

The PowerStream Experience

A TOU Case Study

November 10th 2009



The PowerStream Experience

- **Who is PowerStream**
- 2nd Largest Municipally owned LDC in Ontario
- 320,000 Customers
 - **282,000 Residential**
 - **38,000 Commercial and Industrial**

- Total Revenue \$ 752 million
- Total Assets \$ 844 million
- Peak Demand 2000 MW's
- Service Territory 807 sq. km.



Go **Green**
with **PowerStream**

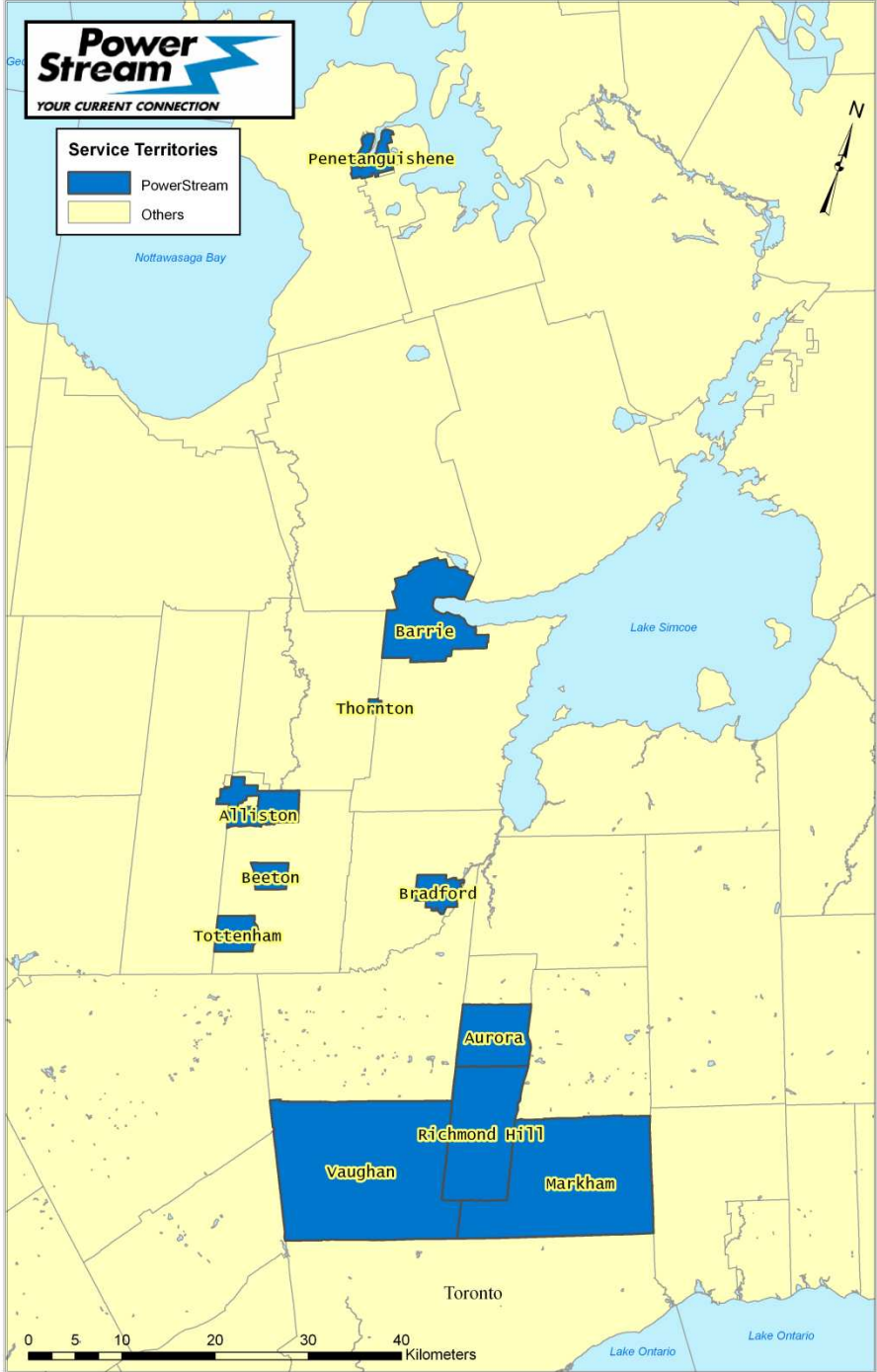
**Power
Stream**
YOUR CURRENT CONNECTION

util-assist

Sky Energy Consulting
A division of Sky Business Consulting Inc.



