



Smart Meter / Smart Grid Update

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Who are we

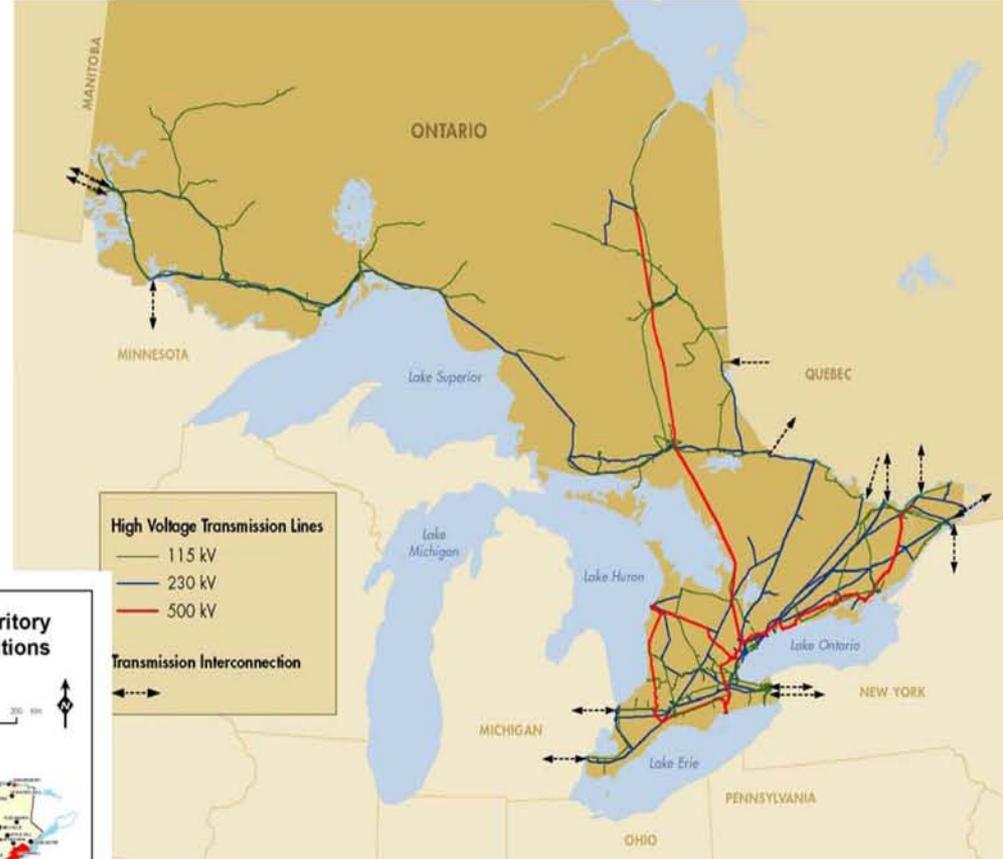
Transmission:

28,600 (circuit - km) interconnected

85,000 towers, 4000 km fibre

Peak demand: 27,005 MW

Energy transmitted: 157 TWh



Distribution:

