



ELECTRICITY DEMAND MANAGEMENT

SBGS MINING CONFERENCE

4 June 2019

Beyers Nel: COO South African operations



PRIVATE SECURITIES LITIGATION REFORM ACT SAFE HARBOUR STATEMENT

FORWARD LOOKING STATEMENTS

This presentation contains forward-looking statements within the meaning of the safe harbor provided by Section 21E of the Exchange Act and Section 27A of the Securities Act of 1933, as amended (the “Securities Act”), with respect to our financial condition, results of operations, business strategies, operating efficiencies, competitive positions, growth opportunities for existing services, plans and objectives of management, markets for stock and other matters.

These forward-looking statements, including, among others, those relating to our future business prospects, revenues, and the potential benefit of acquisitions (including statements regarding growth and cost savings) wherever they may occur in this presentation and the exhibits, are necessarily estimates reflecting the best judgment of our senior management and involve a number of risks and uncertainties that could cause actual results to differ materially from those suggested by the forward-looking statements. As a consequence, these forward looking statements should be considered in light of various important factors, including those set forth in this presentation. Important factors that could cause actual results to differ materially from estimates or projections contained in the forward-looking statements include, without limitation: overall economic and business conditions in South Africa, Papua New Guinea, Australia and elsewhere; estimates of future earnings, and the sensitivity of earnings to gold and other metals prices; estimates of future gold and other metals production and sales; estimates of future cash costs; estimates of future cash flows, and the sensitivity of cash flows to the gold and other metals prices; estimates of provision for silicosis settlement; statements regarding future debt repayments; estimates of future capital expenditures; the success of our business strategy, development activities and other initiatives; future financial position, plans, strategies, objectives, capital expenditures, projected costs and anticipated cost savings and financing plans; estimates of reserves statements regarding future exploration results and the replacement of reserves; the ability to achieve anticipated efficiencies and other cost savings in connection with past and future acquisitions, as well as at existing operations; fluctuations in the market price of gold; the occurrence of hazards associated with underground and surface gold mining; the occurrence of labor disruptions; power cost increases as well as power stoppages, fluctuations and usage constraints; supply chain shortages and increases in the prices of production imports and the availability, terms and deployment of capital; changes in government regulation and the political environment, particularly tax, mining rights, environmental regulation and business ownership including any interpretation thereof ; fluctuations in exchange rates and currency devaluations and other macroeconomic monetary policies; the adequacy of the Group’s insurance coverage; and socio-economic or political instability in South Africa, Papua New Guinea, Australia and other countries in which we operate. For a more detailed discussion of such risks and other factors (such as availability of credit or other sources of financing), see the Company’s latest Integrated Annual Report and Form 20-F which is on file with the Securities and Exchange Commission, as well as the Company’s other Securities and Exchange Commission filings. The Company undertakes no obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after the date of this presentation or to reflect the occurrence of unanticipated events, except as required by law. The foregoing factors and others described under “Risk Factors” should not be construed as exhaustive.

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AGENDA

- 1 Who we are
- 2 Rising electricity costs
- 3 Harmony's electricity cost mitigations
- 4 Harmony's electricity performance
- 5 Future electricity saving initiatives



WHO WE ARE

WHERE WE OPERATE



PAPUA NEW GUINEA

Production split:

FY19E

~200koz (14%)

Hidden Valley (open pit mine)

Wafi-Golpu project (50:50 JV)

Multiple exploration areas

SOUTH AFRICA

Production split:

FY19E

~1.3Moz (86%)

9 underground operations

1 open pit mine

2 Tailings retreatment operations

Corporate profile:

Listed on the JSE and NYSE

Market cap: approx. US\$1bn

Operating for close to 70 years

Production: FY19 guidance 1.45Moz

HARMONY'S STRATEGY

Strategy

Safe, profitable ounces
and
Increasing margins

Strategic pillars



Operational excellence



Cash certainty



Effective capital allocation

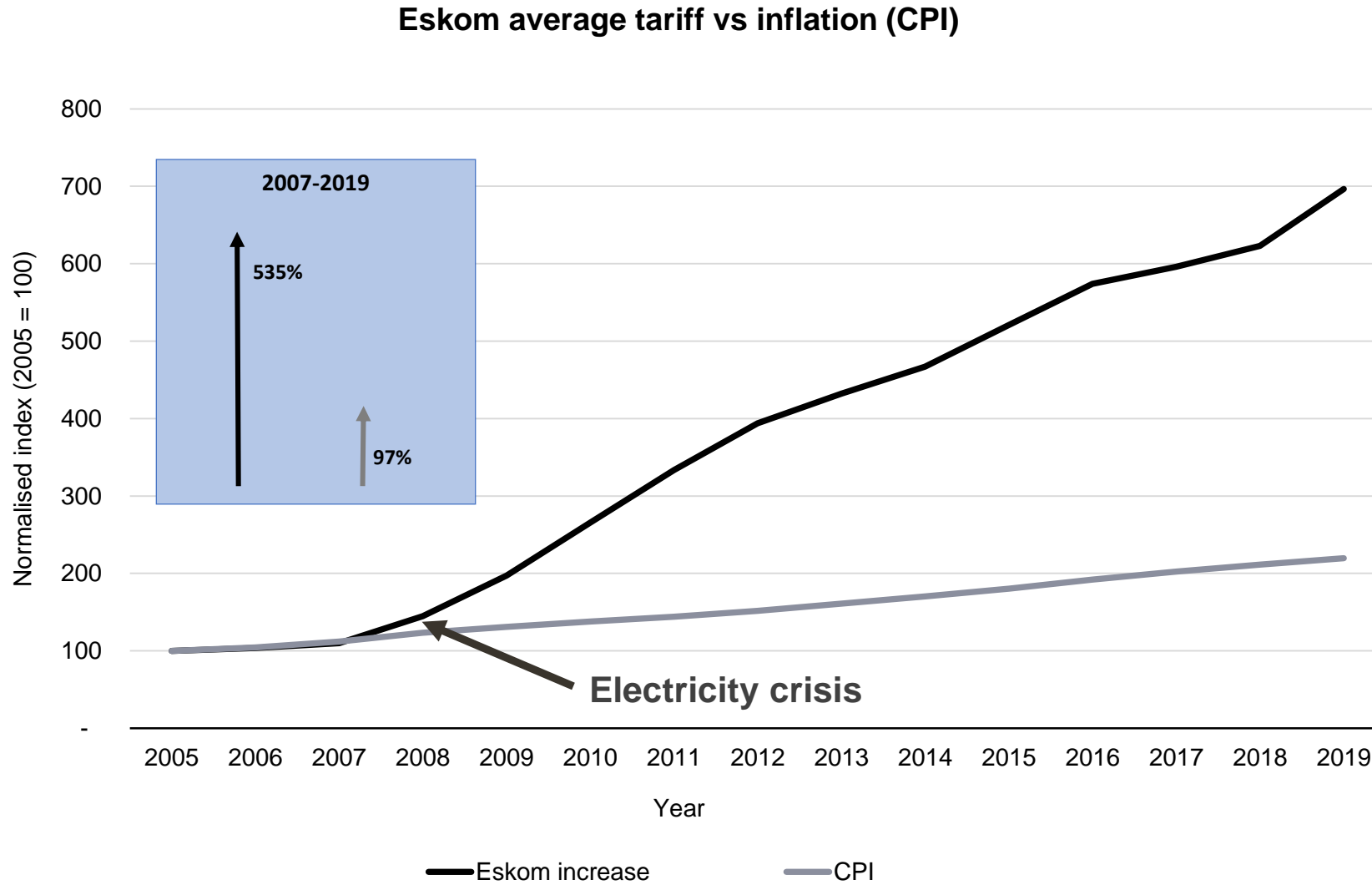
Progress

- Risk-based safety approach delivers improvement in safety rates
- Production guidance achieved for past three consecutive years, on track to achieve annual production guidance of 1.45Moz in FY19
- Two acquisitions in past two years - Moab Khotsong and Hidden Valley - significantly boost production and operational free cash flow
- Hedging programmes lock in attractive margins
- Wafi-Golpu special mining lease permitting underway
- Evaluating quality growth opportunities (organic and M&A)



