



**IDEA 2014**  
Moving Community Energy Forward  
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# Innovative Systems Management of Thousands of Customer Meters



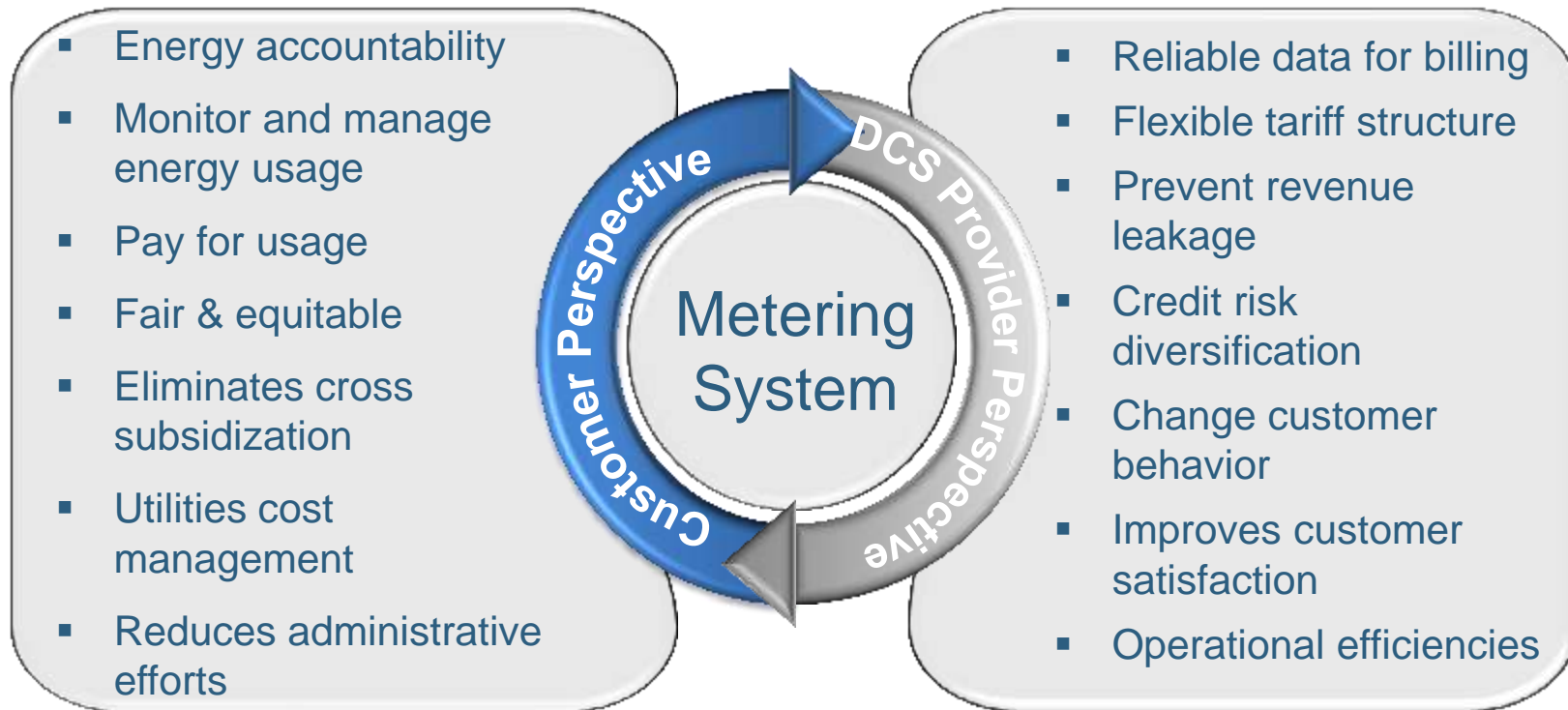
Ramesh Ramadurai  
Empower

# Outline

- 1 Background
- 2 Rationale
- 3 Dimensions
- 4 Key Components
- 5 Approach & Issues
- 6 Challenges
- 7 Road Ahead