Service Territories	
	PowerStream
	Others



The PowerStream Experience

Our Approach

- A transformative experience
- Fundamental Change to the *Way We Do Business*
- Billing data is Key Deliverable
- Operational DataStream is of Equal Value

Strategy

- Lowest Cost Alternative that met PowerStream's requirements without exceeding Minimum Specifications
- Private Sector partnerships for Program Execution to eliminate resource spikes
- *End-to-End* approach to mitigate business risk
- *Over-Communicate* emphasis



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Our Approach

Cross-Functional Project Team

- Corporate Communications
- Customer Service
- Information Technology
- Metering
- Finance – Rates Group
- Regulatory & Government Relations



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Key Partners

- **Util-Assist** – Superior Technology & Strategic expertise, AMI Project Planning & Management, Vendor Selection, Business Process development
- **Sensus** – Meter & AMI System Vendor & Operator
- **Savage Data** – Operational DataStore Vendor & Operator
- **Sky Energy Consulting** – Extensive MDM/R Registration and Enrolment Process Expertise, MDM/R Project Management
 - Business Process Re-engineering
 - Testing Programs
 - Cutover and TOU Implementation



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Our Technology Solution

Meter Vendor

- Selected Sensus – Radio Frequency Point-to-Point Solution
- Service Territory has diverse Customer & Terrain mix
- Sought Single Technology & Interface Solution
- Excellent Communications Range – Up to 40 km
- Over-the-Air Firmware Upgrades
- 2-Way Communication, Single LAN Capability
- Multi-Utility capability
- *Last Gasp* capability (Incl. Outage messaging & Readings)
- IP Addressability – “Own the last mile, not the last inch”



75 to 300 square miles covered per tower



Two-way and one-way meters (water, gas, electric)



Phone Lines
ESDN
Satellite

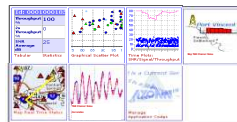


RNI
Regional Network Interface

Tower Gateway Basestation 'TGB'



System Health Management
(by Sensus)



Data Warehouse
60 Day History



Utility Interface

XML File
Itron MV90, MV90 HHF
Itron Enterprise Edition
SIMS
Custom Interface

Web Functions



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Progress To Date

AMI

- 185,000 SMART Meters installed to date
- Primarily Residential meters
- 2009 Target – 85,000
- 2010 Target – 90,000
- Total – 315,000 SMART Meter installations

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Progress To Date

MDM/R & TOU Rates

- Comprehensive Project Plan
- Self-Certification for System Integration Testing (SIT)
 - March
- SIT testing
 - March – April
- Qualification testing
 - April – May
- Cut-over preparation
 - April – May
- 300 Meters flowing
 - May 22nd



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Progress To Date

MDM/R & TOU Rates

- Start of Experiential Period - May 25th
- 2,000 Meters flowing - June 4th
- Initial Pilot (2,000 Customers) - August 1st
- 2nd Pilot (2,000 Customers) - September 1st
- Production Migration - October 1st



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Project Priorities

- Start planning early
- Vital that you know how the business process are going to change
- Choice of AS2 Vendor
- Develop detailed specifications
- Clearly define expectations
- Test MDM/R was used to validate consumptions and process
- Test early and often
- Know your time lines
- Need a cutover plan from conventional meter reading to MDM/R
TOU consumption billing – 30 Days Notification requirement



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Project Priorities

- Minimize interfaces
- Build in automation whenever possible
- Build in checks and balances:
 - Ensure that file transfers are done properly and on time
 - Make sure that data is in the proper format
 - How do you handle data exceptions/files that don't transfer ???
- What/When/How are you going to communicate to your vendors
- Ensure secure data transfers (PIPEDA)
- How to handle customer complaints



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Project Priorities

- Need meter change data in the CIS ASAP once going live with IESO
- Register reading are critical:
 - Get register reads and consumption reads every hour - ensures accurate data
 - Readings are always on the hour
 - Easier to get midnight reads for cutover bills no estimations required
 - Can validate billing consumptions of manual reads to automated reads
 - Better VEE capabilities on missing data



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Critical Success Factors

- AMI/MDMR/TOU Implementation is a Marathon – Not A Sprint
- Dedicated Cross-Functional Project Management Team
- All 6 Business Groups are Critical to Project Success
- Weekly/Bi-Weekly Vendor Project Management Meetings are essential
- Contract Language must clearly define Performance Standards
- Vendor approach to Change Management Process requires careful oversight
- Implementation with *Test MDM/R* reduces cost, risk and provides valuable Operational experience
- Use of Unlicensed Bandwidth may be risky



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Critical Success Factors

- Requires significant Re-Engineering of Metering & Customer Service Business Processes
- Ensure Meter *SMART* cards configured for your jurisdiction
- Manufacturing Capacity & Meter availability are critical path
- Coordination of Meter Deliveries & Installation is Challenging
- Impossible to *Over Communicate*
- Service Territory coverage of RF Antennas can be *Too Good*
- Single Interface solution reduces IT resource demands