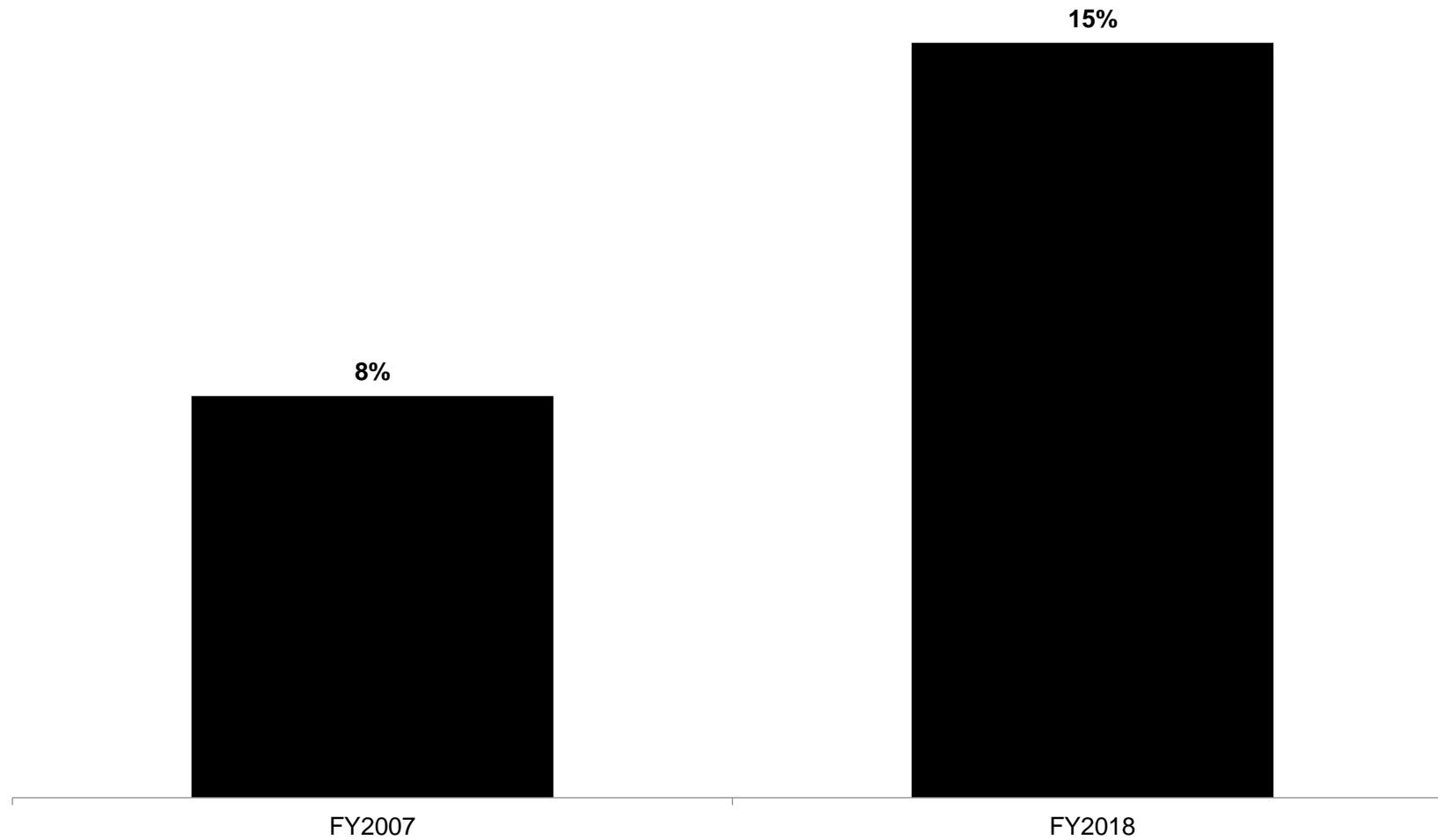
RISING ELECTRICITY COSTS

ELECTRICITY CHALLENGE



HARMONY'S SA ELECTRICITY COST

Electricity portion of cost (excl. capital)

