SA’s Virtual Power Station

600 MW ... AND COUNTING
VPS – PEAKING PLANT ALTERNATIVE
AGGREGATED CUSTOMER LOAD

System Operator

Gen #1
Gen #2
Gen #3
Gen #n

VPS

Cust #1
Cust #2
Cust #3
Cust #4
Cust #5
Cust #n
SUPPLEMENTAL RESERVE: Dispatch

Duration: 2 hours minimum
SUPPLEMENTAL RESERVE: Growth

GROWTH IN THE SUPPLEMENTAL MARKET (MW)

600 MW
SUPPLEMENTAL RESERVE: Capacity

CERTIFIED CAPACITY BY REGION
July 2011 (MWs)

- Western Cape: 75 MW
- Central: 350 MW
- KZN: 110 MW
- Eastern Cape: 45 MW
SUPPLEMENTAL RESERVE: PERFORMANCE

AVERAGE MONTHLY PERFORMANCE (%) OF THE CENTRAL 2 HOUR UNIT
INSTANTANEOUS RESERVE: Dispatch

Duration: 10 minutes

49.65 Hz ↓ 49.85 Hz ↑
CONTROL EQUIPMENT REQUIRED FOR INST
INSTANTANEOUS RESERVE: Capacity

REGIONAL CERTIFIED CAPACITY JULY 2011 (MW's)

- Western Cape: 27 MW
- KZN: 58 MW
- Central: 194 MW
INSTANTANEOUS RESERVE: Dispatches/Month
INSTANTANEOUS RESERVE

CERTIFIED CAPACITY
BY REGION
July 2011 (MWs)

Central
194 MW

KZN
58 MW

Western Cape
27 MW
VPS PROCESSES
• Contracted customers must reduce load on instruction for a minimum of 2 hours, once per day.
• Customer bids are recorded on a day-ahead basis.
• Automated meter reading of 30 min data is a prerequisite.
• Only Eskom’s large customers currently participate.
• Customers are paid a standby payment + energy payment for load reduced.

• Contracted customers must reduce load within 10 seconds of notification, for a maximum of 10 minutes, maximum twice per day.
• Customer bids are made available on a day-ahead basis.
• Special metering requirements are necessary.
• Only Eskom’s large customers currently participate.
• Customers are paid a standby payment, but no energy payment.
BENEFITS OF VPS TO CUSTOMERS

- Financial compensation
- Excluded from any forced load shedding
FUTURE OF THE VPS IN SOUTH AFRICA

Current: 600 MW
2012: + 500 MW
2013: + 1100 MW
VPS AND THE SMART GRID EVOLUTION

- Generation
  - Flexible Generation & Storage
    - Hydro dam generation
    - Mini generation
  - Distribution Substation
  - City
    - Standby & self generation
  - Factories
    - Solar panels
    - Self Generation
  - Electric vehicles
- Transmission Substation
- Wind Farm
- Solar Farm
- Residential
  - Solar panels
  - Solar water heaters
  - Smart meters
  - Smart appliances
**CONCLUSION**

Information Technology + Customer flexibility = Avoided Power Plant Costs
QUESTIONS

Thank You