123,000 km of distribution lines,

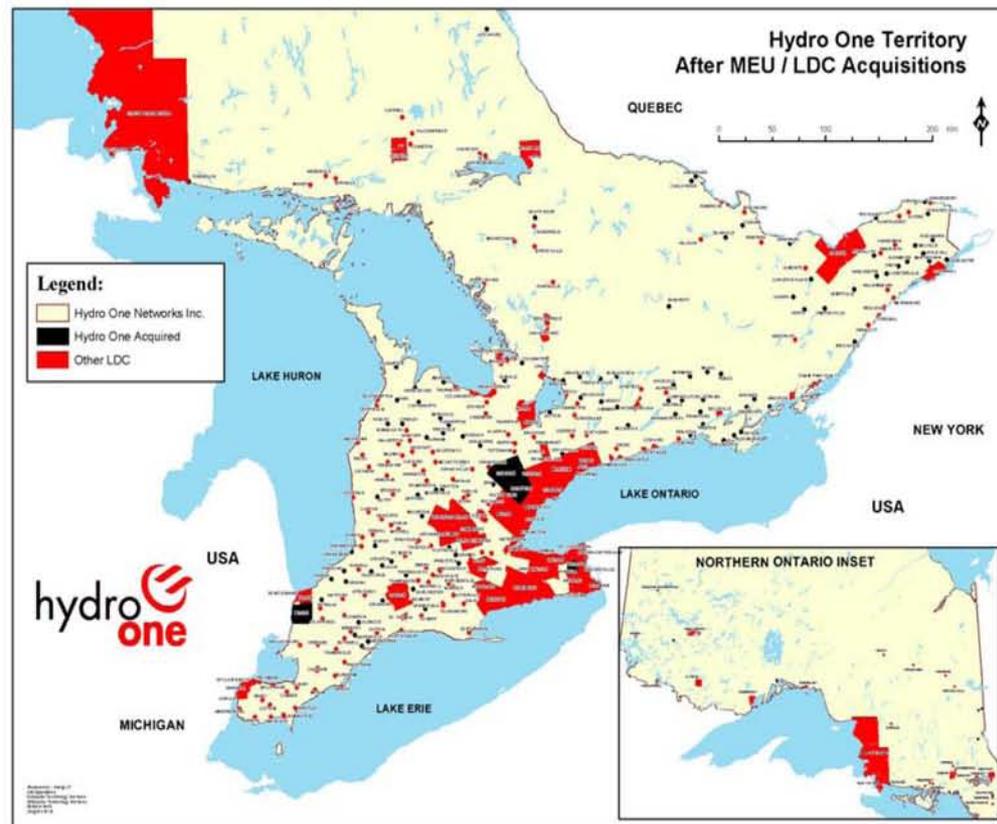
1.8M poles, 1.3M customers,

640,000 sq km service territory

(twice the size of Texas),

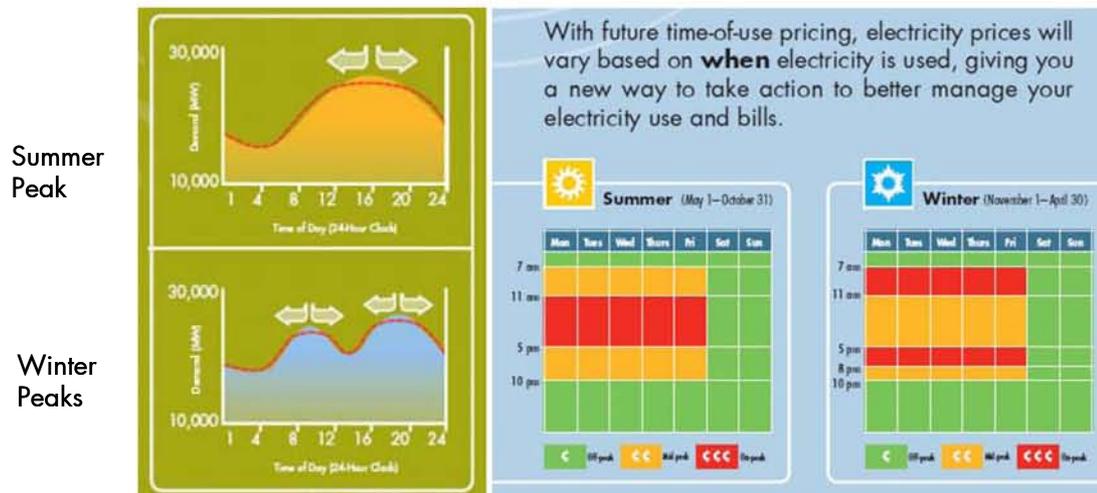
acquired 90 utilities since 2000

(still about 90 utilities left)