- District Cooling is a credible alternative to traditional systems
- Most preferred energy efficient and environment friendly cooling solution
- Many entrants/early operators relied on bulk metering
- Customers not used to pay separately for cooling services
- Inequitable cost allocation
- Growing emphasis on efficient use of energy resources





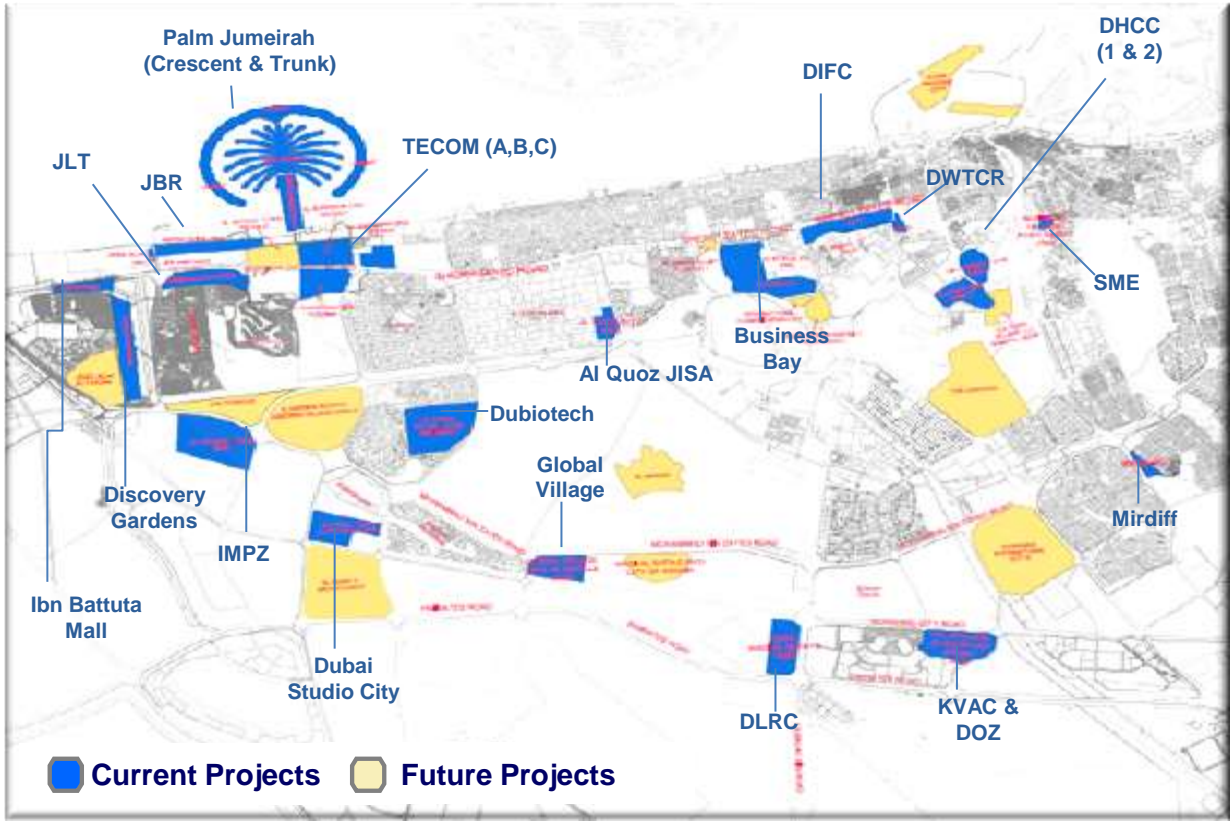
# Dimensions



DIFC Plant



DHCC Plant





25  
Projects

## Key Projects

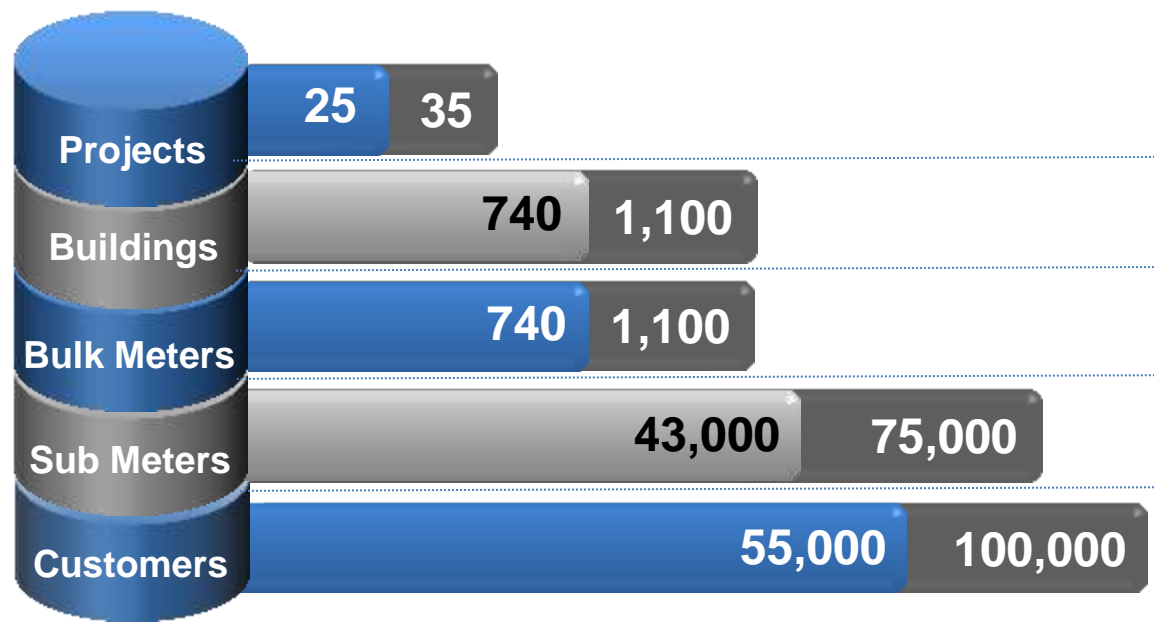


Innovative Systems

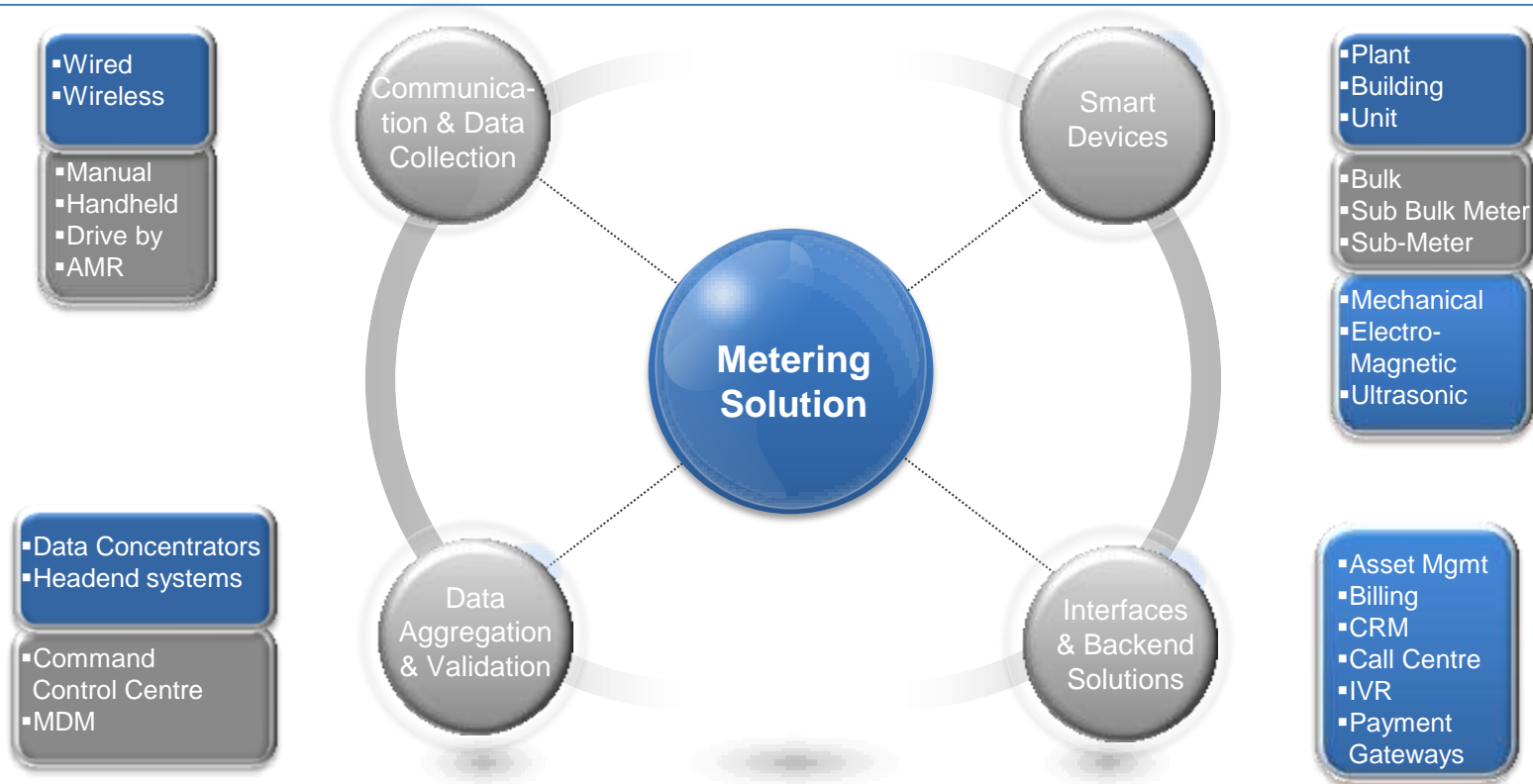
Management of Thousands of Customer Meters



# Dimensions



# Key Components





# Approach & Issues

## New Installation

- Coordinate with developer/building owner
- Empower's design and implementation guidelines
- Procure/supply meters
- Manage/oversee installation and commissioning
- Establish communication infrastructure

