Demand Response Applications for Municipal Utilities

Comverge South Africa
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energy made better

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Agenda

• What is Demand Response

• Eskom Demand Response Rewards Pilot Programme

• Demand Response Applications for Municipal Utilities
  – Requirements for an effective Municipal DR Program
  – Maximize municipal utility revenues using DR
  – DR to enhance AMI infrastructure investment
  – DR as a complement to Renewable Energy
  – DR as an essential component of SmartGrid

• Conclusions
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Demand Response Defined

• FERC Definition:

“Changes in electric usage by demand-side resources from their normal consumption patterns in response to changes in the price of electricity, or to incentive payments designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardized.”

• Effective Demand Response relies upon:

  – Business rules driven load management
  – Dynamic and scalable technologies
  – Customer centric marketing & recruitment
  – Near real time management of supply & demand side resources
  – Aggregate & dispatch thousands of unique customer responses

“Demand Response is the killer app of the smart grid”
- Jon Wellinghoff, FERC Chairman
Demand Response – Value Proposition

Reduces Demand Costs

Improves Utility Profitability

- Value Proposition

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  – DR to leverage AMI investments
  – DR to manage intermittency of RE resources
  – DR to capture the full value of the Smart Grid

• About Comverge

• Case Studies
Eskom Engaged Comverge to Pilot Demand Response

**Original Pilot Objectives**

- Prove viability of Demand Response in SA
- Establish DR Rewards Market Rules
- Deploy a DR Grid Management System
- Develop and Train C&I market participants
- Develop a 5 minute DR product
- Recruit up to 100 MW of C&I customers

**Pilot Successfully Completed**

- Deployed IntelliSOURCE™ v3.0
- Recruited & Contracted 167 MW
- Aggregated & Dispatched over 3000 MWhs per month (Jan, Feb, & March 2013)
- Created several DR products
  - 10 minute product (1 min. metering)
  - 30 minute product (5 min. metering)
  - Municipal ripple dispatch product

Demand Response has been proven to be effective in the Municipal and Industrial markets in South Africa
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Requirements for an effective Municipal DR Program

Marketing & Segmentation

Program Management

Call Centre/NOC

Installation & Service

DLC Equipment

Communications Infrastructure

Measurement & Verification

Scalable & Robust DRMS

IntelliSOURCE Solution Suite

Enterprise Users
- Distribution Operations
- Program Design
- Customer Care
- Analysis & Performance
- Trading & Markets

Knowledge Applications
- Direct Load Control
- Dynamic Pricing
- C&I DR
- Distributed Generation
- Consumer Engagement
- Web Presentment

IntelliSOURCE Platform

Comms / Data
- DR Network (Paging/Broadband/Cellular)
- MDM / CIS
- AMI Network
- SMS/RoboCall
- IEE / MV-90

Devices
- Load Mgmt
- Smart PCT
- Display
- ZigBee GW
- Smart Meter
- Energy Mgmt
- C&I Meter

Maximize municipal utility revenues using DR

- DR reduces the cost of supply by peak shifting/shaping and better managing demand
- Automated DR reduces penalties associated with Notified Maximum Demand
- Automated DR reduces Repair & Maintenance costs associated with manual substation switching

**Peak Load Shifting**

Managed MD

**Load Curtailment**

Standby

DR Event

Base

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DR to enhance AMI infrastructure investment

Intelligent Dynamic Pricing Solution

- Time-of-Use (TOU) Pricing
- Real Time Pricing (RTP)
- Critical Peak Pricing (CPP)
- Peak Time Rebate (PTR)

SmartPrice™

An intelligent dynamic pricing solution delivering increased value to your customers and peak-reduction benefits to the Municipality.

SmartConsumer™

A residential customer engagement solution designed to increase energy awareness among utility customers and inspire them to use electricity more efficiently.
Demand Response Applications for Municipal Utilities

DR to enhance AMI infrastructure investment

•  Flexible Load Control

Comverge Web-Based Applications

Web Portal

Load Management System

Interval Meter

GSM Modem

GSM/GPRS

Customer Access

Utility Network Operations Center (NOC)

30-minute Advanced Notification

Utility NOC Remote Control

DCU

EMS/BAS Load Control

Direct Load Control

Manual Load Control

3rd Party Control
Demand Response Applications for Municipal Utilities

DR as a complement to Renewable Energy

Renewable Energy

Intelligent Energy Management Platform (Automated DR)

Commercial & Industrial DR

Residential DR

C&I Meter

Municipal Distribution System

DR as an essential component of SmartGrid

Smart Grid

Comverge provides the resources to help utilities overcome the challenges of an outdated grid today, while preparing for the smart power grid of tomorrow.
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Demand Response is a viable way to help municipal utilities:

- Decrease the cost of supply through load shifting/shaping
- Decrease Notified Maximum Demand (NMD) penalties
- Reduce load shedding related repair and maintenance costs by avoiding unnecessary substation switching
- Leverage existing AMI infrastructure for Demand Response Programs
- Leverage technology to influence residential customer behaviour
Thank you