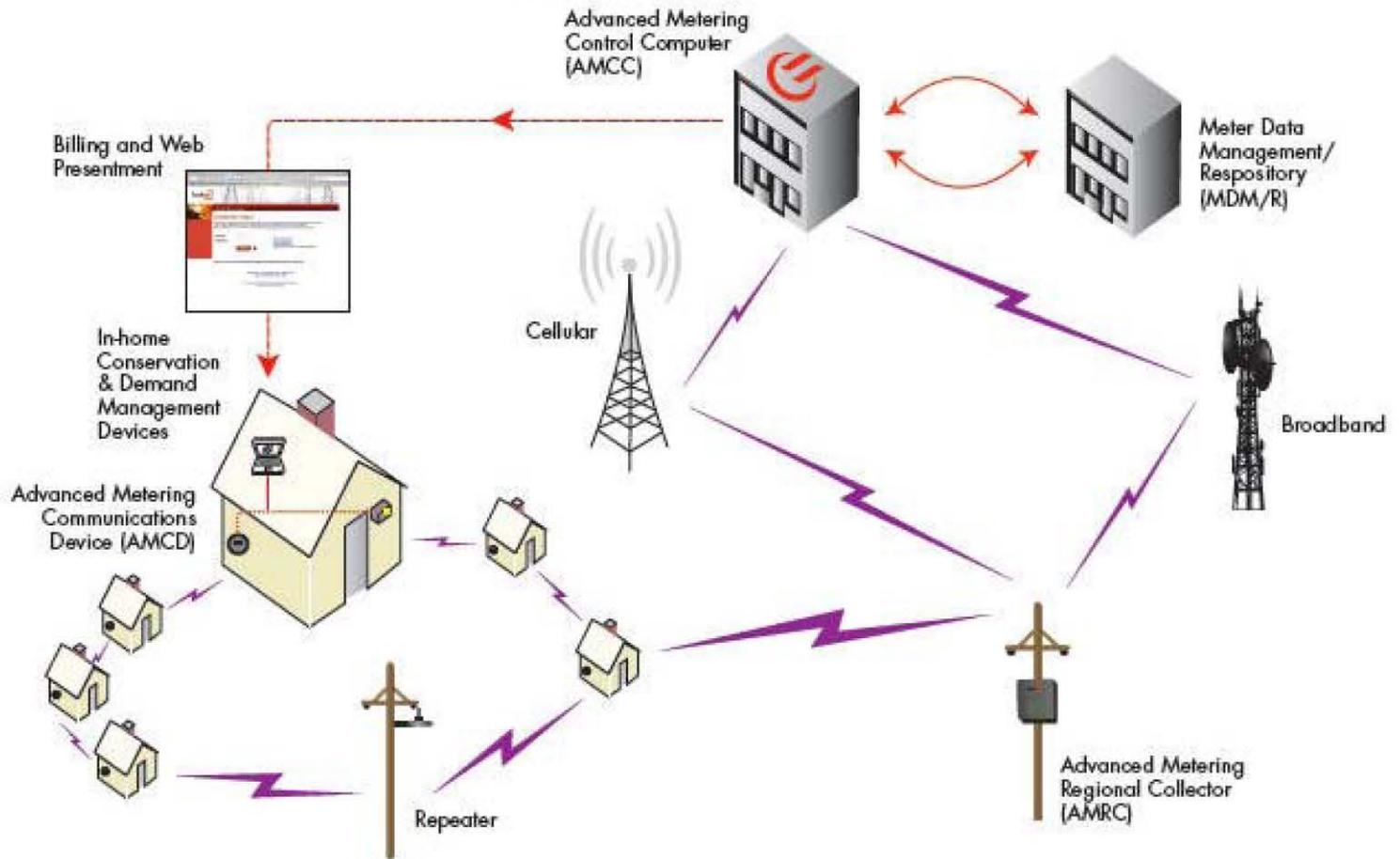


2004 Ontario Ministry of Energy Direction

- Create an energy conservation culture across Ontario and help consumers better manage their electricity use
 - More efficient use of Ontario's existing supply
 - Reduce reliance on external generation resources
 - Need to replace 80% of generation over next 20 years (~\$70B)
- Convert 100% of the 1.2 million smart meters to TOU.



Smart Metering System



What have we done

- Deployed just under 900,000 of the smart meters since end of 2006
 - Tested AMI communication in “in situ” lab, urban and rural
 - Automated change meter order process
 - GPS / Geo-code
 - Deployed a community (15k in 2006), tested processes and communications
- Network build for approximately 600,000 smart meters
- Using AMI for AMR
- In process of CIS upgrade and MDMR Integration



