

A Smart Energy Ecosystem

Presentation to the Ontario Smart Grid Forum

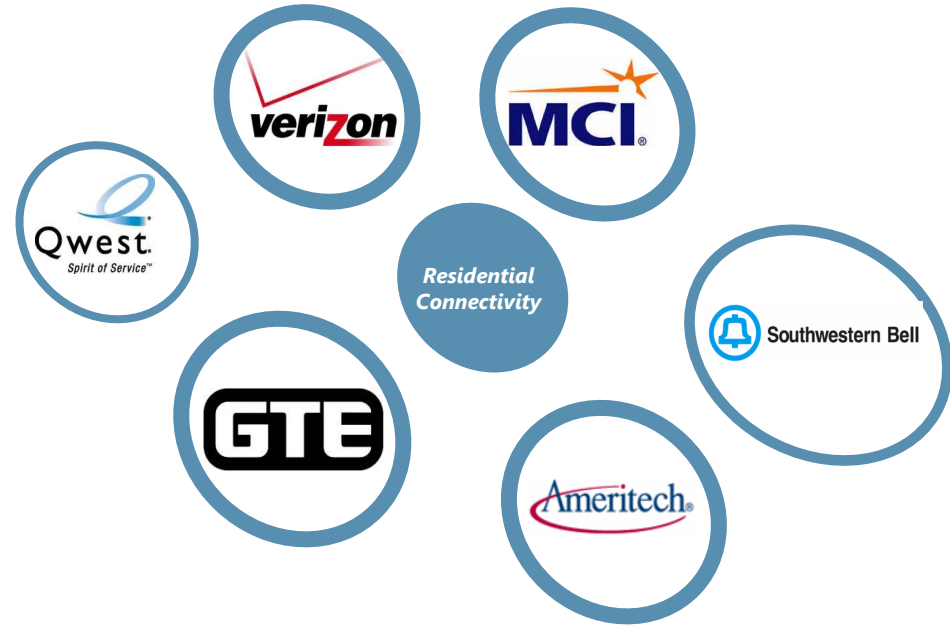
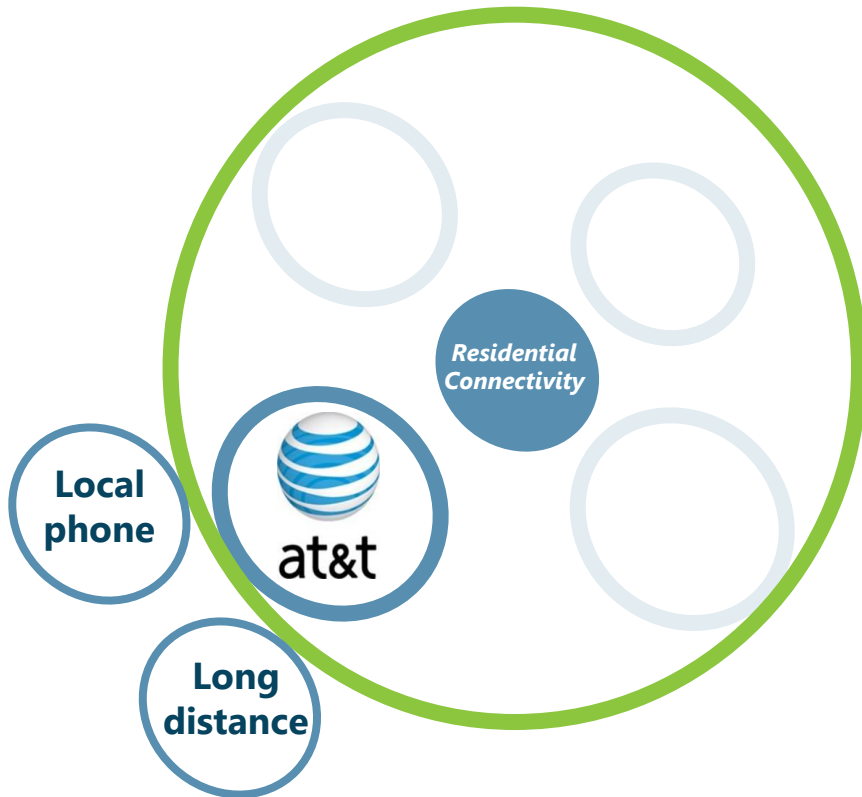
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November 25, 2008



