



# *Summary of 2013*

## *24<sup>th</sup> AMEU Technical Convention*

### *Proceedings*

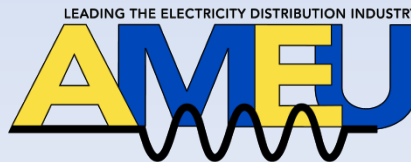


Hosted by  
Buffalo City  
Municipality



*Peter Fowles*

*9 October 2013*





*“The world will not be destroyed by those who do evil, but by those who watch them without doing anything”*

**Albert Einstein**



# Affiliates Sports Day

- Golf, bowls and hike
- Much fun
- Sports prize giving – wonderful meal and entertainment
- Many thanks to Affiliates





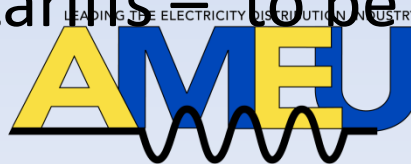
# Opening Session

- Scene set by the lovely rendition of our anthem  
– Selborne Primary School
- Welcome by our President
- Address by Clr Aubrey Nxumalo - Ekurhuleni Metro on behalf of Buffalo City Metro
  - “Do not pass loo when over 40” fame!
  - Trials & tribulations of marriage - partnership
  - Encourage communities – pay & no tampering
  - Success of AMEU dependent on us dealing with the many challenges of service delivery



# Opening Session

- Dr Wolsey Barnard, DoE - keynote address
  - Appreciation of good working relationship - DoE and AMEU: honour to open Convention
  - Difficult to operate a technical organisation in a changing political and energy environment
  - IEP published – urge AMEU to provide input
  - Time to look at modern trends of supplying energy needs – IRP 2650MW of RE projects approved
  - Major infrastructure development required – NDP
  - ADAM pilot project being implemented
  - Administrative tariffs – to be ring-fenced for infrastructure





# Opening Session

- Word from the Regulator, Ms P Baleni
  - Important Convention theme – infrastructure lies at heart of socio-economic development
  - Infrastructure plan no good by itself – needs to be accompanied by financial plan
  - Economic regulation needed to achieve goals – pricing levels managed to provide certainty and reduce price shocks
  - NERSA has challenges with municipal distribution sector and need to improve relationship to find solutions



# Opening Session

- Venue of 64<sup>th</sup> AMEU Convention 2014 – Clr Matshidiso Mfikoe, MMC, City of Johannesburg
  - why do we not electrify informal settlements and remove the current illegal business?



# 1<sup>st</sup> Session – Day 1: Industry Issues

- Dr Carola Hantelmann, GIZ – GIZ/SALGA support to municipalities on Renewable Energy Projects.
  - GIZ has been in Africa since 1994
  - SAGEN (South Africa German Energy Programme)
    - Large scale grid connected RE projects
    - Energy Efficiency projects
  - GIZ/SALGA
    - Feasibility studies for `waste to energy` projects
    - Rooftop PV –calculation of tariffs
    - Options for Public Private Partnerships (growing interest by munics)





# 1<sup>st</sup> Session – Day 1: Industry Issues

- Minnesh Bipath - *Proposed Smart Grid Vision for South Africa*
  - Industry process to develop vision through the SASGI
  - Purpose is to define future and allow participants to ‘pull in same direction’
  - *An economically evolved, technology enabled, electricity system that is intelligent, interactive, flexible and efficient and will enable South Africa’s energy use to be sustainable for future generations*
  - SG is an enabler to allow industry to address a number of issues



# 1<sup>st</sup> Session – Day 1: Industry Issues

- Chris Billingham – *Disaster Recovery – An Integrated Response*
  - What is a disaster? - how we react and not about looking at the 'Act'
  - Disaster management - discipline around preparing for response to possible disasters
  - Examples of Katrina, Superstorm Sandy & Eliot Snow disaster – have we learned any thing?
    - Communications essential
    - Role clarity is greatest problem?



