

City of Cape Town Transport for Cape Town

Procurement of Battery Powered Electric Buses for the MyCiTi Bus Fleet

A Pilot Project



5 December 2016



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Transport for Cape Town (TCT)

Background

- Transport for Cape Town (TCT) - City of Cape Town's transport authority
- MyCiti Integrated Bus Rapid Transport System launched in 2010
- 377 vehicles in the fleet
- Operated by private Vehicle Operating Companies (VOC's)- transformation of the existing taxi / bus industry
- Buses operated include 9m, 12m and 18m - solo and articulated vehicles
- Combination of high and low floor buses
- Universal access
- 53 million passenger journeys to date and growing

Greening Initiatives

- Transport sector consumes 64% of energy in the City
- Transport accounts for 34% CO₂ emissions
- City Established a Fleet Greening Framework to identify alternative energy/fuels as a key initiative for both the City's vehicle and bus fleets:
 - a pathway to zero emissions
- TCT is embarking on a pilot study to undertake comparative analysis of conventional diesel versus electric buses with regards to
 - CO₂ emissions
 - energy consumption
 - Full life cycle costs
- A separate study is underway to determine the suitability of the use of solar energy from photovoltaic (PV) panels as a means of offsetting some of the power use and to power depots



MyCiti Battery Powered Electric Bus Pilot Project



Mexico City Cop 40



Chairman BYD and
Mayor of Cape Town



MyCiTi e-Bus Pilot Project

Contract awarded to BYD SA (Pty) Ltd

- 10 x battery powered electric buses
 - 12m low-entry buses, integrated chassis, 34 seats
 - > 250km range at 100% SOC
 - Li-Fe-PO_x battery, 5hrs to charge @ 80kwh
- Two charging stations locations
 - Cape Town CBD
 - Metro South East (Khayelitsha / Blackheath)
 - Data management system for power systems and drivetrain telematics
- Maintenance of Fleet (up to 3 yrs.)
- Training (drivers & maintenance staff)
- Detailed technical and life-cycle cost analysis

Outcome: An informant into the City policies

- Greening Policy
- MyCiTi bus procurement and operational deployment



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Challenges

Development of specifications- internal

- Functional and technical specifications
 - Transport system requirements
 - Bus body local content requirements
 - Power system and drivetrain
 - Electric vehicle charging stations
 - Data management and systems
- Availability of specifications for e-buses
- Applicable standards

Ensure compliance with the National Road Traffic Act Regulations and compulsory specifications (NRCS)

- Rapid transport buses – capacity and range (trade-off?)
- GVM and axle limits – battery mass an issue
- Roll-over compliance – SA vs EU

Depot and staging area facilities



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Way forward / Considerations

- Transport for Town
 - To development of robust life-cycle cost model (essential for future tendered operating contracts)
 - Undertake comparative assessments with competing diesel buses and other “green technologies” – on going
 - Seek advantages of supporting / new technologies
 - Photovoltaic systems (wheeling opportunities)
 - Fuel cells (range extenders)
- EV Industry / Authorities
 - Development / adopt standard specifications for e-buses including
 - Power systems
 - Charging systems
 - Overnight charging
 - Opportunity / on route charging
 - Data management / vehicle telematics
 - Maintenance training & certification (HV)

Way forward / Considerations

Continued engagement on a national level

- Evaluation of EV emerging technologies
- Development / adoption of specifications (e-buses)
- Review of legislation



Thank You



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