Telco – The Ecosystem Evolution

- Circa 1980 –
- Regulatory barrier

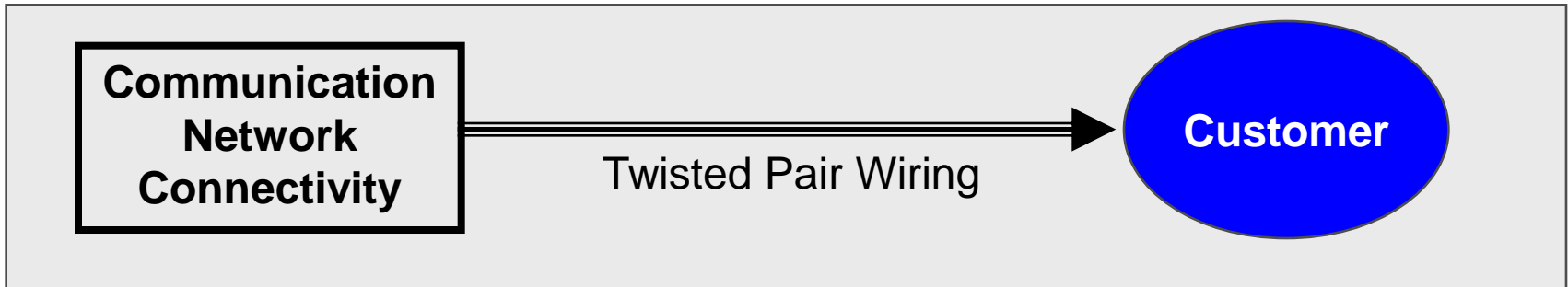


- Post AT&T breakup
- Telco - consumer choices and solution Ecosystem

Evolution of the Telco market

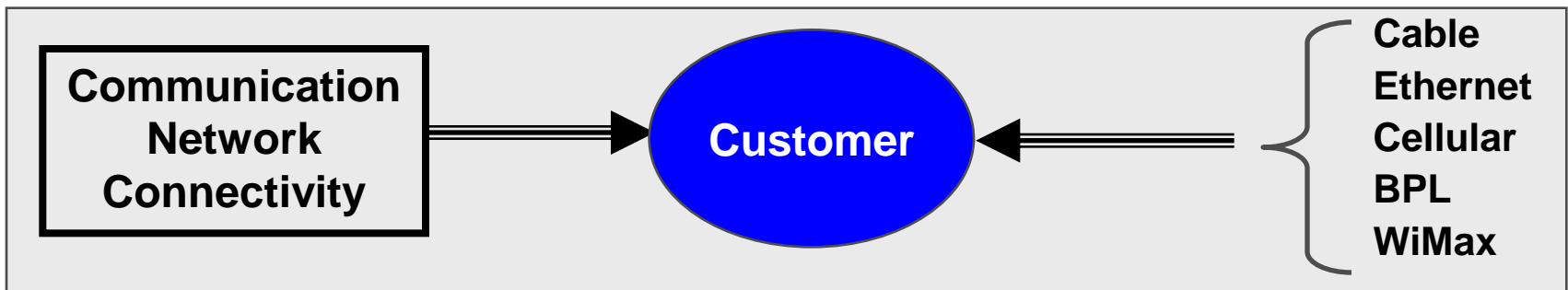
With limited sources for network connectivity, resellers' attempts to compete are limited as they work from the same cost basis and have little ability to differentiate themselves.