## 2<sup>nd</sup> Session – Day 1: Asset Management

- Jayshree Pershad – *eThekwini Electricity - Enhancing AM with detailed asset data and a connected network model*
  - AMP developed in 2008- introduced 2009
  - Phase 1 - HV assets: Phase 2 – LV/MV (960000 items)
  - Field Capture challenges :
    - High cost of technically qualified personnel
    - Data recording is time consuming
    - Data attribute quality not verifiable
  - AM is a number of systems working together to support asset information throughout its lifetime



## 2<sup>nd</sup> Session – Day 1: Asset Management

- Bouke Spoelstra - Unified service, asset and work management processes in a spatial environment delivers new levels of efficiency
  - Benefits of `spatial' – gives context (visual), proximity, visualize trends, location, efficiency
  - Integration of Asset Management, Work Management, spatial systems, real time systems, project & resource management, mobile data
  - Field service technician is the face of the organisation



## 2<sup>nd</sup> Session – Day 1: Asset Management

- David Ellis - *Demand Response Applications for Municipal Utilities*
  - Provision of `Aggregator' and CSP services to the SA marketplace through an Eskom-funded DR pilot
  - Effective DR relies upon:
    - Business rules load management
    - Dynamic and scalable technologies
    - Acts like peaking generation
    - Net benefits – reduces demand
  - Many munics involved in Eskom pilot programme



# Final Session – Day 1: New Technology

- Patrick O'Halloran - Medium voltage cable evolution
  - Evolution MV power cable construction from 1880
  - Process necessary due to need for joints, terminations and loss of skills
  - Consequences of failure to cables, joints, terminations is extensive
  - Cable are evolving in the same manner as mobile communication technology
  - 'It always seems impossible until its done!!!!'



# Final Session – Day 1: New Technology

- Tony Hill – How an ACCC (Aluminium Conductor Composite Core) conductor can improve capacity, efficiency and reliability of transmission and distribution networks
  - High temperature, low sag overhead line conductor
  - Increasing expectation of reliability but faced with difficulties in obtaining servitudes
  - Tradition ACSR >100 years – increased loads=higher resistances=increase losses=increase sag
  - Composite core Al conductor – improved sag, increased spans; reduced line losses (25 -40%), greater strength & twice capacity of ACSR & AAC



## Social Activities – Day 1

- Ladies treated to a most enjoyable day – thanks to Powertech
  - Village of Ngxingxolo
  - Chintsa East village - close off with a stop at the local brewery

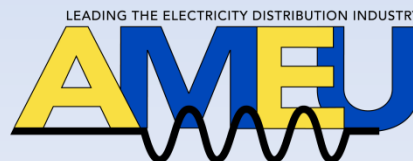






# Social Activities – Day 1

- Well attended President's Cocktail Reception at East London ICC – Exhibition Area
  - Welcome from Ald Badenhorst and Hannes Roos
  - Entertainment and lovely food





# 1<sup>st</sup> Session – Day 2: Renewable Energy

- Keynote address – Minister of Public Enterprises
  - He is in the midst of `well behaved people’!!
  - Play an important role in SA’s economic transformation
    - Address poverty and inequality
    - Achieved a lot over last 19 years – positive future
  - NDP highlights infrastructure demands required for economic development & exhorts us to service and maintain this infrastructure
    - Munics play important role in provision of electricity
    - Reliability of supply needs to be addressed





# 1<sup>st</sup> Session – Day 2: Renewable Energy

- Derek Morgan - Creating an Enabling Environment for Small Scale Embedded Generators. The Durban Solar City Framework as a Case Study
  - eThekweni policy to encourage & facilitate SSEG to enable economic transition – create jobs + LED
  - Issues being addressed – framework, finance, regulations, and outreach
  - Leading to generic tender specifications and research pilots



# 1<sup>st</sup> Session – Day 2: Renewable Energy

- Mick Barlow - *The inter-relationship between renewable generation reactive power capability and grid code compliance*
  - Critical subject but not well understood
  - Most RE plant has capability to generate and/or absorb reactive power
  - May not be compliant with Grid Code
  - Many grid codes being modified to accommodate RE
  - Additional equipment should be identified during planning process