Man Made Challenges



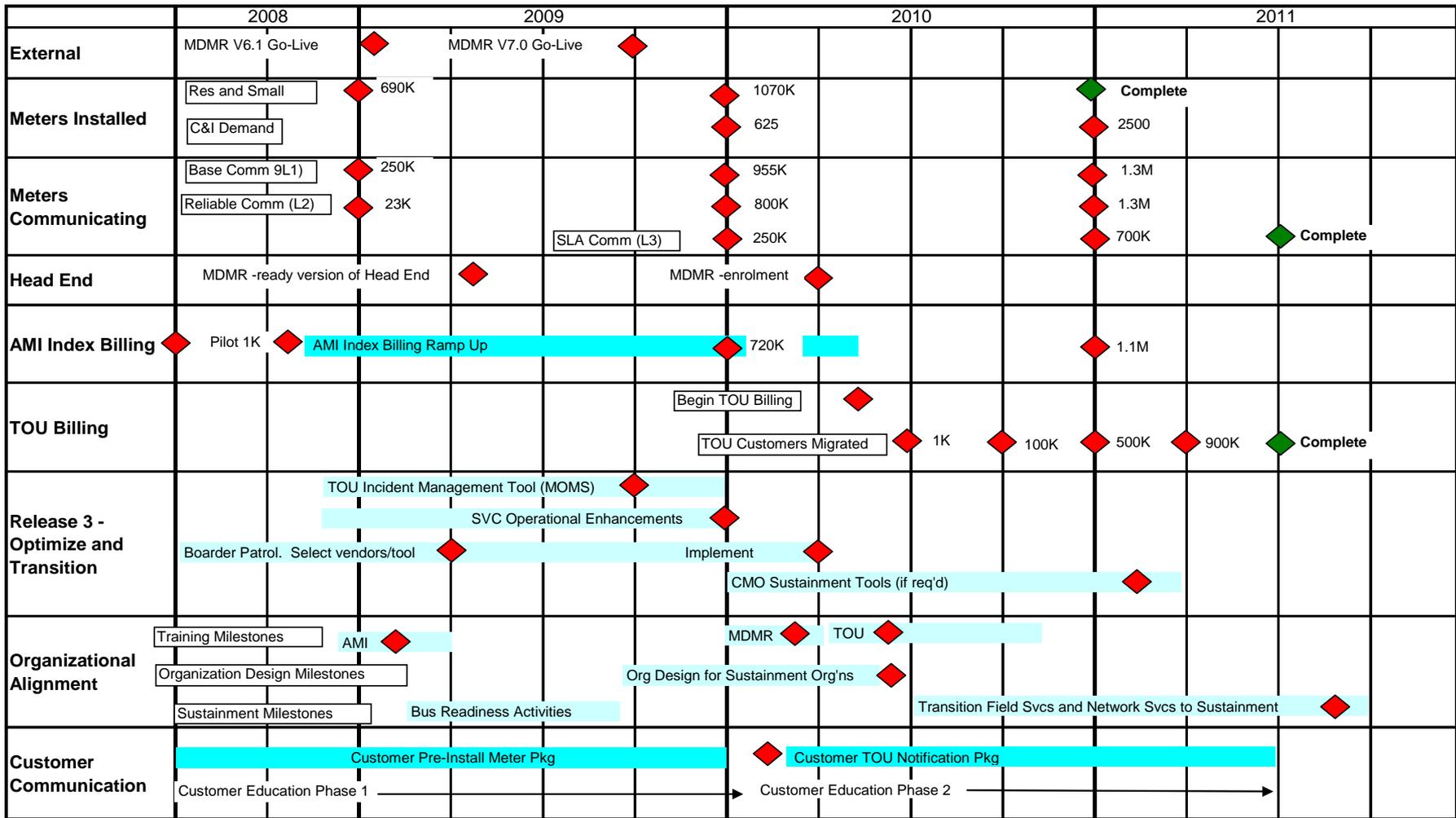
“Creepy” Challenges



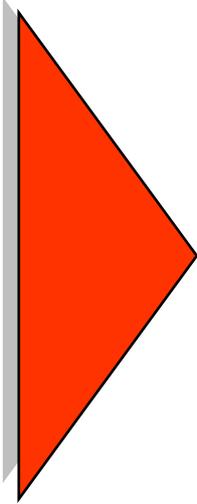
Big Challenges



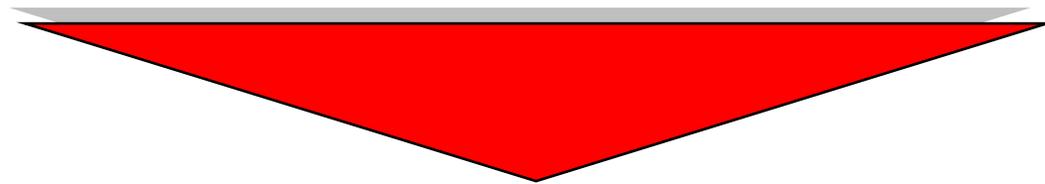
Smart Meter Project Timeline



Where are we going

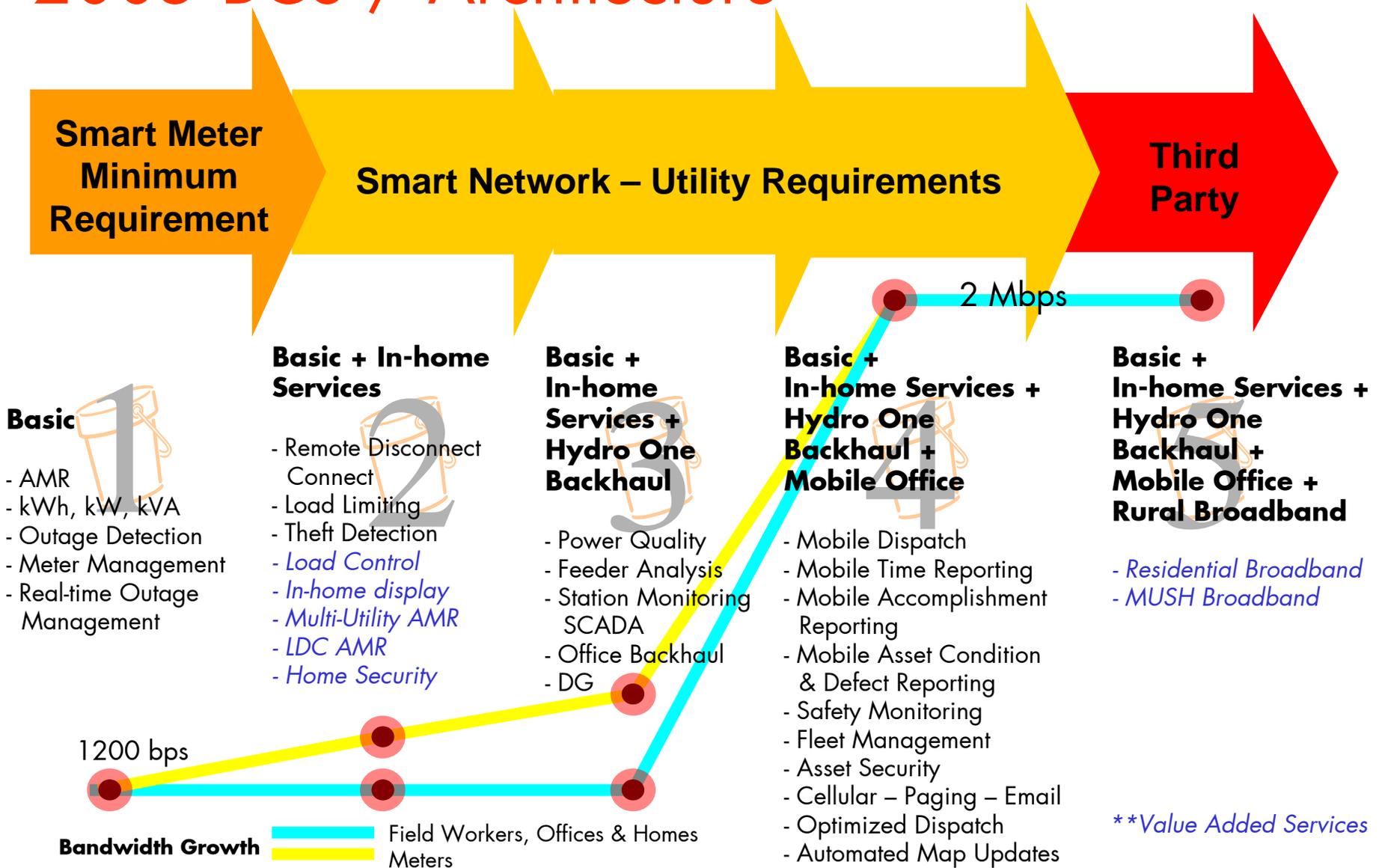