1984

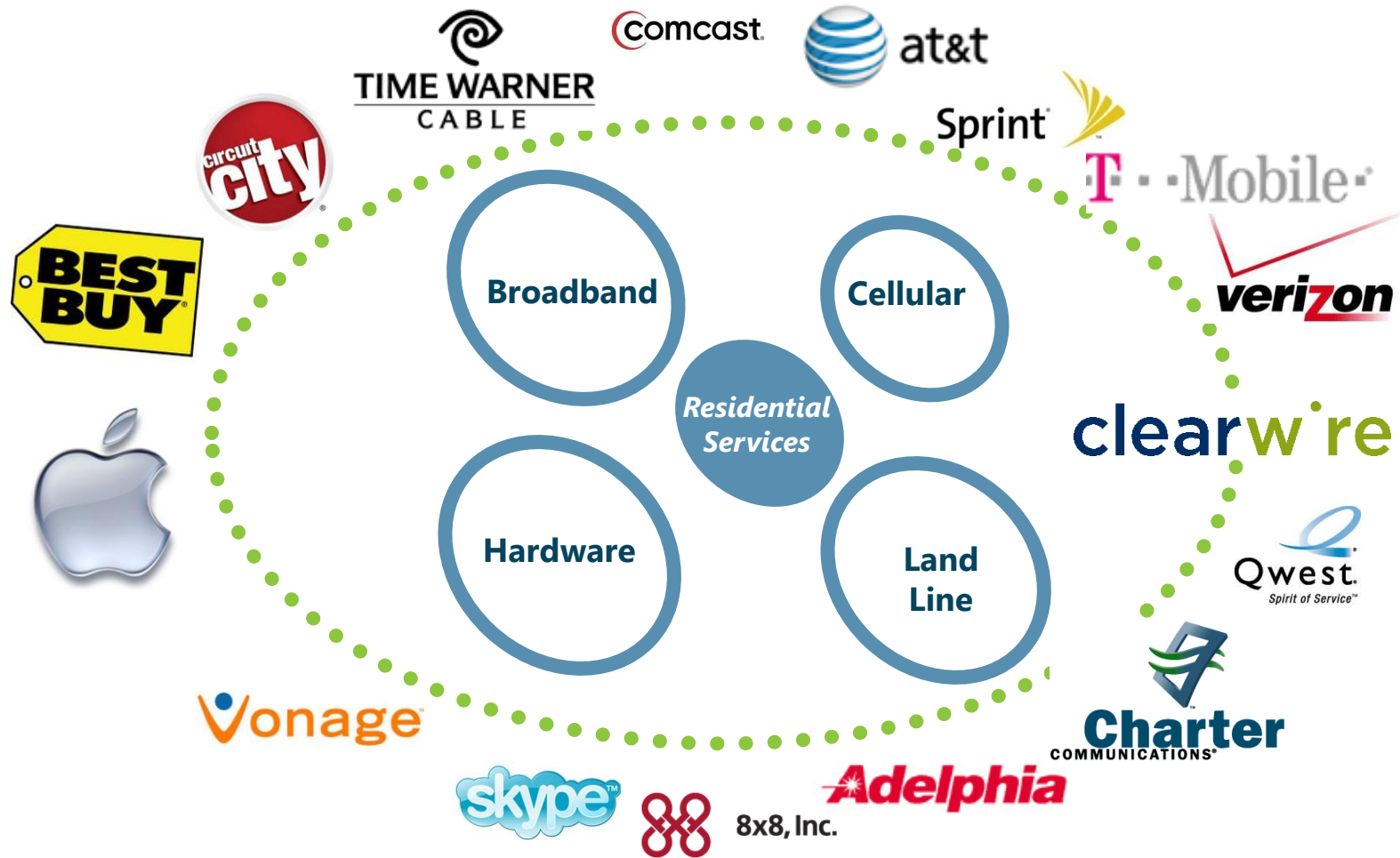


As additional forms of connectivity are introduced to the market, the competitive landscape changes dramatically, with multiple competitors able to differentiate themselves by both price and service.

Comm. Act of 1996



Ecosystem 2008 - Consumer choices and solutions



The impact of the Ecosystem expansion



at&t

(Really  Southwestern Bell)

**Local phone
Long distance
phone**

(2000)

\$51.5 B revenue

**Local phone
Long distance
phone
Internet
Wireless hotspots
Cellular
Home Security
Hardware
TV services**

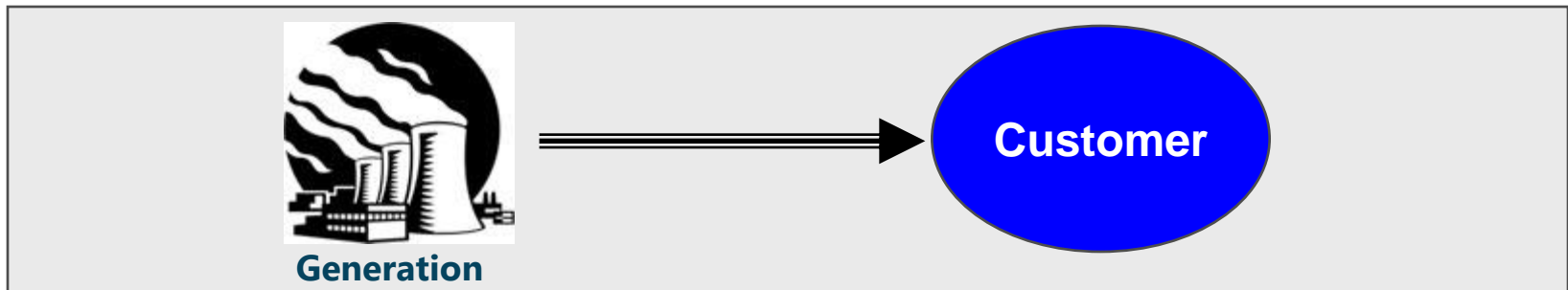
(2007)

