solution?
- What are the next steps in exploring the opportunities for alternative energy in the Eastern Goldfields?

**Chair:** Hon. Alannah MacTiernan MLC, Minister for Regional Development; Agriculture and Food, Government of Western Australia

- **Michael Ottaviano**, CEO and Managing Director, Carnegie Clean Energy
- **John Walker**, CEO, City of Kalgoorlie-Boulder
- **Peter Kerr**, Executive Manager, Growth, Western Power

### Q&A with Session Speakers

## Creating Value and Managing Risks with Renewables for Mines

### Creating Value and Managing Risks with Renewables for Mines

- Insights from projects under development for remote mining operations
- Updates on the economics, integration and performance of hybrids for mines
- Operational results from the landmark Degrussa Solar Project for Sandfire Resources

**Amiram Roth-Deblon**, Head of Global Business Initiatives, juwi Renewable Energies

### Case Study: Energy Challenges for Grid-Tied Mines

### Case Study: Energy Challenges and Strategies for Grid-Tied Operations

- Understanding the key elements including policy developments, reliability, price and carbon emissions challenging energy-intensive refineries
- What are the impacts of these challenges and what solutions are currently being explored?
- Assessing the potential for renewables to play a role in securing stable and affordable power

**Greg Zooeff**, Regional Energy Manager, Nyrstar Australia Pty Ltd
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<th>Time</th>
<th>Session</th>
<th>Speaker/Details</th>
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<tbody>
<tr>
<td>2:50</td>
<td>Networking Break</td>
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<td></td>
<td><strong>REGIONAL SPOTLIGHT: RENEWABLES FOR MINES IN SOUTH AMERICA</strong></td>
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<td>3:20</td>
<td>Lessons Learned from Chile: The Benefits of Renewables Integration for Grid-Tied Operators</td>
<td>Chile provides an interesting example of how renewables can be integrated with gas-fired generation and provide benefits for mining operators.</td>
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<td>• What lessons can be taken from Northern Chile on the advantages of renewables integration?</td>
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<td>• What are the results in terms of energy costs, system performance and carbon emissions?</td>
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<td>• How might this model be applied in Australia - what key changes would be required?</td>
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<td>• How might the Chilean experience inform the energy transition in Australia?</td>
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<td>Christian Claveria, Manager, Energy, Copper Strategy &amp; Development, BHP</td>
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<td>3:40</td>
<td>Reducing Energy Costs with Solar for an Remote Argentinian Mine</td>
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<td>• What are the main drivers for integrating solar PV with natural gas for this remote mine?</td>
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<td>• Next steps for project implementation and current expectations for gas savings</td>
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<td>• Understanding the impact on steam generation and mitigation</td>
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<td>• What lessons from this project can be applied to the Australia context?</td>
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<td>Michel Carreau, Director Hybrid Power, Hatch</td>
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<td><strong>EVOLVING ENERGY STRATEGIES FOR MID-TIER MINING LEADERS</strong></td>
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<td>4:10</td>
<td>Session 4: Evolving Energy Strategies for Mid-Tier Mining Leaders</td>
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<td>Australia’s mid-tier mining sector has hit a turning point with higher commodity prices and cautious spending leading to higher returns. With many operations reliant on diesel and gas, energy cost and reliability is a core focus for management teams. This panel will bring together mid-tier mining leaders to discuss their evolving energy strategies and the potential role of renewables in improving performance.</td>
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<td>• How are mid-tier mines evolving their energy strategies in light of power cost pressures?</td>
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<td>• What is the internal process for considering new energy options for a site?</td>
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<td>• What particular challenges do junior mines face when considering new power options?</td>
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<td>• What role do mid-tier mining leaders see for renewables in addressing energy challenges?</td>
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<td>• What has been the experience of mines that have invested in renewables options?</td>
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<td>• What are the preferred business model for investing in renewable energy options?</td>
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<td>• How is mining’s power portfolio expected to change in the next 3-5 years?</td>
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<td>Chair: Matthew Currie, Sector Manager – New Markets, Aggreko</td>
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<td>Vincent Algar, Managing Director, Australian Vanadium Limited</td>
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<td>John Welborn, Managing Director &amp; CEO, Resolute Mining</td>
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<td>James Koerting, Unit Manager: Electrical Operations, Australasia, Gold Fields</td>
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<tr>
<td>4:50</td>
<td>Q&amp;A with Session Speakers</td>
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<tr>
<td>5:00</td>
<td>Networking Drinks</td>
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</table>
8:55 **Chair’s Remarks**  
Adrienne Baker, Director, Energy and Mines