# 1<sup>st</sup> Session – Day 2: Smart Grids

- Ravi Moonsamy – Financial recovery of embedded generation in medium voltage systems
  - Energy economics is complicated and extensive
  - Must get capital returns + acceptable profit with acceptable risk
  - Different R/kW capital cost for different technologies
  - Once EG achieves certain penetration, technical losses start increasing



## 2<sup>nd</sup> Session – Day 2: Electrification

- Grant Mashile - Using alternative energy technologies and strategies to deliver services to unproclaimed urban informal settlements
  - Solar solution for off-grid supplies to rural communities
  - Informal settlements – fact of life
  - Buildings & illegal connections raise safety concerns
  - No options but to turn to low voltage dc supplies together with supplementary energy (LPG)



## 2<sup>nd</sup> Session – Day 2: Electrification

- Mohamed Peer - *Deep Rural Electrification*
  - Backlog of 3.4 million households, schools and clinics
  - Challenges
    - Access to households, constructing infrastructure, design criteria, validity of current data etc
  - Opportunities
    - Use of local labour
    - Basic skills programmes (line worker, operator training for O/H lines) – crates a pool
    - Safety priority



## 2<sup>nd</sup> Session – Day 2: Electrification

- Mikie Khumalo - *The Electrification Planning Report – the content, the process and the result*
  - Process
    - Roadshows – Councillors & electrification coordinators
    - Incorporate local energy sector plans (IDPs)
  - Network Planning Report
    - Project summary, ADMD, Herman Beta, MV system parameter calculations and assumptions
  - END result – electrification project approved resulting in job creation, economic growth & community development





## 3rd Session – Day 2: Industry Issues

- Lucky Ngidi – *Self regulation, A leap to self sufficient and efficient electricity distribution utility*
  - Promote `self compliance' within ESI
  - Why is regulation and compliance not a core requirement of IDP?
  - Regulation seen as a burden – not proactive and respond only when pushed
  - Municipalities should operate as a business, **not** as a generator of income for Councils – timely reminder of role of politicians by Clr Mfikoe
  - Example of eThekweni compliance process
  - Plan on attending AMEU Branch meetings – listen to Munics





## 3rd Session – Day 2: Industry Issues

- Rodney Swartz - *Achieving optimal benefits with a demand response system*
  - DR – incentivise consumers to reduce non-essential loads, especially during critical system conditions
  - How can DR system leveraged to benefit of municipality?
  - Participation via contract – quantity, duration, frequency, notice period, clear incentives
  - Municipality can aggregate own loads with benefits
    - Control overload reduction
    - Revenue protection
    - Utilise existing ripple control
  - Can even be implemented by ‘one person municipality’



## 3rd Session – Day 2: Safety Papers

- Target Mchunu – *GCC for renewable power plants connected to electricity system*
  - Why a GC for distribution?
    - Maintain local stability (voltage)
    - Ensure that power is provided in a stable and reliable manner when needed
    - Part of licence conditions
  - GC objectives:
    - Establishes obligations of participants
    - Defines minimum technical requirements
    - Ensures non-discriminatory access to the grid



## Final Session – Day 2: Safety Papers

- Troy Govender – Strategies to to eliminate or minimize safety incidents and environmental impacts
  - Why do organisations have to respond to environmental challenges
    - Nature of its activities – lead to safety related incidents
    - > number of environmental problems or impacts on planet
    - Strong link between poverty and safety/environment
    - Health and safety issues are related to and are influenced by the environment
    - Moral or ethical reasons
  - Business drivers for improved safety & environmental practices