\$119 B revenue

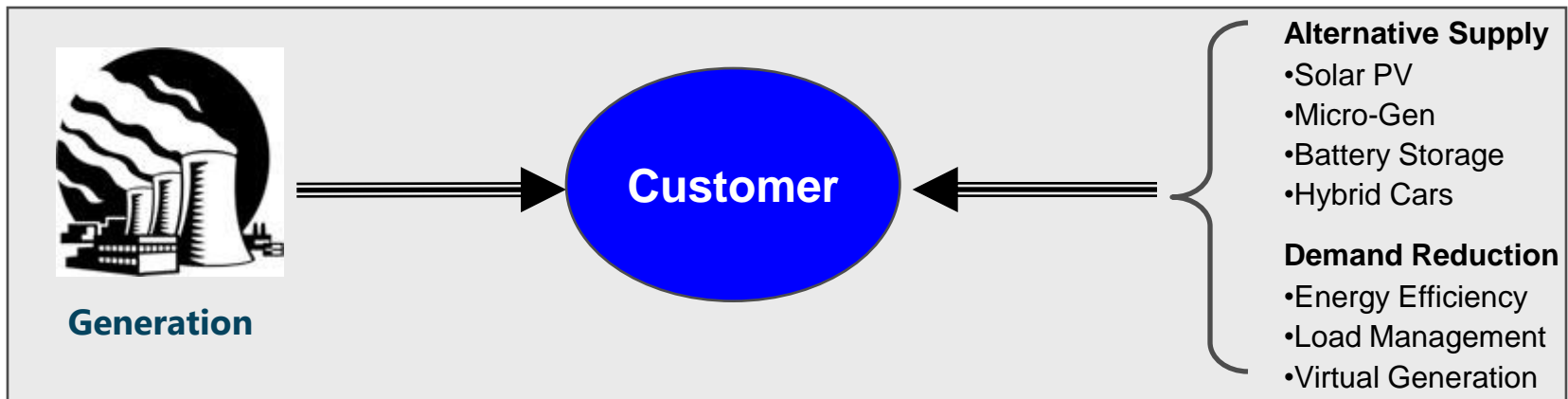
- Approximately 50% of gain through M&A
- Approximately \$30B in new products and services that did not exist in 2000

The Parallel: Telco and Energy

In much the same way that the Telco industry was constrained by a single source of communication network connectivity, the energy markets are constrained by a single source of energy supply – the generator through the local wires and poles company.

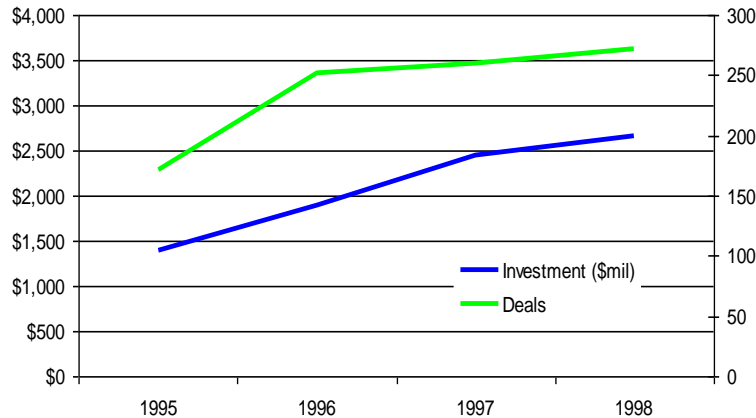


In order to relieve the constraint, alternative forms of energy supply must be introduced to the market. The alternatives can come in the form of alternative supply or demand reduction (Virtual Generation).