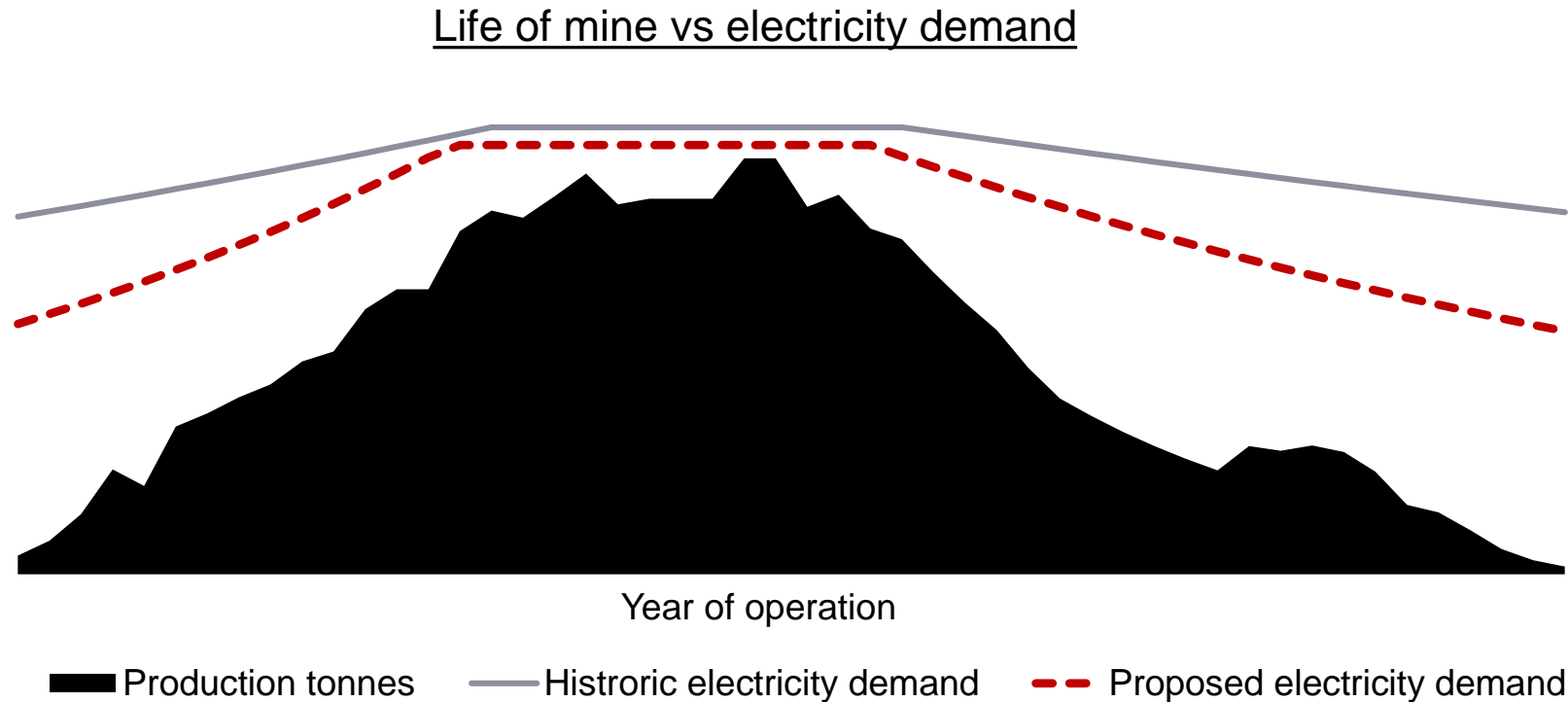




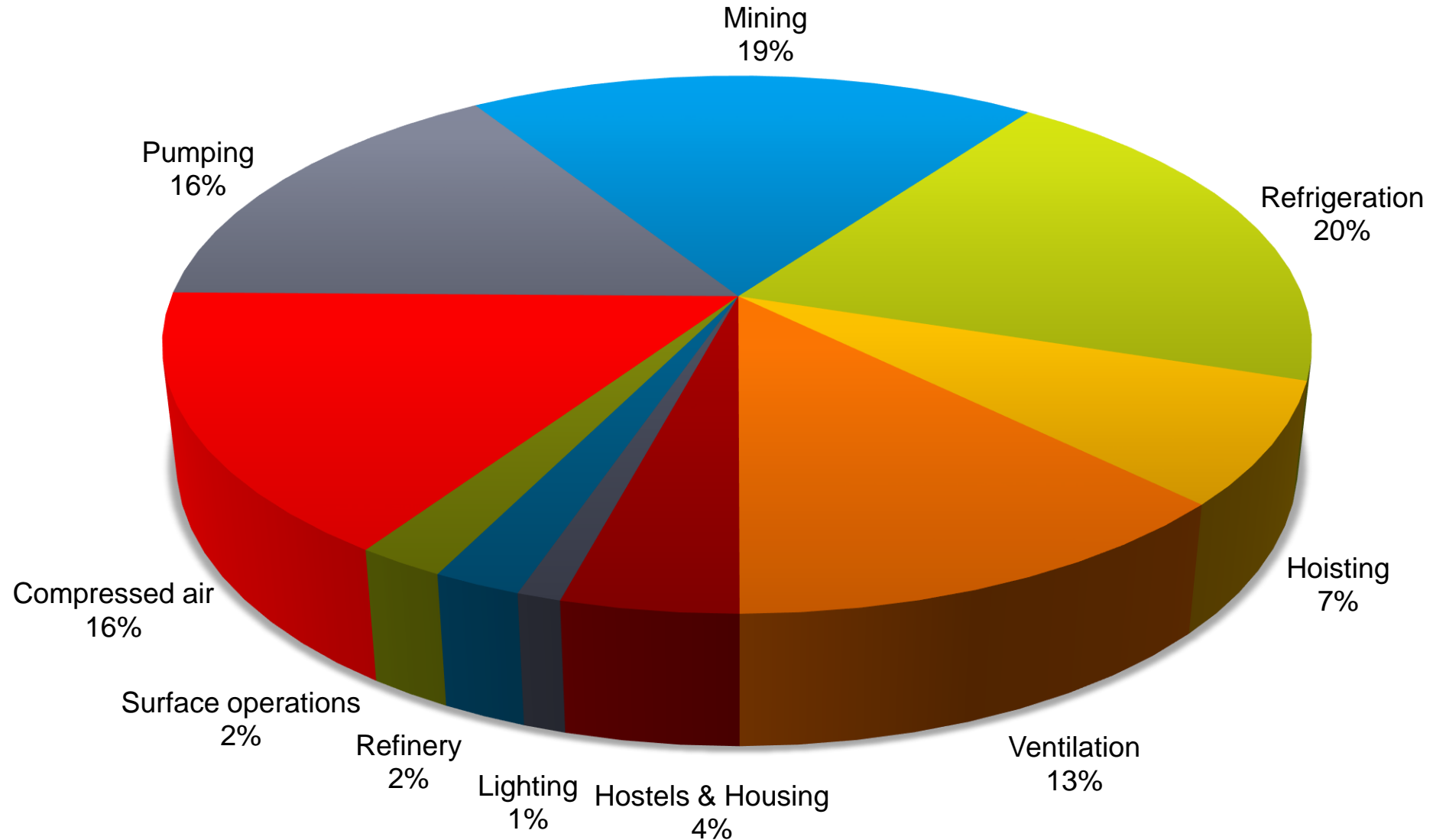
HARMONY'S ELECTRICITY COST MITIGATION

CHALLENGES FACED BY DEEP LEVEL GOLD MINES

- Mining systems are designed for maximum production - current systems are oversized for current applications
- Historically electricity was relatively cheap, thus no real concern
- Current electricity costs are high
- Aim: Match supply with demand, control consumption



