Achieving Optimal Benefits with a Demand Response System
Discussion Points

- Background on Demand Response
- Applications for Municipalities
- Considerations
Background

- Medupi
- Capacity Constraints (Supply)
- Demand Management (DSM)
What is Demand Response?

- Utilities incentivise Consumers
- Reduce Non-Essential Loads
- Critical System Conditions
- Supply Constraints
- High Generation Costs
Demand Response

Participation

- Contract – Utility & Consumer
- Quantity, Duration, Frequency
- Notice Period
- Incentives
Why Demand Response?

- Contrasted to Load Shifting
- Standby to Reduce Load
- Virtual Power Plant
- Lower “Generation” Costs
South African Situation

- Peak Demand – 35 525 MW
- Nominal Capacity – 41 919 MW
- DR Program – 900 MW
- Provision for < 100kW
- Aggregation of Loads
Municipality Opportunities
Demand Response Process

- Marketing & Sign-Up
- Register Participants & Loads
- Receive Eskom Forecast
- Verify Existing Load
- Notify to Reduce & Restore Load
- Determine Load Reduction
- Pay Incentive
Program Constraints

- How many times DR Event called
- Consecutive Hours
- Consecutive Days
- Option to Opt-Out
- What Days and Times
- Advanced Notification
- Base Line Calculation
DRMS Considerations

DRMS Platform
- Server – Database & Calculations
- Access via HTTPS
- In-House or Cloud Based
Sending Event Notifications

1. Email / SMS / Automated Phone
2. Advanced Metering Infrastructure (AMI)
3. Gateway Devices
Grouping of Loads

- Substation or Feeder
- Participant Contract
- Participant Site
Baseline Algorithms

PJM (4 of 5)
- 5 Similar Weekdays
- Non Event Days
- x Days in History
- Max Delta in Consumption
- 4 Highest

ERCOT (8 of 10)
Settlement Calculations

- Access to MDM
- Delta Baseline & Actual Usage
- Linked to Billing System
Scalability

Electricity Consumer
- BMS
- Meter
- Pool Pump
- Thermostat
- PLC

Utility Field
- Substation

Utility IT
- SCADA
- AMI

DRMS

Supermarket Group
Substation Group
Ripple Control
Event Notification

BMS
Commercial Gateway
Residential Gateway
Industrial Gateway

CIS
MDM
Conclusion

- Municipality as Aggregator
- Existing Load Management Systems
- Own & Manage Scalable DRMS
- Revenue Protection
- Asset Management
- Customer Satisfaction
Thank You