**REALIZING THE SOCIAL AND ECONOMIC BENEFITS OF DISTRIBUTED GENERATION**

9:00 **Joint Case Study: Realizing the Social and Economic Benefits of Distributed Generation**  
Image Resources is investing in a 3-4 MW solar farm adjacent to its Boonanarring mine and processing plant, which are currently under construction.  
- Details on this ‘behind the meter’ solution to deliver around 25% of the electricity needs  
- Insight on the full social and economic benefits driving the business case  
- Next steps in realizing success with distributed generation in Western Australia  
  
  **Patrick Mutz**, Managing Director, Image Resources  
  **Neil Canby**, Executive Director, Sunrise Energy Group

**REDUCING CARBON EMISSIONS AND ENERGY COSTS WITH LNG**

9:20 **Case Study: Reducing Carbon Emissions and Energy Costs with LNG**

**WHAT COULD THE NEG MEAN FOR MINING’S ENERGY STRATEGY?**

10:00 **What Could the NEG Mean for Mining’s Energy Strategy?**  
While the details are still unclear, the Federal Government’s National Energy Guarantee (NEG) could have significant impacts on the mining sector by shifting the burden of federal carbon emissions reduction targets.  
- Key updates on the NEG and its potential impacts on the mining sector  
- Understanding the potential financial impacts of the NEG on mining companies  
- What does this proposed policy mean for the strategic energy choices of mines?  
  
  **Louis Kent**, Principal Consultant and Mining Sector Lead, Energetics

10:20 **Networking Break**

**HOW WILL ENERGY STORAGE IMPROVE MINING’S ENERGY LANDSCAPE?**

11:00 **Session 7: How will Energy Storage improve Mining’s Energy Landscape?**  
The big turning point that will drive the uptake of renewables for mines is affordable and reliable energy storage. Improving storage both in terms of scale and cost will dramatically alter the ability for wind and solar to meet the energy needs of mines by providing continuous power 24/7. This session will explore the latest developments in energy storage for mining applications and the next steps that will drive further integration of these technologies for mines.  
- How and when will energy storage transform the applicability of renewables for miners?  
- Expert views on the current status and outlook of energy storage for mining microgrids  
- How are large-scale storage projects impacting energy costs and reliability for grid-tied mines?  
- What challenges need to be overcome to realize the full potential of storage for mines?  
- What recent innovations will drive further integration of storage for these hybrid systems?  
- What should miners expect in terms of diesel reductions when integrating storage?  
- What key criteria should mines consider when exploring storage options as part of a microgrid or grid-connected project?  
  