Deploy a smart metering/network solution that meets the Ministry of Energy's requirements at the lowest possible cost and is an enabler for other business processes and transformations:



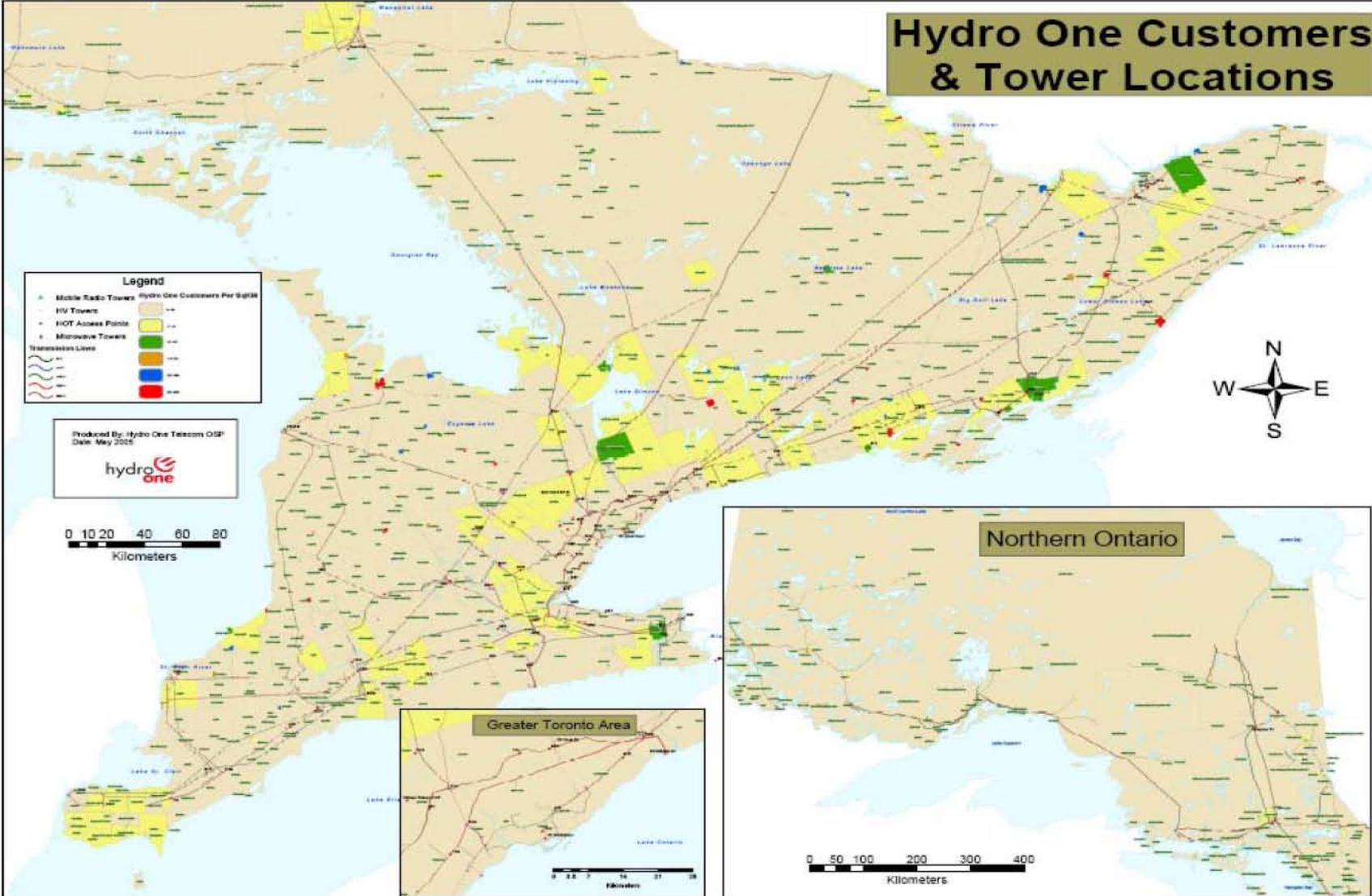
IP / Standards / Secure / Open,
non-proprietary – the foundation