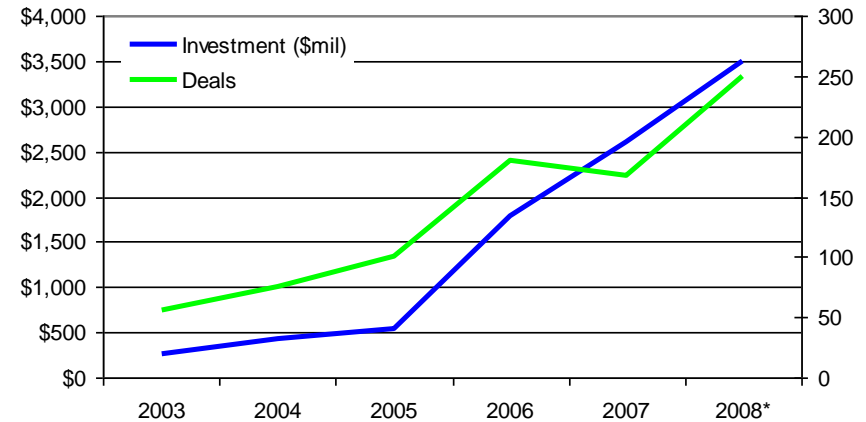


VC Investment Telecom vs Cleantech

VC Investment in Telecom 1995-98



VC Investments in Cleantech 2003-08



- VC investment in telecom peaked in 2000 just prior to rapid growth in mass markets
- VC investment in Cleantech advancing at a rapid pace although some slowing due to recent economic downturn
- VC investment in Cleantech expected to peak in 2010
- Federal and provincial subsidies will act as accelerators for innovation

Mass Market Emerging Energy Ecosystem

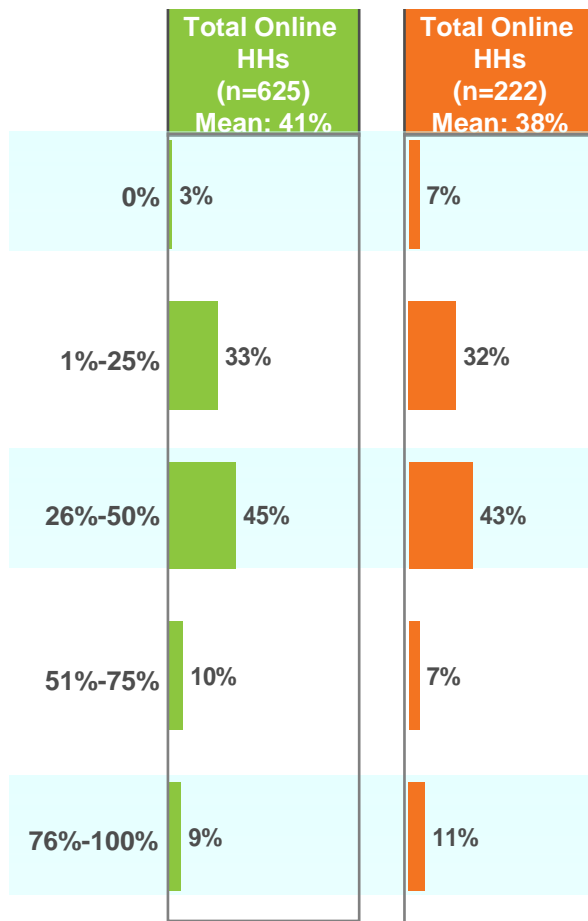


State of the Connected Home – Summary 2008

- Online consumers cite safety alerts and home energy conservation as the top benefits of having an integrated home control system that enables control/monitoring via the Internet from any device.
- Mass market consumers are a bit more positive (and less negative/more neutral) about safety/security and energy conservation than other benefits, such as one-touch control/scene setting.
- *Energy-related products and services—and one security product—are the **top-rated** concepts tested in this research.*
 - A home energy management gateway that delivers a reduction in energy costs.
 - An energy-saving power strip that allows users to turn-off devices drawing power and monitor energy usage.
 - A programmable thermostat and a home zone sensor system, both of which allow monitoring/control via computer or cell phone.
- Consumers are most able to envision adopting new products and services that are simple and compatible with their current ways of doing things.
- They warm to the idea of using technology to improve how they do specific tasks that are typically done on paper, on the phone, and/or on a computer—such as paying bills, communicating with others and managing to-do lists.
- By contrast, they have trouble envisioning how to use technology to streamline routine tasks that traditionally involve physical activity, such as lawn mowing, meal preparation, dishwashing, etc.