  **Chair: Craig Bearsley**, Associate Director - Renewables, Generation and Industrial, AECOM
### AGENDA

**Day 2: June 28, 2018**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>11:40</td>
<td>Audience Q&amp;A</td>
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<td></td>
<td><strong>INNOVATIVE ENERGY SOLUTIONS FROM KEY INDUSTRIAL SECTORS</strong></td>
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<tr>
<td>11:50</td>
<td><strong>Session 8: Innovative Energy Solutions from Key Industrial Sectors</strong></td>
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<td>What lessons can be applied to mining from other large industrial users that have integrated renewable energy and storage solutions to drive down energy costs and ensure power reliability? This session will showcase innovative case studies and provide insight from key industrial sectors.</td>
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<td><strong>EXPLORING SOLAR THERMAL OPTIONS FOR AN ALUMINIUM REFINING</strong></td>
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<tr>
<td>11:50</td>
<td><strong>Joint Case Study: Exploring Solar Thermal Options for Aluminium Refining</strong></td>
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<td>With funding from ARENA, aluminium producer Alcoa is testing the benefits of integrating solar thermal energy into the Bayer alumina process.</td>
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<td>• Insight on the process for integrating concentrated solar power into aluminium refining</td>
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<td>• What are the current expectations in terms of energy savings from CST technology?</td>
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<td>• How might this technology be applied to the mining sector?</td>
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<td>Ray Chatfield, Senior Engineering Specialist, Alcoa</td>
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<td>Gus Nathan, Director, Centre for Energy Technology, University of Adelaide</td>
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<td>12:10</td>
<td><strong>Networking Lunch</strong></td>
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<td><strong>SAVING CARBON EMISSIONS WITH ENERGY STORAGE</strong></td>
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<td><strong>Case Study: Saving Costs and Carbon Emissions with Energy Storage</strong></td>
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<td>Woodside Petroleum broke new ground in the offshore oil and gas industry by installing a large lithium-ion battery on one of its platforms.</td>
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<td>• Key benefits of adding this 1 megawatt-hour storage system</td>
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<td>• What were the main technical considerations in integrating storage?</td>
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<td>• Operational results: How is the system performing in terms of energy and carbon savings?</td>
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<td>Lourens Jacobs, Principal Development Engineer, Woodside Energy</td>
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<td>1:30</td>
<td><strong>EVolving Finance Options for Renewables for Mines</strong></td>
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<td><strong>Session 10: Evolving Finance Options for Renewables for Mines</strong></td>
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<td>The upfront capital costs and longer-term paybacks for renewables are often the biggest hurdles for mines considering alternative energy investments. As more technologies are integrated into these projects with multiple parties involved, there is a risk that the power purchase agreement becomes more complex. This session will provide insight from a recent finance case study as well as bring together leading investors to discuss evolving finance options and structures for these projects.</td>
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1.30  **Joint Case Study: Customizing and Simplifying PPAs for Renewables for Mines**
This joint presentation will offer key insights from a soon-to-be announced renewables and storage project for a remote Australian mining operation.
- Key finance elements of this deal that met the mine’s objectives and approvals’ process?
- Details from the power purchase agreement: what are the lessons learned?
- Balancing risks, expectations, timelines and ROI requirements for multiple parties

1:55  **Panel Discussion: Evolving Finance Options for Renewables for Mines**
- Insight from renewable energy finance leaders on current risks for new renewables investments
- How are the NEG and other regulatory developments impacting investment decisions?
- What is the current appetite for investing in renewables projects with mine offtakers?
- How would investors analyze risk for renewables projects where the offtaker is a mine?
- What guarantees need to be in place for mines and developers if the operation shuts down?
- How are lenders and developers evolving their finance models to adapt to the mining sector?
- What is now possible in terms of shorter power purchase agreements and up front capital costs?
**Chair:** Cate Rocchi, Chief Executive Officer, Perth Media
Charles Ho, Head of Wholesale Banking Australia, ING

2:35  **Q&A with Session Speakers**

2:45  **Closing Remarks**
Will Rayward-Smith, General Manager, SunSHIFT

3:10  **Conference Close**
Companies represented at Energy and Mines Australia Summit 2017

