

Issues as of Sept 1, 2004 – To be discussed with WG Leaders

1. The target customers of 50 kW and above is an unrealistic priority target for the following reasons

- small percentage of customers so would have to look at two system options in order to get the required number of meters deployed in phase 1
- technology options are more customized to this group and may not provide the best “bang for the buck” in price per point and total single system solution to enable mass deployment timelines

Recommendation: Allow individual utilities to select the customer segment that will best meet the targets and provide the most benefit to gain savings. Utilities should balance the benefit of the specific customer group with the availability and benefits to be gained by the technologies available for deployment.

2. Funding for the Smart Meters – Can the rate increase for the DSM initiatives be used to off set cost of the Smart Meter?

3. Information to the Customer – could be quite onerous. Concerns include:

- how much information and for how long should it be available to the customer
- would a sliding 4th window after meter deployment be sufficient?

Option?Suggestion:

- Kearny study indicates that customers are interested and must educate themselves that profile data and curtailment savings are realized. Once this is understood they no longer have to access data on a daily basis and may want to check with final monthly bill or by specific request to the utility

If daily information is provided “daily” does this mean just the profile data or must it be billing quality

What are the realities in getting billing quality or can a general unscrubbed cost be provided within this window?

4. How much data should be saved and accessible? IMO may require 2 years with new billing regulations.

5. When can the billing data be consolidated into summary data for archiving?

Assumptions & Questions

Discussion of Assumptions

- Customers to be selected Selection Process
- Participating utilities Selection Process
 - competition and recognition?
- Smart meter Program options – rates, LC....
 - must be defined if to reach 5%
- Deployment Timeline and Logistics
- Deployment Phases
- Method for measuring and benchmarking
- Phases moving forward

Questions for the Group

Richard

Will Critical Peak Occur at the same time on any day in Phase 1?

Should this group define a standard file format for all vendor data to be downloaded into data storage/management facilities?

Should the group concentrate on functional requirements or denote technology options available?

Note: All information in italics is a discussion item and has not been discussed or agreed upon by the working group

Base Smart Meter Functionality

Base Level Functionality

(does not mean it is cheaper in all cases than advanced systems but does mean all vendors must be able to perform these functions in order to offer systems for sale in Ontario. Business cases and justification may be stronger with enhanced features in various vendors' AMR systems)

Proven Technology

Systems to be deployed must have proved track record in the field with over 10,000 units installed and working prior to qualifying as an Ontario Certified Smart Meter. Utilities/Alternate providers can trial beta smart meter equipment on their own timeline and at their own expense. Unproven systems cannot be part of the Smart Meter System deployment initiative.

Reading the Meter

Demonstrated and proven 99% accuracy rate

Demonstrated and proven 95% read retrieval in 24 hour period

Ability to read more than one brand of meter would be given preference in order to ensure competitive bidding processes where ever possible

Cost effective retrofit module for meters less than 5 years old and are currently deployed in the field. This would alleviate some of the stranded asset burden.

- electro-mechanical
- solid state

Accommodating Pricing Structures

Billing Reads

– final monthly read of total kW used in each time/rate period offered

Time of Use – Preprogrammed four season rate with three rate options in a 24 hour period

Critical Peak Pricing

Meter Intervals – hourly

Reads must be able to be taken on the hour and be supported with time synchronization to ensure accurate accounting of on and off peak periods.

Ability to provide a 5 minute grace period?

or

Time of Use – with ability to change time buckets to meet Critical peak pricing options (requirement for two way communication with this option)

Communication Module

Preference given to under-glass solutions

Preference given to modules that can be factory installed and sealed at the meter manufacturing facility. This will expedite installation and sealing requirements.

Preference given to modules that have the ability to communicate with more than one vendor AMR systems

Preference given to modules that utilize more than one communication medium

Transmission of usage data

Meter can be read and data stored at any point from the meter to the data collection computer. Transmission to the head end must take place at a minimum every 24 hours between 12:01am – 6:00 am.

Meter Module Topic Guidelines

1. Management of Smart Meter System

- Ability to Install and initialize
 - automatic
 - end point installation devices
- End point identification
- reprogramming and configuration
- Ad hoc interrogation
- system status reporting
- maintenance and monitoring of system/end point functionality
- monitoring of DSM and load management
- ability to acquire trending for benchmarking (before/after)

Customer Information

Data Presentment to the Customer

Data must be available for access by the customer by 8:00 am the following day.

Level of Granularity of the Data

Data Updates to the Customer

Data updates will be made every 24 hours by 8:00am each day following the last read transmission.