2005 BCS / Architecture



Δ Benefit > Δ Cost by 3:1 for Utility applications and (level 4)

Leveraging Telecom Assets

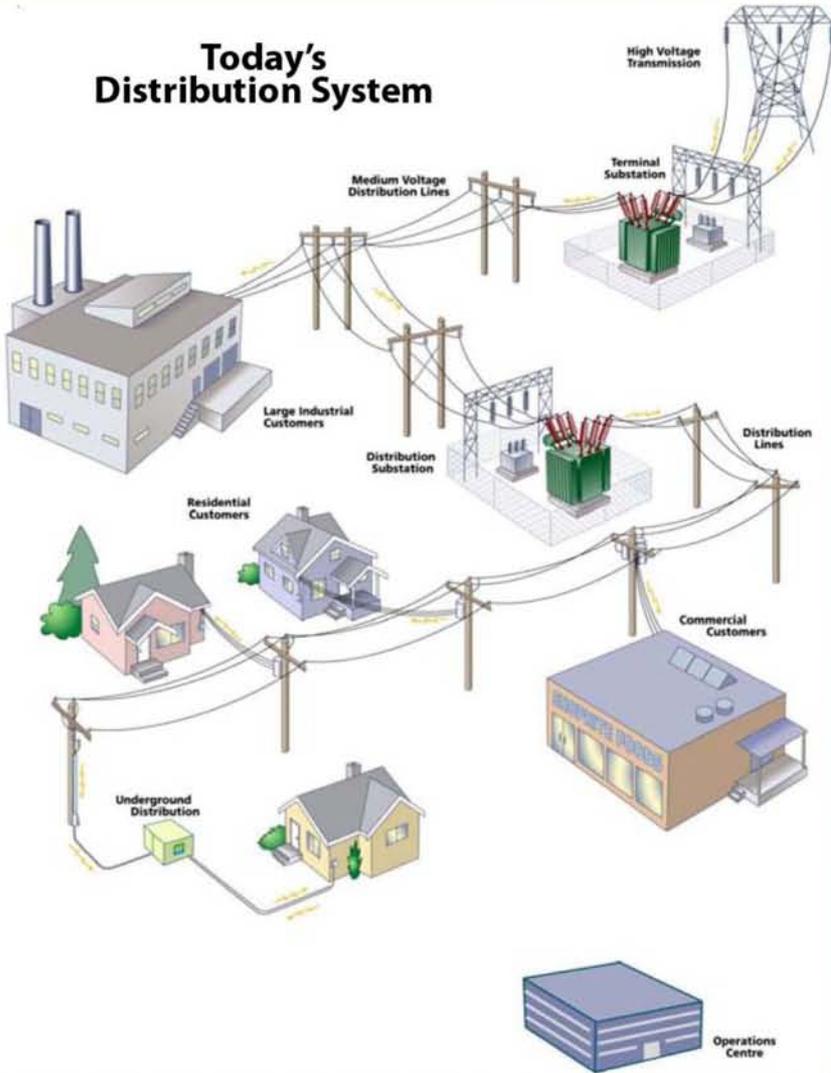


Getting ahead on communications...1800-1830 MHz!