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Critical Success Factors

- Preparation for MDM/R Registration and Enrolment should start as early as possible before the smart meters are installed and communicating:
 - 3-4 months for business process re-engineering and documentation
 - MDM/R technical documents are available to enable this activity to commence
 - 4 months for testing and training preparation and execution
 - Additional months are required for testing and cutover
- It must be clear to LDCs that cost recovery for preparation activities will be considered prudent expenditures
 - Adequate resources (internal/external) must be allocated to business process documentation, testing and training

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**Building Blocks: LDC-MDM/R
Integration & TOU Rollout**



Successful TOU Billing

- MDM/R Registration & Enrollment
- LDC-MDM/R TOU Implementation
- Customer Communications

- LDC Operations Testing
- End User Training
- Cutover & TOU planning

- LDC Operations Business Process Development & Documentation

- CIS, AMCC and ODS Configuration and Readiness

- AMI Technology Procurement, Selection, Contracting, Testing & Implementation

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Critical Success Factors

Business Process Development

- Need for business process development is driven by the fact that the systems interacting (i.e. MDM/R, AMI, and CIS) will handle data differently
- Understanding your AMI network, as well as how MDM/R handles the reported data, is critical to business process development
- When actual experience does not match expectations, do not assume that one system is operating incorrectly
- Rather, through understanding how data is handled, the business process is designed to handle the particular situation

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Critical Success Factors

SIT Testing

- Ensure the AMI provider fully understands the purpose of the testing and the importance of the timing for data submission
- Submitting data late directly affects the control and exception reports
- Missing data quality indicators will diminish the value of the test
- Engage your partners VERY early in the integration process and ensure they are part of the planning



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Critical Success Factors

Qualification Testing

- As in SIT testing, communication with partners is critical
- QT testing is when you test your business processes
- Try to be as exhaustive as possible and use real life situations
- Difficult to forecast the various business processes changes required for data flow changes associated with a meter change
 - Will you use a WFM system to expedite the paperwork?
 - If not, how long will it take to process the paperwork to allow synchronization?
 - If sync takes more than a day, how will meter data be resubmitted?
 - How will any metering data be edited in the MDM/R?
 - Manual edits are possible - However submission of meter read files might be easier -requires communication with the MDM/R



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ID	Task Name	Duration	Start	Finish	2009											
					Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	Start Installing Smart Meters	1023 days	May 1, 2007	March 31, 2011	[Gantt bar spanning from May 2007 to March 2011]											
2	Verify Billing Quantities	66 days	October 1, 2007	December 31, 2007	[Gantt bar spanning from Oct 2007 to Dec 2007]											
3	Modify Billing Process	414 days	October 1, 2007	April 30, 2009	[Gantt bar spanning from Oct 2007 to Apr 2009]											
4	AS2 Design / Installation	130 days	February 1, 2008	July 31, 2008	[Gantt bar spanning from Feb 2008 to Jul 2008]											
5	Connectivity Testing	21 days	August 1, 2008	August 29, 2008	[Gantt bar spanning from Aug 2008 to Aug 2008]											
6	Unit Testing	40 days	February 2, 2009	March 27, 2009	[Gantt bar spanning from Feb 2009 to Mar 2009]											
7	Redesign Other Business Process	86 days	January 1, 2009	April 30, 2009	[Gantt bar spanning from Jan 2009 to Apr 2009]											
8	Sit Testing	44 days	March 2, 2009	April 30, 2009	[Gantt bar spanning from Mar 2009 to Apr 2009]											
9	Q/T testing	43 days	April 1, 2009	May 29, 2009	[Gantt bar spanning from Apr 2009 to May 2009]											
10	Cutover Preparation	43 days	April 1, 2009	May 29, 2009	[Gantt bar spanning from Apr 2009 to May 2009]											
11	Test Meters Flowing	16 days	May 22, 2009	June 12, 2009	[Gantt bar spanning from May 2009 to Jun 2009]											
12	Meters Flowing	565 days	May 1, 2009	June 30, 2011	[Gantt bar spanning from May 2009 to Jun 2011]											
13	First Pilot 2000 meters	89 days	July 1, 2009	November 2, 2009	[Gantt bar spanning from Jul 2009 to Nov 2009]											
14	Second Pilot 2000 meters	85 days	August 3, 2009	November 27, 2009	[Gantt bar spanning from Aug 2009 to Nov 2009]											
15	Production Migration	412 days	October 1, 2009	April 29, 2011	[Gantt bar spanning from Oct 2009 to Apr 2011]											