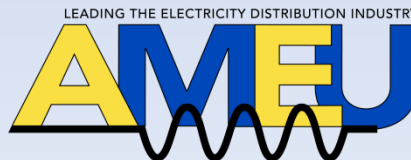
## Final Session – Day 2: Safety Papers

- Dave Jamieson – *Finding of an investigation into an accident in the Ekurhuleni electricity area of supply*
  - To show the dangers and hazards of not wearing PPE
  - 4 employees sustained serious burns –MV OCB failed
  - Conclusions:
    - Short circuit current rating of CB exceeded sufficiently to cause catastrophic failure of the breaker
    - Operating personnel omitted to use the personal PE supplied to them for the function they were performing



## Social Activities – Day 2

- Ladies were guests of CBI Electric at a
  - Pamper Day @ The La Royale Ocean Spa
    - Workshop – The Complete Image Solution by Chata Romano
    - Back, Neck and Shoulder Massages





# Social Activities – Day 2

- AMEU Gala Evening hosted by the AMEU President – East London ICC



# 1<sup>st</sup> Session – Day 3: Smart Grids

- Sicelo Xulu – Smart metering implementation – “From concept to Reality”
  - Not just about smart grids and metering –making City as a whole become smart
    - Rapid urbanisation growth – pressure on services and infrastructure. How do they cope?
  - Problem statement: NT losses, manual processes, corrupt data, frustration, grid not ready for effective management
  - Solution: defined a 6-part approach including smart meters for customers >1000 kWh/m and automation





# 1<sup>st</sup> Session – Day 3: Smart Grids

- Tim Spearing - Distribution automation – Sets up network standards and smart grid roll out
  - Automation improves network reliability
  - Stages of automation in migrating to smart grids
  - Tipping point between the investment in DA and the benefits realized – hence incremental development of smart grids
  - What and how to automate? – need a modular approach to evolution of smart grid
  - DA provides greater insight into networks for smart grid roll-out



# 1<sup>st</sup> Session – Day 3: Smart Grids

- Mike Adriaanzen – *How software adds Intelligence to Smart Grids*
  - Talking about `smarter grids' – some already smart
  - Essential characteristics of a smart grid
    - Three Is – intelligence, integration and innovation
  - Turning data into information
    - SGs are dynamic and rich in information but sources and formats of the data are many and varied
  - Management of the health of assets – Asset Health Centre
    - Proactively anticipate problems & build business case for repair/ replace decision





# 1<sup>st</sup> Session – Day 3: Smart Grids

- Andrew Goedhart - Secure reliable communications for the LV Smart Grid
  - Function of the LV smart grid is not just AMI
    - Customer messaging, revenue protection & much more
  - Smart grid extends into the customer premises
    - Need for secure audit trails for billing
    - Privacy
  - Ops & Maint dependent on accurate ‘Customer Network Link Data’
  - Current communications specs not really adequate



## 2<sup>nd</sup> Session – Day 3: Street Lighting

- Daniel Kasper - LED street lighting- Current and future trends, South African standards and case
  - 3 phases to LED transformation
    - Technology reaches 'good enough' phase
    - Technology is superior, cost decrease, penetration
    - New solutions and new features
  - 2013: LEDs now the most efficient lighting +cost decreasing – system more efficient & more affordable
  - Misleading claims: SABS are only safety standards – no local performance standard available. Use international standards until LED performance standard finalised
  - ARP35 (SABS) – revised guideline for street lighting to include LEDs



## 2<sup>nd</sup> Session – Day 3: Street Lighting

- Daniel Gooijer - *Philips CityTouch; Bringing city lighting to life*
  - Controllability of light – must do more with less – be smarter in managing our cities
  - LED with control can save up to 80% of energy lighting
  - Document to assist munics in tendering for LEDs
  - Moving from `dumb' to `smart' lighting networks
    - Save energy, pollution & improve safety
    - Keep control (automatic reporting of failures etc)



# Thank you

- to all the presenters
- to the Paper Selection Committee
- to the session chairs
- to the microphone position adjustment technician
- to the Affiliates for the Sports Day, sponsorships and Exhibition
- to the AMEU Secretariat
- to the team from Buffalo City and all who have contributed to an enjoyable and very interesting Convention