Quality of Data to the Customer

Data updates will show kW saved and unscrubbed pricing for benchmarking only

Data Availability

Data collection topic guidelines

- frequency of data collection
- base level for data collection frequency
 - distance and location of collection and storage points for access
- redundancy issues, re-reads – on demand reads
- confirmation of reads in rate/time buckets
- ability to log and calculate CPP and TOU

Basic – Pricing Signals

Assumption: Pricing changes from flat rate or standard TOU will be posted 24 hours in advance. This type of ad hoc pricing is referred to as Critical Peak Pricing

Pricing changes will take place on the hour.

Customer Notification of Pricing Changes

Notification will take place via Public Media – Newspaper and Radio

Requirement for Customer Education to insure support and understanding of what is required/recommended in order to mitigate energy usage

Media notification should include quick tips on how to manually deal with high energy using devices. How to save \$ quickly, resulting in a minimum of inconvenience.

Question: What about emergency system failures, etc.

Ancillary Services and Devices to support CPP, TOU, etc.

Other methods of Customer Notification

Internet bulletins, direct emails, telephone calls, page signal to transmit message to a smart thermostat, light on thermostat indicating green, yellow and red status, etc.

Load Control – by LDC or Alternate Service Provider

Load Control/Management systems can be installed to assist the customer in curtailment/shifting compliance

1. Paged or broadcast message to smart thermostat
2. Internet message and bulletins
3. Broadcast signal to load control devices scheduled to cycle or cut load to specific appliances connected to receivers on
 - air conditioning cycling
 - thermostat adjustments of 2 degree increases or decreases
 - water heater load
 - pool pumps
 - etc.

Technology Issues

Technology Impact and Cost Issues associated with

- Technology Options
 - list communications options and overview of pros & cons
 - risks
 - technology lifecycle – types of options available – pros & cons
 - R&D vs. Here and now
 - vendors at the table vs. those unaware of opportunity
 - Canadian vs. US – conversion requirements
 - stipulations for vendors to meet immediate, intermediate and future requirements (ensuring success)
 - from a technology perspective,
 - from a software perspective
- from a network management perspective

Customer type and Utility size

Communication Infrastructure Availability

Consolidated or Dispersed Deployment Options

New Homes

Network and Data Collection Management Capability and Resources

Billing Capability and Resources

Must consider Each Utility's ability to deploy, benchmark and manage process of

- *installation, maintenance, operations, and programs to customers*
- *utility operated and third party options*
- *providing information to the customer*

Communications/Network Topic Guidelines

1. Immediate ability to deploy Smart Meter Network Options

- requirement to negotiate with public network providers
 - segmenting data usage on public bands
 - pricing
 - rate schedules
 - ownership
 - protocol conversion
- ownership and access issues to utility built and managed private networks
 - public infrastructure for profit making? (fiber unfair advantage?)
 - rights of way and public network access fees
 - expertise and upfront investment
 - utility fiber and last mile issues
- public frequencies vs. private
 - bandwidth availability
 - allocation and application
 - lead time to acquire/convert from US frequencies etc.
 - cost for conversions
 - congestion/collision
 - upgrade and maintenance responsibilities and costs
 - abandoned networks, technologies and frequencies
- wireline
 - telephone – customer segments, cost allocations, ownership of data, software/protocols
 - o cross over to cellular, digital wireless
 - o negotiation and ownership issues
 - o transmission, activation and TOU charges options
 - o
 - PLC – broadband – reality and ability to deliver on promises
 - PLC – narrowband – cost and migration capabilities to address future requirements
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Deployment

- Deployment considerations based on cost and success in realizing savings
- utility network sharing with
 - smaller utilities
 - consortia
 - private enterprise
 - water and gas
 - bandwidth allocation
 - priorities
 - ownership
 - data collection and privacy issues

Data Management, Warehousing and processing for billing

- monthly billing
- providing monthly time of day history,
- savings and other savings options available
- ability to acquire and disseminate to customer and utility operations
- cost
- archiving – time period, access, consolidation, rate sensitive

ownership of the data

Demarcation of systems and assets

Topic Guidelines

- . Ancillary Software Options and Data Storage and Management
- Don't mess with the CIS
- Basic modifications necessary to bill for TOU and CPP
- Data Storage and archiving –
 - location
 - accessibility to data
 - utility
 - customer
 - aggregators
- Crystal Reports
- User Groups

Outsourcing/Partnering/Service Bureaus

Alternate Service Providers

- shared head end
- service bureau
- third party contractors
- interim data collectors
- business agreements
 - lease
 - share
 - own
 - based on data collection and presentation requirements