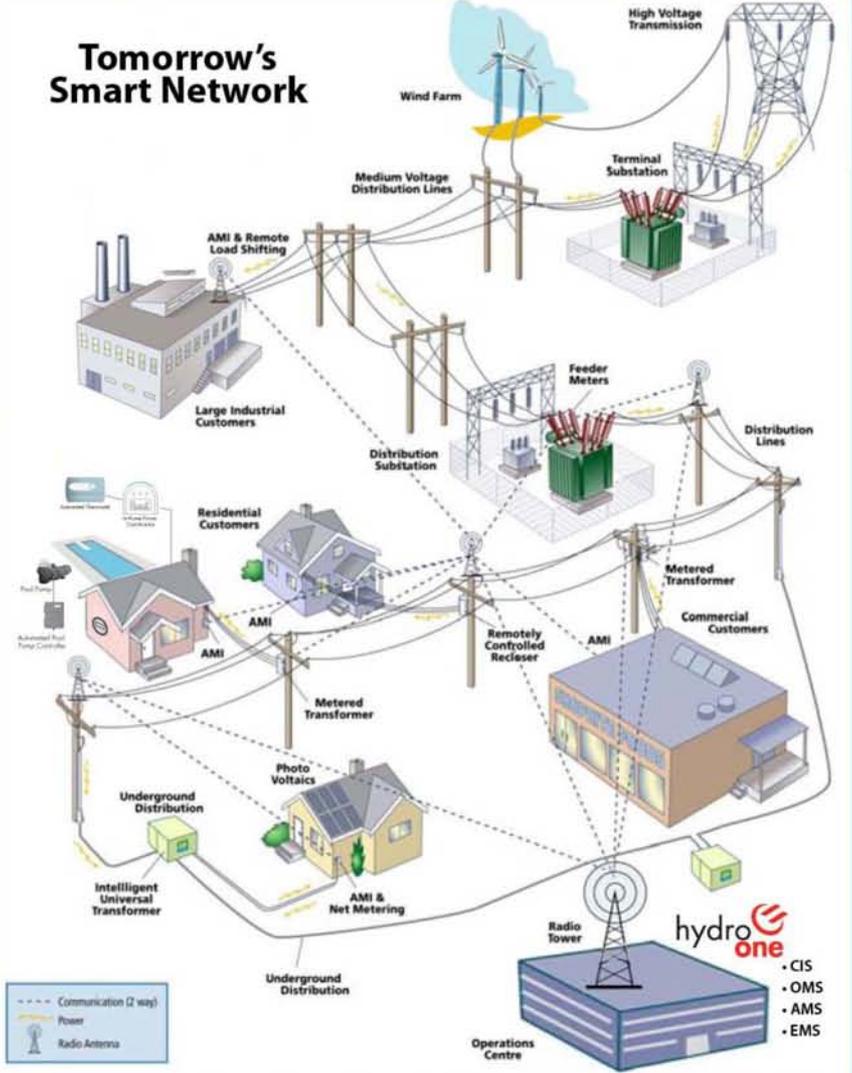
- Industry Canada has issued a Policy Directive in December...key milestone to moving forward.
 - Consultation occurred, no issues
- Radio Plan now draft and stakeholdered
 - No issues
 - Technical Spec now finalized
- Our licence in Q2 2009
- Wimax radio's will be ready in Q3 for deployment in the Smart Zone.

The Future

Today's Distribution System



Tomorrow's Smart Network



Building in Stages

Increasing Evolution of a Smart Network

Utility Applications



- Dx Automation
- DG integration
- Mobile Worker enablement

Data Management



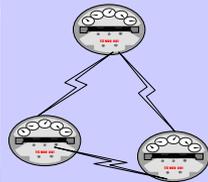
- Cornerstone
- Border Patrol

Upgraded Communications



- Securing Spectrum
- Leverage existing towers and fibre

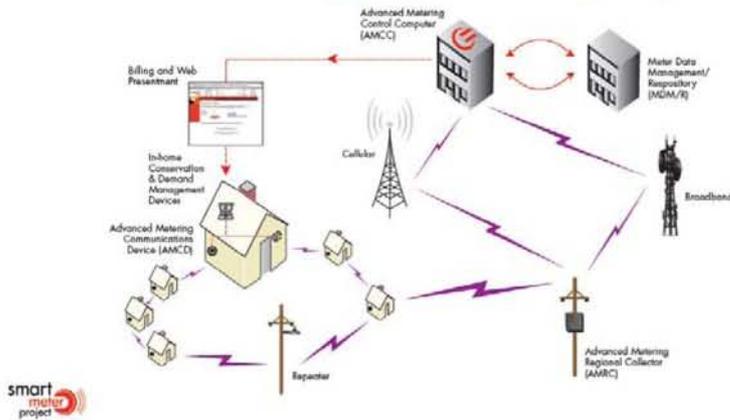
Smart Metering



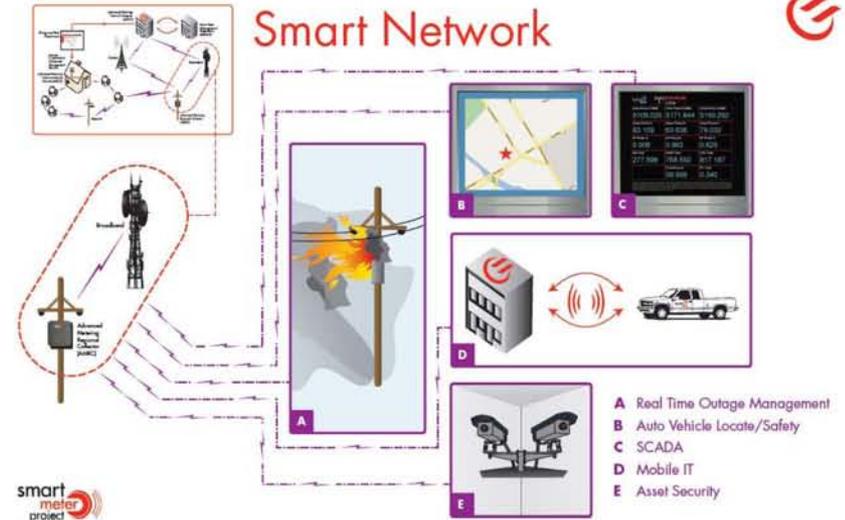
- Evolving into AMI with the addition of disconnect ability
- Platform for CDM initiatives