## Taking over Existing System

- Metering solution not as per Empower's specification
- Meter location/access
- Meter calibration
- Incompatible Meter reading software
- Maintenance/support issues

## Retrofit

- Secondary system modification
- Meter location/access
- Communication system setup
- Disruption to services
- Inconvenience to occupants

# Challenges

## Device Management

- Multiple vendors
- Multiple models
- Calibration/Re-calibration
- Meter verification
- Meter tampering
- Faulty meter management
- Common area metering

## Data Management

- Multiple Communication modes
- Multiple Meter reading softwares
- Meter data storage capability
- Data harmonization, validation and aggregation
- Consumption estimation
- Mix and Match of meters/Interoperability

## Customer Management

- Customizable billing options
- Ownership transfers
- Move-in/Move-out (tenant changes)
- Customer Care/Call Centre
- Customer awareness and education
- Complaint/disputes resolution
- Collection follow-ups
- Disconnection/Reconnection

## Innovative Systems

Management of Thousands of Customer Meters



# Road Ahead

**GPMS**  



**Operator Station**  

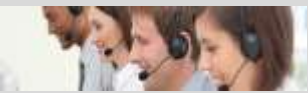

**Mbus Meters**  


**Modbus Concentrators**  






**Customer Care & Billing**  
**E-BUSINESS SUITE**


**Asset Management**  


**Customer Care & Call Centre**  





**Firewall**  



**Fiber Optics**  



**Repeaters**  



**MPLS Cloud**


**GPMS Network**


**NTP**  



**NAS**  


**Operator Stations**  


**Application Server**  


**SAN**  


**Historian Server**  


**Meter Data Management (MDM)**  






## Command Control Center



# End-User Metering is the Way Forward!





# Contact us

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