ELECTRICITY COST BREAKDOWN OF DEEP LEVEL MINES

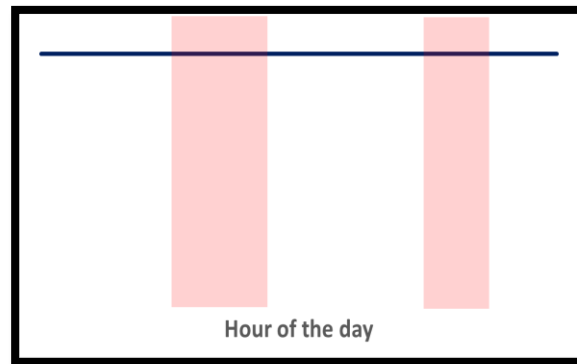


ESKOM'S INTEGRATED DEMAND MANAGEMENT

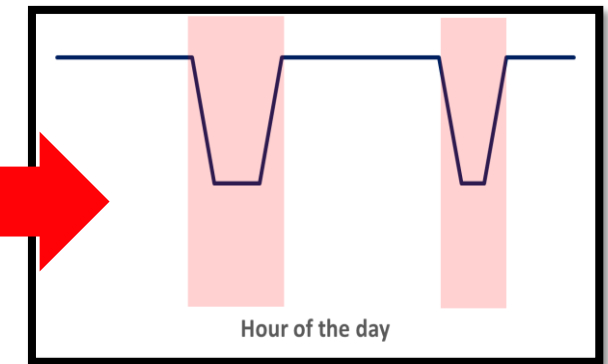
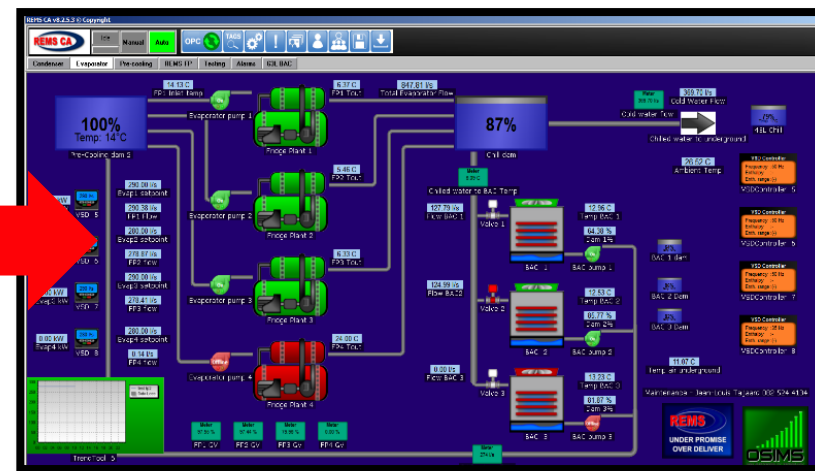
- Eskom's Integrated Demand Management (IDM) started in 2004
- Aim:
 - Eliminate load shedding
 - Enhance economic growth
- IDM model:
 - Eskom provided project funding (initially 100%, later 50:50%)
 - Projects: reduce electricity usage during Eskom peak demands (expensive Eskom tariff periods)
 - Client to maintain initiatives

HARMONY'S COMMITMENT TO ESKOM IDM

- Harmony energy journey started with Eskom IDM
- Harmony was the first mining company to participate in IDM (2005)
- IDM funding was utilised to:
 - Install efficient motors, lights, fans and motors
 - Automate and upgrade control of large electricity intensive systems
 - Systems include: pumping, compressors, refrigeration, etc.
- Result: Reduce electricity usage and change electricity profile



Power profile before



Power profile after

HARMONY'S SYSTEM AUTOMATION

| System | Quantity | Automatically controlled | System automated |
|---------------------------|----------|--------------------------|--|
| Compressed air | 40 | 25 | <ol style="list-style-type: none"> 1. Compressed air supply 2. Automated underground level demand 3. Stope isolation compressed air control |
| Fridge plants | 71 | 59 | <ol style="list-style-type: none"> 1. Fridge plant control 2. Variable Bulk Air Cooling control 3. Automated flow control |
| Main Fans | 44 | 20 | Automated vane control |
| Water reticulation | 110 | 90 | <ol style="list-style-type: none"> 1. Automated turbine / 3CPFS control 2. Automated underground water supply control 3. Automated pump scheduling according to consumption patters 4. Stope isolation water control |
| Winders | 56 | 14 | Automated safe-wind systems |

HARMONY'S ENERGY COLLABORATION

- ETA/Harmony collaboration aims at improving operational efficiencies
- Team uses specialised tools and resources to manage electricity costs
- Scope include:
 - Maintenance of existing energy cost saving initiatives
 - Implementing new initiatives
 - Managing day-to-day energy consumption



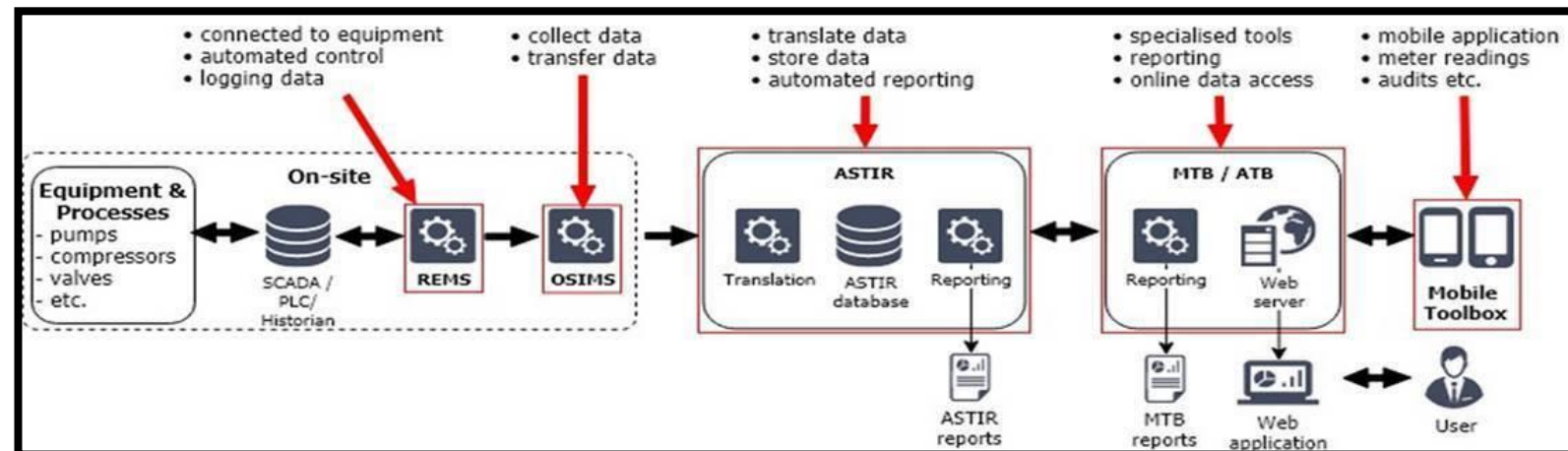
ETA/HARMONY ENERGY TEAM - SCOPE OF WORK

- Auditing and measurements
- Data integration and centralisation
- Energy data analytics
- Identify risks and opportunities
- Project identification, simulations and feasibility
- Project implementation and management
- Maintenance on energy initiatives
- Energy reporting
- Awareness and training

ENERGY MANAGEMENT TOOLS

- Specialised energy management tools utilised
 - Analyse 14-million data points daily
 - + 220 systems monitored
 - + 2 500 graphs available for detailed analytics
- Notifications:
 - Exceptions, daily, weekly and monthly reporting
 - Real-time access to web-based management platform
- Recipients / users: +200

Integration of multiple energy management tools



ENERGY AWARENESS – TECHNOLOGY AND PEOPLE

- Co-operation of employees essential for energy management performance
- Continual training / assistance given to control room operators
- Stakeholders updated regarding energy performance
- Monthly newsletters distributed to share success
- Monthly energy champion selected to give recognition

ETA Operations / Harmony Gold Operational Efficiency Feedback
December 2017

Purpose
Harmony Gold (Harmony) and ETA Operations (ETA) collaborate to enhance the operational efficiency of Harmony's operations. Cost savings achieved to date:

- New initiatives – R62.7-million (financial YTD R26.6-million).
- Maintained savings – R65-million (financial YTD R17.7-million).

Efficiency Champion of the Month
Joppie du Plessis for contributing to the development of line-of-sight systems at Kusasalethu & Doornkop.

Energy Efficiency
A new control philosophy resulted in energy efficiency savings on Tshepong's surface fridge plants.