Architecture - Leveraging AMI Infrastructure

Advanced Metering Infrastructure (AMI)

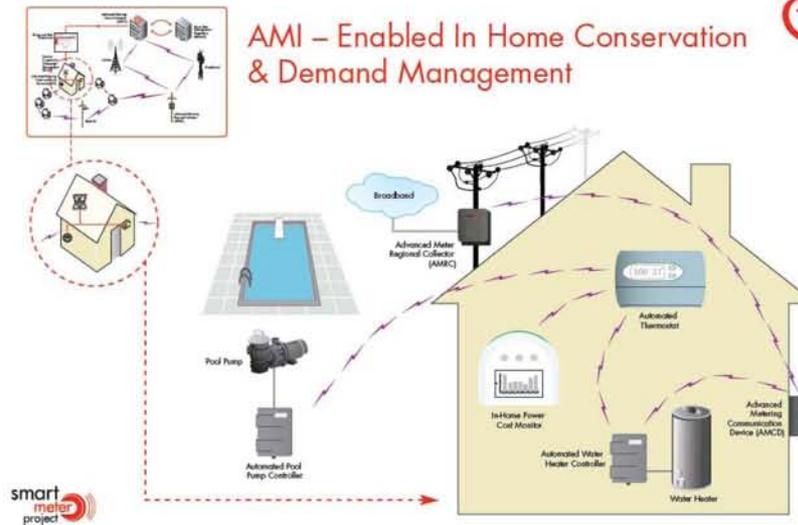


Smart Network



- ✓ Vision / BCS
- ✓ POC
- Plan → Pilot

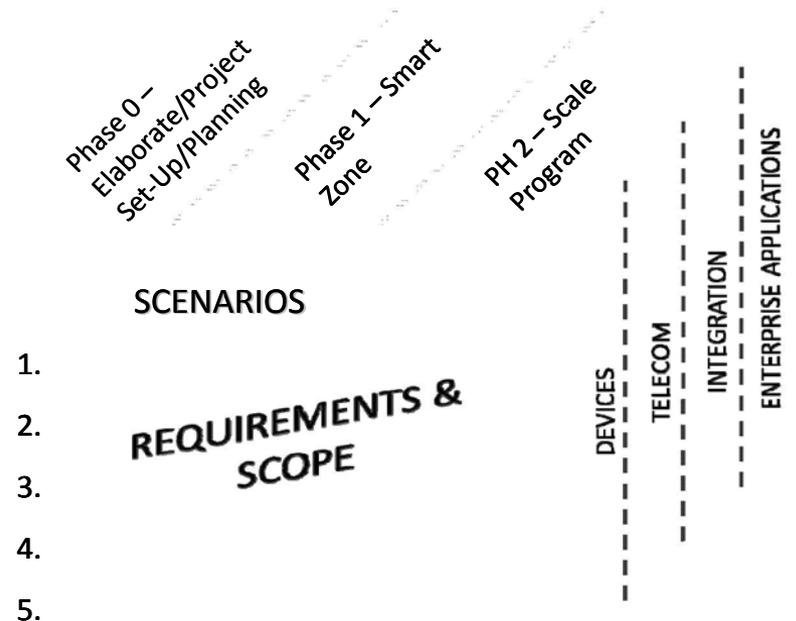
AMI - Enabled In Home Conservation & Demand Management



Key Value Release Functions

RFP Process

- Modelled on the 2005 Smart Meter RFP
 - Scenarios / Requirements
 - Solution components
 - Timeline / Phases
- Best of breed or Integrator
 - Field devices
 - Telecommunications
 - COTS / EA
 - Integration
 - Various SMEs
- Phase 0 = plan
- Phase 1 – Joint opportunity / incubate in Smart Zone Sandbox
- Phase 2 – Transition to programs



Business Scenarios

<p><i>Scenario A:</i></p> <p>DG Integration</p>	<p><i>Scenario B:</i></p> <p>Dx Reliability-Operations Improvement (OGCC Focus)</p>
<p><i>Scenario C:</i></p> <p>Outage Restoration (Field Focus)</p>	<p><i>Scenario D:</i></p> <p>Dx Network Asset Planning and Tools</p>
<p><i>Scenario E:</i></p> <p>Customer Enablement</p>	<p><i>Scenario F:</i></p> <p>PHEV</p>

SmartZone

Owen Sound Area – Zone d'essai

- Roll out of enablers - Wimax and GIS deployment
- Realize mandated programs - CDM, Smart Meter, DG
- Technology trials – GIS mapping, IED's, Mobile IT, ORMS/OMS, Dx monitor and automation, DG SCADA, customer demand response, Energy Storage
- Develop training materials and Operating procedures

Hydro One **Green Initiative**

- PHEV trial in the SmartZone
- Third Party collaboration - Realize energy savings – Res/Com
- Technology trials – CDM Controllers, Smart appliance interface

With Broadband you never know what you will see out there.....



*Connectivity has put us on the roadmap!
Thank you.*