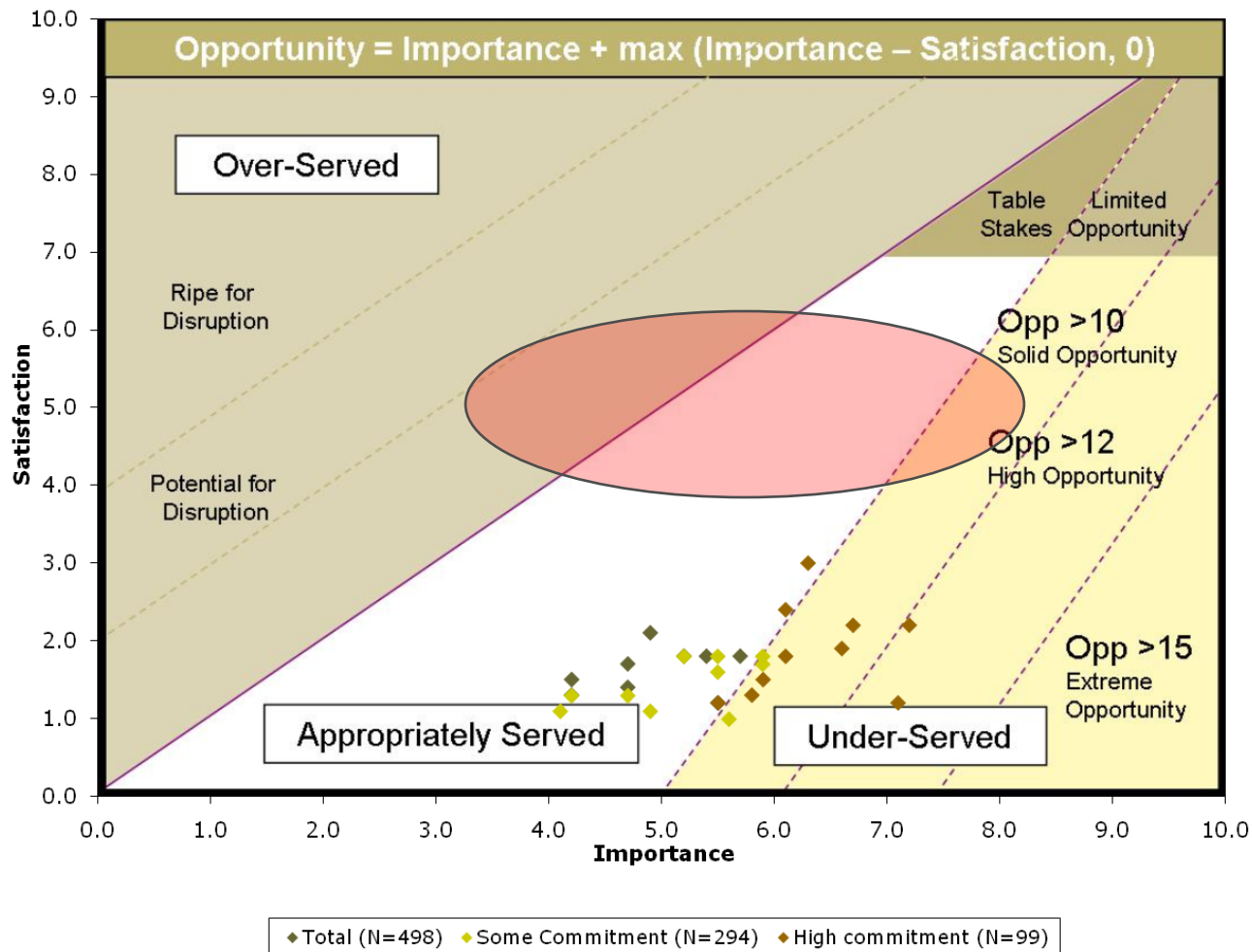
Interest in Home Energy Management System

**% Savings on Annual Home Energy Bill
Required to Consider Buying a
Home Energy Management System**



- Target consumers have high expectations for payback on investment in a home energy management system—on average, they expect to see about 40% annual savings on their home’s annual energy costs.
 - More than two-fifths expect savings in the 26-50% range.
- The average U.S. household spent \$1,493 for household fuel in 2001 (the latest year for which data are available), according to the U.S. Energy Information Administration Residential Energy Consumption Survey.
 - On average then, consumers expect to recoup at least \$600 per year from their energy bills when buying a home energy management system—likely an unrealistic expectation.
- Mass market consumers have higher expectations for payback than primary market consumers, particularly in the U.S.

Current satisfaction with home energy management systems



What is next?

- Continue to deploy AMI as rapidly as possible – this is the key enabler.
- Employ standards based open architecture to encourage innovation and non-traditional market entrants.
- Customer expectations must be met for wide scale adoption.
- Wide scale adoption will bring prices down both in the wholesale market and aggregate KWH's.