Operational Efficiency
Automated reporting for monitoring and managing various operational parameters.

Industry News
What is Big Data?

"If you can't measure it, you can't improve it." – Peter Drucker

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Method & Results

Method
ETA provides a centralised service aimed at inefficiencies/problem areas at Harmony Gold's operations. The service consists of multidisciplinary engineers capable of providing a wide range of specialised services, including: investigation, analysis, simulation, optimisation, maintenance, condition monitoring, reporting, etc. The distribution of effort between the four major focus areas is shown below.

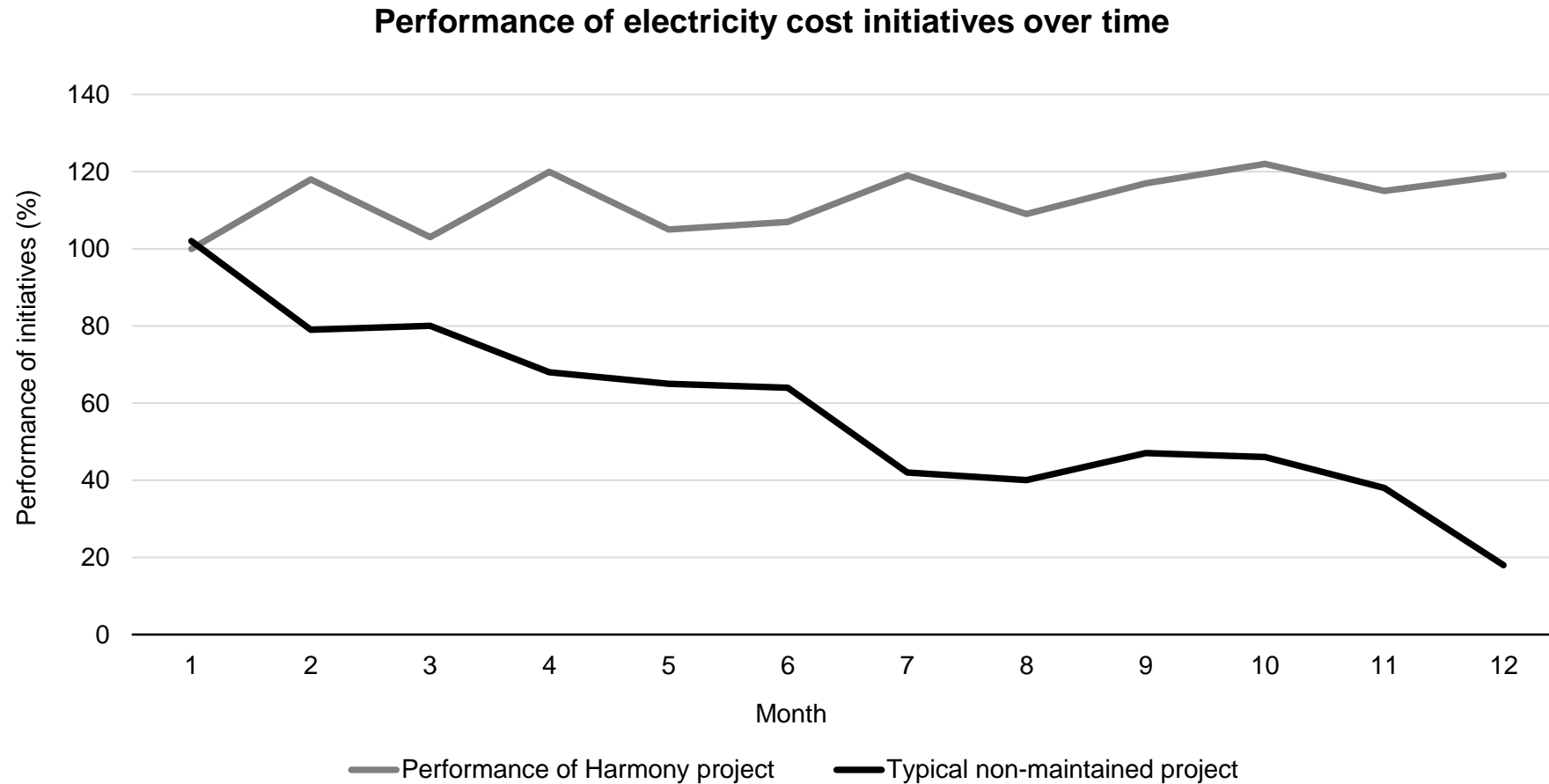
| Focus Area | Percentage |
|------------------|------------|
| Energy | 54% |
| Line-of-sight | 11% |
| Service delivery | 24% |
| Environmental | 11% |

Results
Total cost savings achieved since project inception is R128-million. Some service delivery improvement highlights are shown below.

| Target | Doornkop | Kusasalethu | Teel |
|--|--|--|---|
| • Cooling duty increase: 5.3 MW | • 2°C colder ventilation air in mining areas | • 5.7°C improvement in pre-cooling dam temperature | • 63 kPa improvement in compressed air pressure |
| • Heat rejection increase: 5 MW | • 35 kPa compressed air pressure increase | • 3.2°C decrease in chilled water temperature | • 3.5°C improvement in chill dam temperature |
| • Workplace air temperature reduction of 2.7°C | | | |

IMPORTANCE OF MAINTENANCE

- Maintenance essential due to dynamic mine operation
- Non-maintained operational energy projects loses 53% of savings in year 1*