ABB • ABB Australia • ABC Radio • Acciona • Acciona Energia • Adani Australia Renewables • Advanced Energy Resources • Advisian • Aggreko • Agrimin • AKUO ENERGY • Alinta Energy • AMEC • ARENA • Association of Mining & Exploration Companies (AMEC) • ATCO Australia • Auspac Energy Technology • Australian Broadcasting Corporation • Australian Institute of Energy • Australian Mines • Australian Mining • Australian Vanadium Ltd • BAE Systems • BBIG • BHP • BHP Iron Ore • Bloomberg • Canadian Solar • CERCG • ChinovaResources Pty Ltd • Clean Energy Finance Corporation • Conergy • CrossBoundary Energy • CSIRO • Dampier Bunbury Pipeline • Doral Pty Ltd • E3 Advisory • EDL • ekistisca • Enel Green Power • Energetics Pty Ltd • Energy Made Clean • Energy Queensland • Energy Storage Rights • Enernet Australia • Enernet Global • ENGIE • EVOL LNG • Fortescue Metals Group • Freelance • Galena Mining • GHD • Gold Fields Australia • Golder Associates Ltd • Hatch • Helios Renewable Energy Limited • Holman Fenwick Willan • Honeywell • Hydro Tasmania • Indigenous Business Australia • Ingeteam • INPEX • ITP Renewables • Jacobs • Jinko Solar • juwi • K&L Gates • Lighthouse Infrastructure • Lochard Energy • Magaldi • McDowall Affleck • Mitsui & Co. • Mitsui Coal Holdings • Momentum Engineering • Mount Gibson Iron • MPower • NAB • Newmont • Northern Star Resources NL • Norton Rose Fulbright • OneTide • Origin • OZ Minerals • Pacific Energy • Pacific Hydro Australia • Panoramic Resources • Perdaman Advanced Energy • Perth Media • Power Technics Pty Ltd • Powerwest • PwC • R4mining • RCR Tomlinson • RES Australia • ResourcesWA • Rio Tinto • Rocky Mountain Institute • Santos • SBI Logistics • Siemens • Siemens Australia • Siemens Gamesa Renewable Energy • SolarReserve • South32 • Southern mining electrical contractors • Sun Metals • SunPower • SunSHIFT • TEC-C Investments • Tempo Australia • The Clean Energy Council • thyssenkrupp Industrial Solutions • University of Adelaide • Vector Energy • Votorantim • Weatherzone • Western Areas Ltd • Woodside Energy • X-Elio Energy • Zenith Energy
Delegate Passes

The delegate pass includes admission to the conference on June 27 and 28 plus all the listed sessions, lunches, breaks and reception. The ticket includes all the presentations plus video recordings of all the sessions. Passes to the Pre-Summit workshop are purchased separately. To sign up for the site visit complete the Expression of Interest on the event site.

Are you new to the mining sector?
The pre-conference workshop - An essential introduction to mining for renewables professionals will equip you with the knowledge and confidence to effectively engage with mining energy decision makers.

Are you a mining professional responsible for energy decisions?
We offer substantial discounts for mine energy decision-makers. Please contact andrew.slavin@energyandmines.com.

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Are you a mining professional responsible for energy decisions? We offer some complimentary passes for mine energy decision-makers. Please contact andrew.slavin@energyandmines.com.

To register visit http://australia.energyandmines.com/register/
Energy and Mines is the leading global information and event media provider for energy management and operations of the mining sector. Through its global event series (Canada, South Africa, Chile, UK, Australia) web portal, awards and the technology, funding, research newsletter, Energy and Mines brings together the mining and renewable energy sectors to drive solutions for affordable, reliable and sustainable power for mines.

Over the last six years, Energy and Mines has built a reputation amongst the mining and renewables sectors as the first point of contact for connection and information on renewables in mining. We have strong links with senior mining leaders, renewable energy developers and key players driving the technology, research and development in this space.

For speaking opportunities

Adrienne Baker
Director
adrienne.baker@energyandmines.com
+1 613 680 2482

For sponsorship opportunities

John Hodgkins
Sales Director
john.hodgkins@energyandmines.com
+44 7516 113339

For delegate information

Olivia Mendoza
Delegate Director
olivia.mendoza@energyandmines.com
+1 613 927 9908