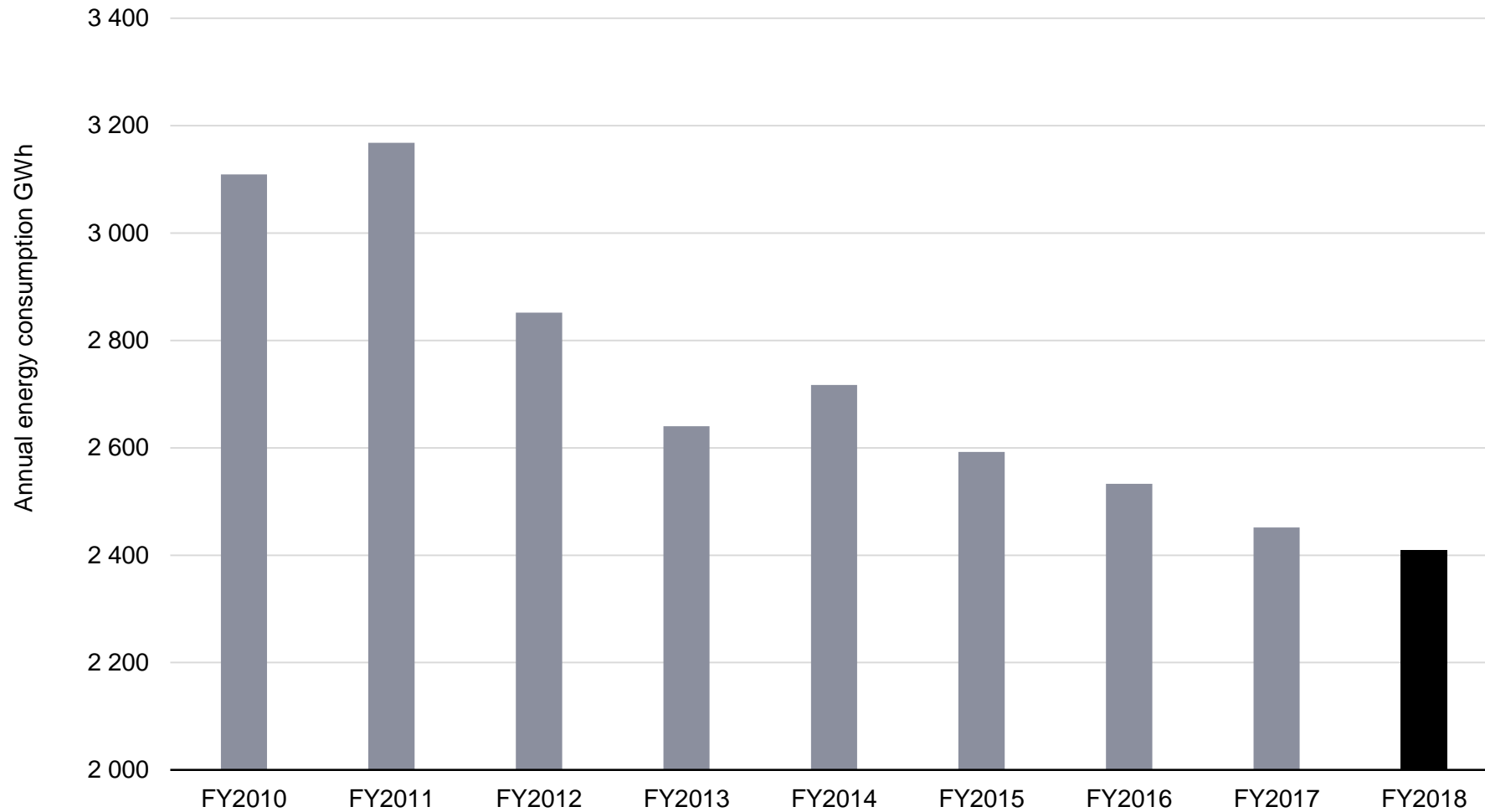
* Study was conducted on 14 independent measured and verified mining projects on different mining groups



HARMONY'S ELECTRICITY PERFORMANCE

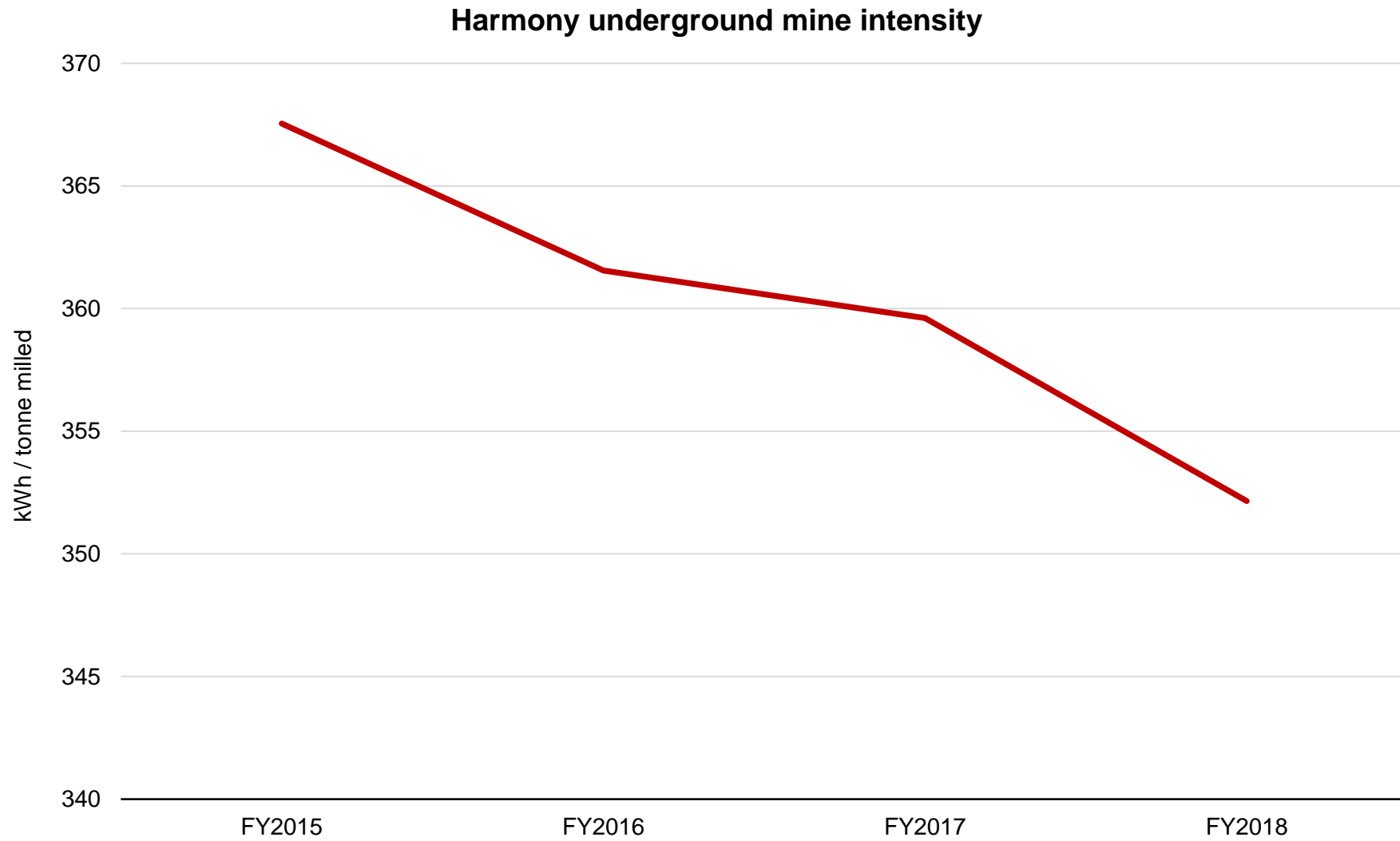
OUR ENERGY REDUCTION

Harmony RSA electricity consumption



* Moab Operations and discontinued operations excluded

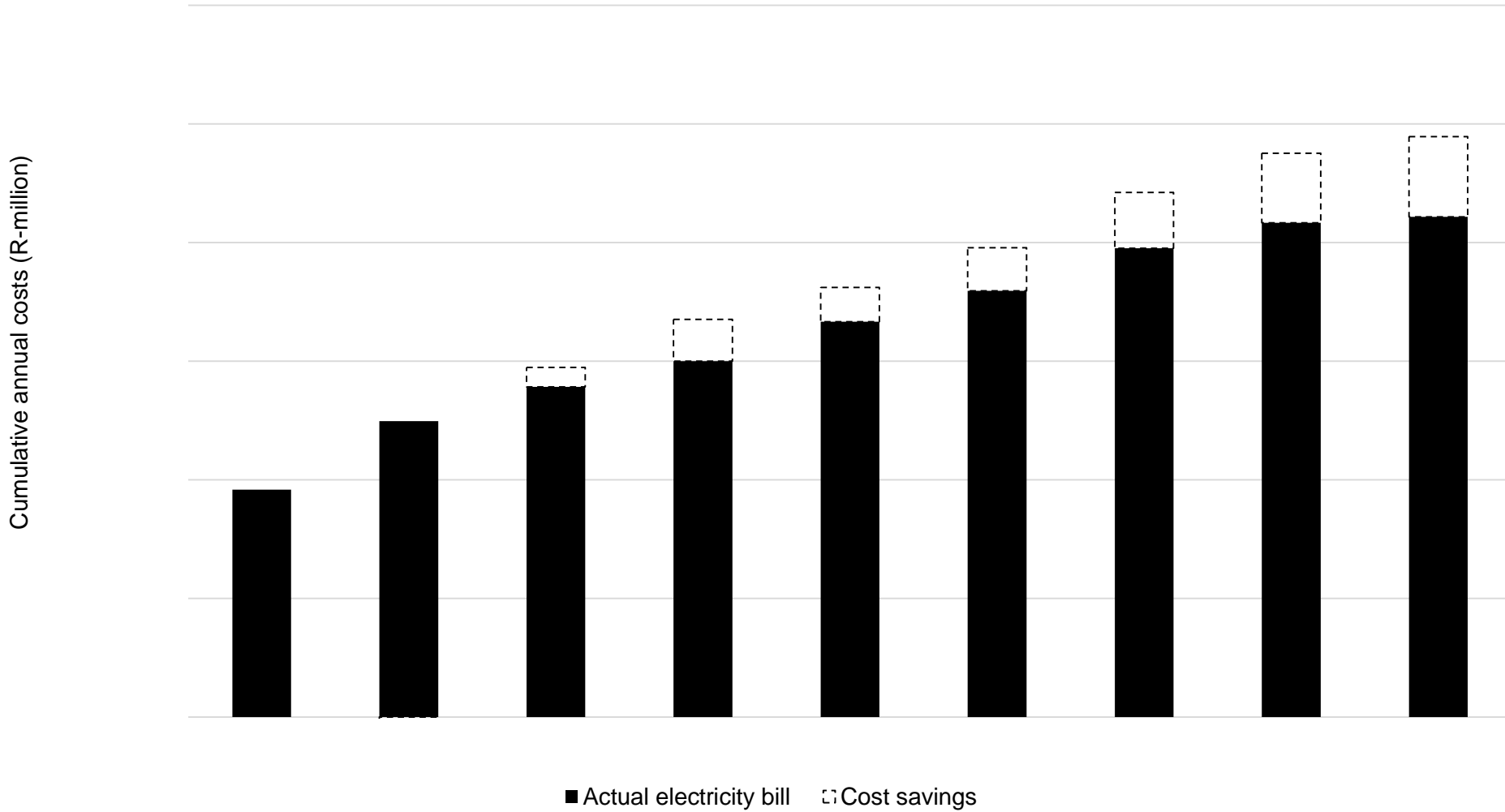
ENERGY MANAGEMENT SEES RESULTS



* Moab Operations and discontinued operations excluded

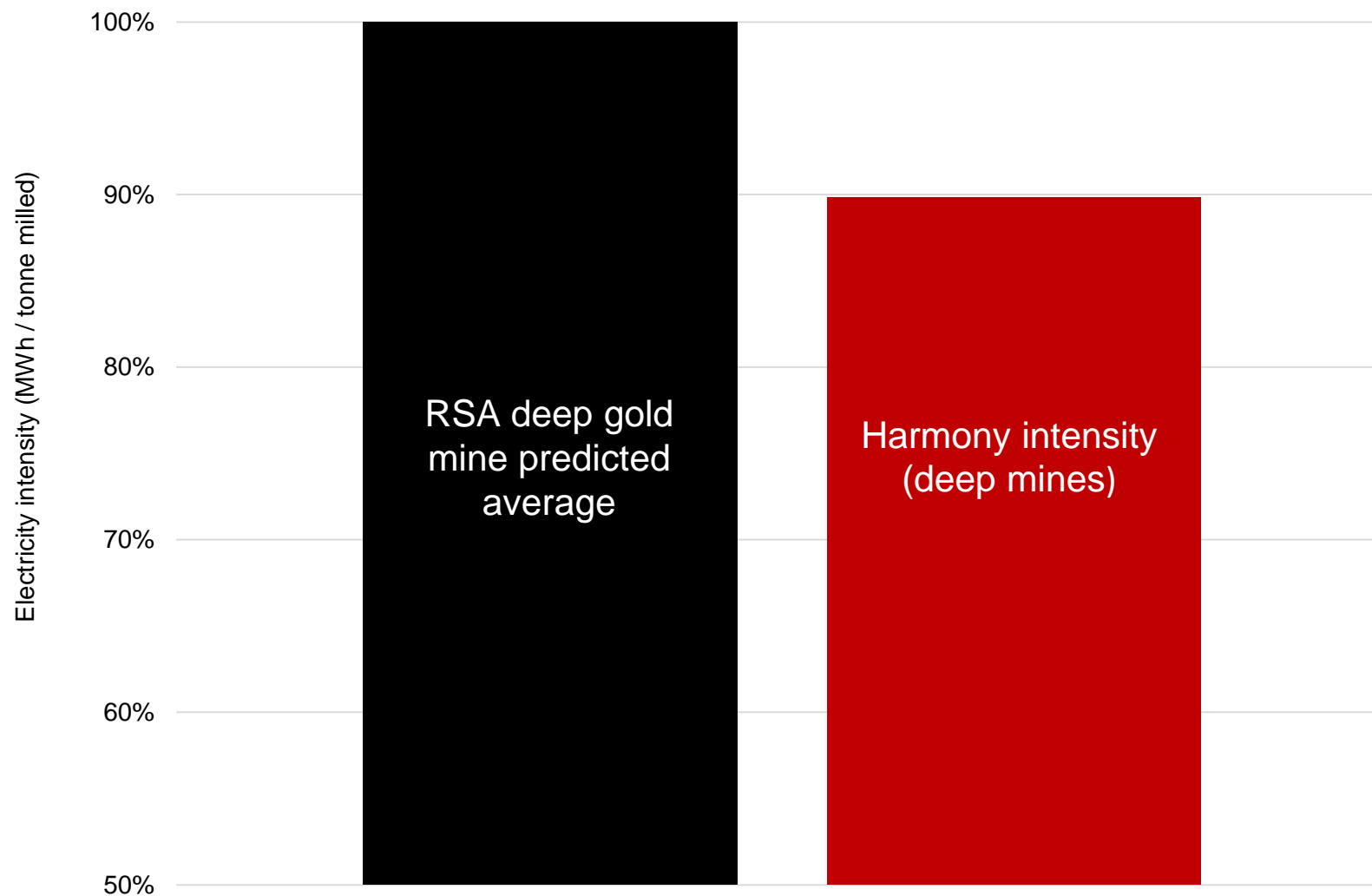
REDUCTION IN OUR ENERGY COSTS

Harmony RSA electricity cost increase since 2010



* Moab Operations and discontinued operations excluded

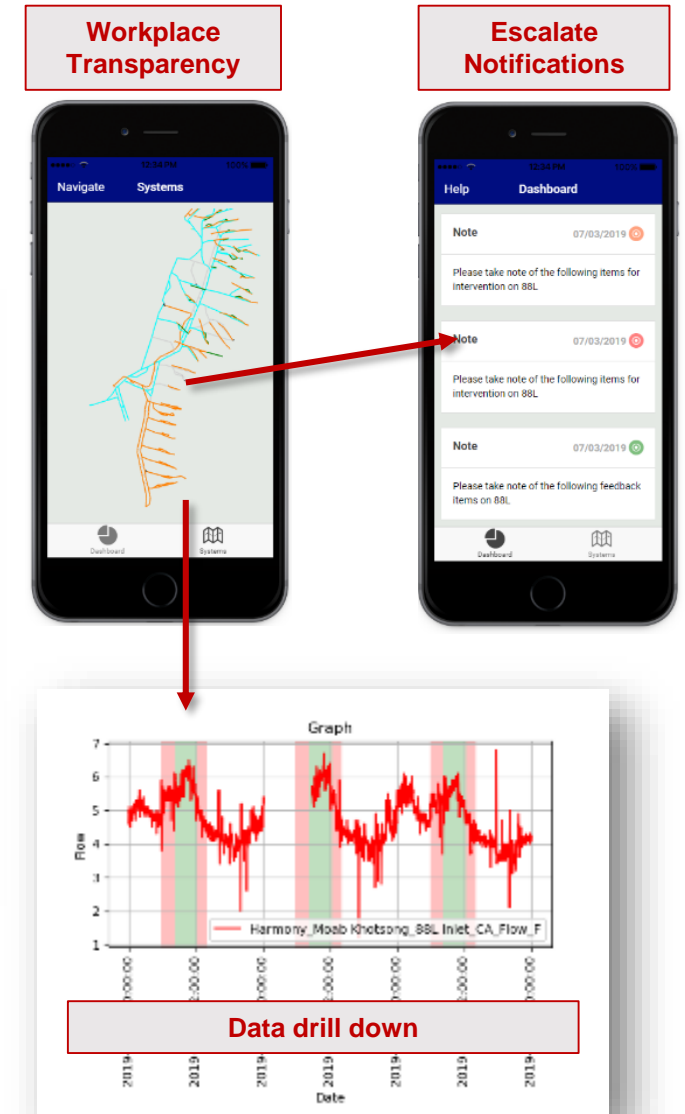
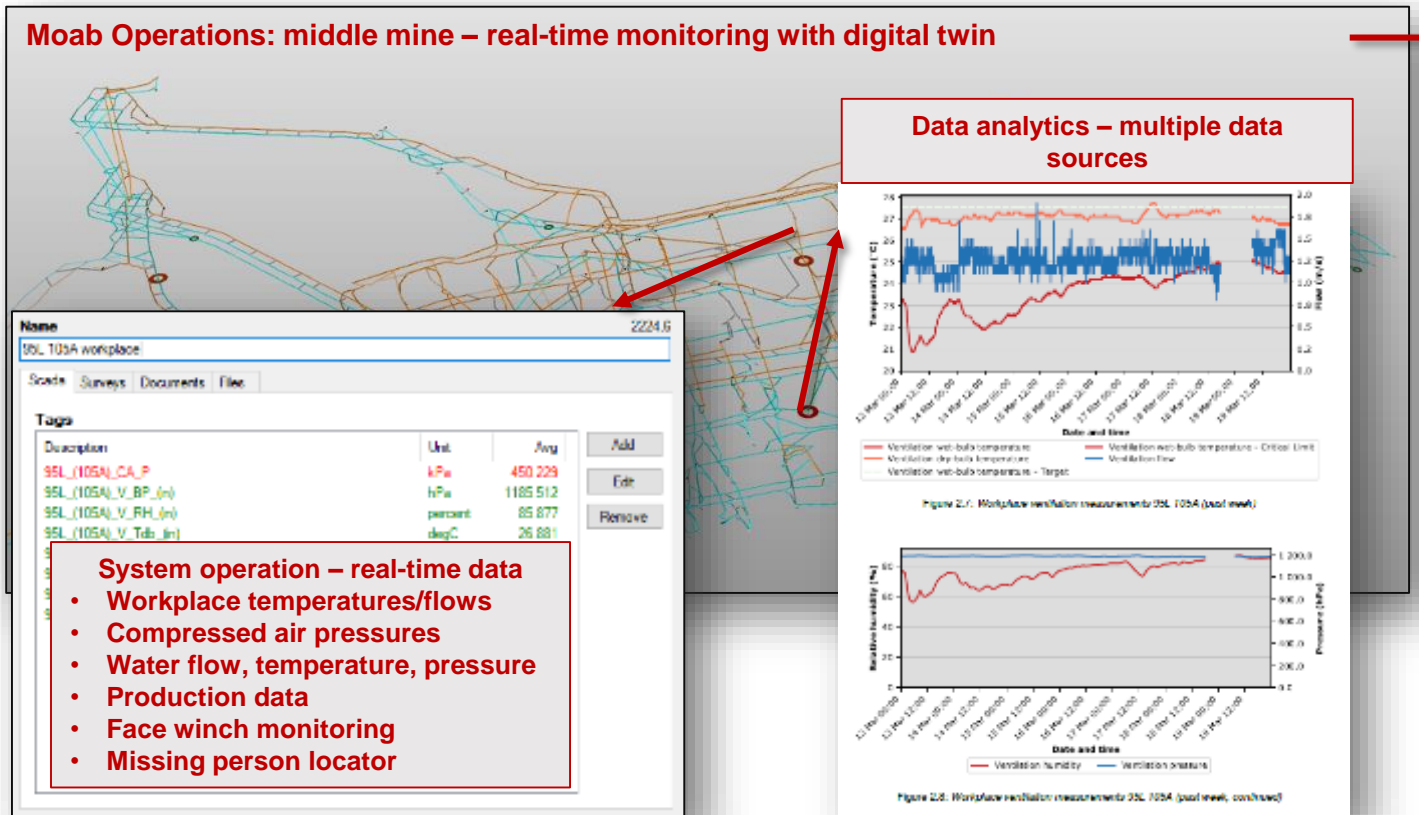
HARMONY'S USAGE RELATIVE TO RSA MINES



* Derived from 2017 and 2018 annual integrated gold mining company reports and normalised for industrial actions

LINE-OF-SIGHT AND DIGITAL TWINNING

- Line of sight to active workplaces (water, ventilation, cooling, compressed air, production, electricity)
- Data analytics, automated reporting, simulations, etc.
- One platform: multiple data sources & logic into
- Result: quicker response to exceptions





FUTURE ELECTRICITY SAVING INITIATIVES

FUTURE INITIATIVES AND POSSIBILITIES

- Capital projects with quick payback (less than 12 months)
 - Automation of outstanding equipment and processes
 - Variable speed drive technologies
 - Hydro-drilling
- “Line-of sight” and digital twinning in the mining stopes (enhance energy management)
- Services on demand (water, compressed air, etc.) through integration with missing person locator
- Solar photovoltaic (PV) installations
- Latest technology considered

OUR ELECTRICITY FORECAST

- Aim: 2% year-on-year consumption reduction
- Target initiatives with return on investment (ROI) less than 9 months
- Usually total ROIs not more than 12 months



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