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Understanding Utility Responses to BPL

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NARUC

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Introduction

- Broadband over powerline (BPL) technologies offer new opportunities for electric utilities to leverage their infrastructure for
 - Commercial broadband communication services
 - Utility applications
 - outage detection and management,
 - automated meter reading (AMR)
 - demand response programs

Background

- BPL experience
 - Utility pilot programs
 - Deployments of commercial BPL services
- State and federal regulators have encouraged expanding reach of broadband
- Pace of utility BPL adoption slower than hoped
- Regulators question how to encourage BPL deployments

Regulatory Interest in BPL

- Regulatory interest in BPL has primarily been driven by three factors:
 - The desire for a “third wire” – a broadband alternative to cable and DSL providers that could introduce additional competition into the market;
 - The potential for BPL to extend broadband service to rural areas that are currently underserved; and
 - The potential for BPL to enable a more flexible, self-healing power grid that would be more robust in the face of either natural or man-made disasters, including terrorist attacks

Objectives and Approach

- National Association of Regulatory Utility Commissions (NARUC) asked EPRI to help better understand utility responses to BPL
- EPRI conducted
 - literature search
 - interviews with utilities
 - some who have embraced BPL
 - some not

Key Questions

- Why some utilities embrace BPL while others are uninterested – even in the same regulatory environment?
- Why some utilities focus primarily on internal applications of BPL (i.e., smart grid) and others view it primarily in terms of offering broadband communications services?
- Do the benefits of BPL for internal utility applications in fact outweigh the costs?

Key References Cited

- Clark Gellings and Karen George, *Broadband Over Powerline 2004: Technology and Prospects*. An EPRI white paper, 2004
- Karen George, *BPL Market Update and Teleconference Highlights*. A Primen Customer Insights Perspective (CI-PP-10), 2004
- *Consumer Portal Telecommunications Technology Assessment (DRAFT, v2)*. EPRI, 2005
- BPL coverage in mainstream and industry press
- BPL providers websites

Utilities Interviewed

- **Cinergy**--*Greg Wolf, VP, Cinergy Ventures*
 - Largest commercial BPL deployment
- **Consumers Energy**--*Gerry Wyse, Manager of Distribution Planning and Performance*
 - Commercial broadband pilot
- **South Central Indiana REMC**--*Kevin Sump, CEO*
 - Commercial broadband deployment
- **Con Edison**—*Tim Frost, Director of Corporate Planning*
 - BPL viewed as utility application
- **Central Hudson Gas & Electric** —*John Chrysler, R&D Administrator*
 - Study led to conclusion not to pursue BPL
- **First Energy** —*Eileen Buzzelli, Managing Director, New Products*
 - Measured approach for piloting BPL

Characteristics of Enthusiastic BPL Utilities

- **Municipal utility status**
 - They face fewer regulatory uncertainties
 - There is only one set of stakeholders– the municipality’s ratepayers/taxpayers/citizens
- **Geographically compact service territories** that make deployments more cost-effective
- **Existing fiber networks** that the utility can leverage such as those of Cinergy and PPL
- **Significant potential for broadband service growth**
- **A successful history of offering services other than commodity electric power**

Commercial Services vs. Utility Applications

Commercial service

- Strategic commitment to new services and technology investments by senior management
- Unregulated subsidiary to pursue new opportunities
- BPL service providers partnering with utilities and assuming risk

Utility application

- To stay close to their core business and “what they know”

Cost-Effectiveness of BPL for Utility Applications

- High deployment cost
- BPL ranked eighth of nine technologies for wide-area networks (WANs) in IntelliGrid architecture
- Low marks on standardization and use of object modeling (tied to lack of technical maturity)

Utility Applications Criteria

- Level of standardization
- Ease of obtaining and using the technology
- Current level of adoption
- Degree of users' group support
- Security
- Manageability
- Scalability
- Use of object modeling
- Use of self-description or meta-data
- Applicability to the power industry
- Applicability to consumer services

Other Concerns With BPL

- Lack of electrical current (power outage) disrupts some advanced IntelliGrid functions that wide-area networks would be intended to enable
 - Load shedding in an emergency situation with a finer degree of control than is currently possible,
 - Load redistribution by using demand response customers as a “fast reserve,”
 - Monitoring and controlling distributed generation at a customer’s site
- Alternative technologies such as WiMAX, radio frequency, paging, or wireless communications could still be active in case of a power outage

Why Some Utilities Are Moving Slowly on BPL Deployment

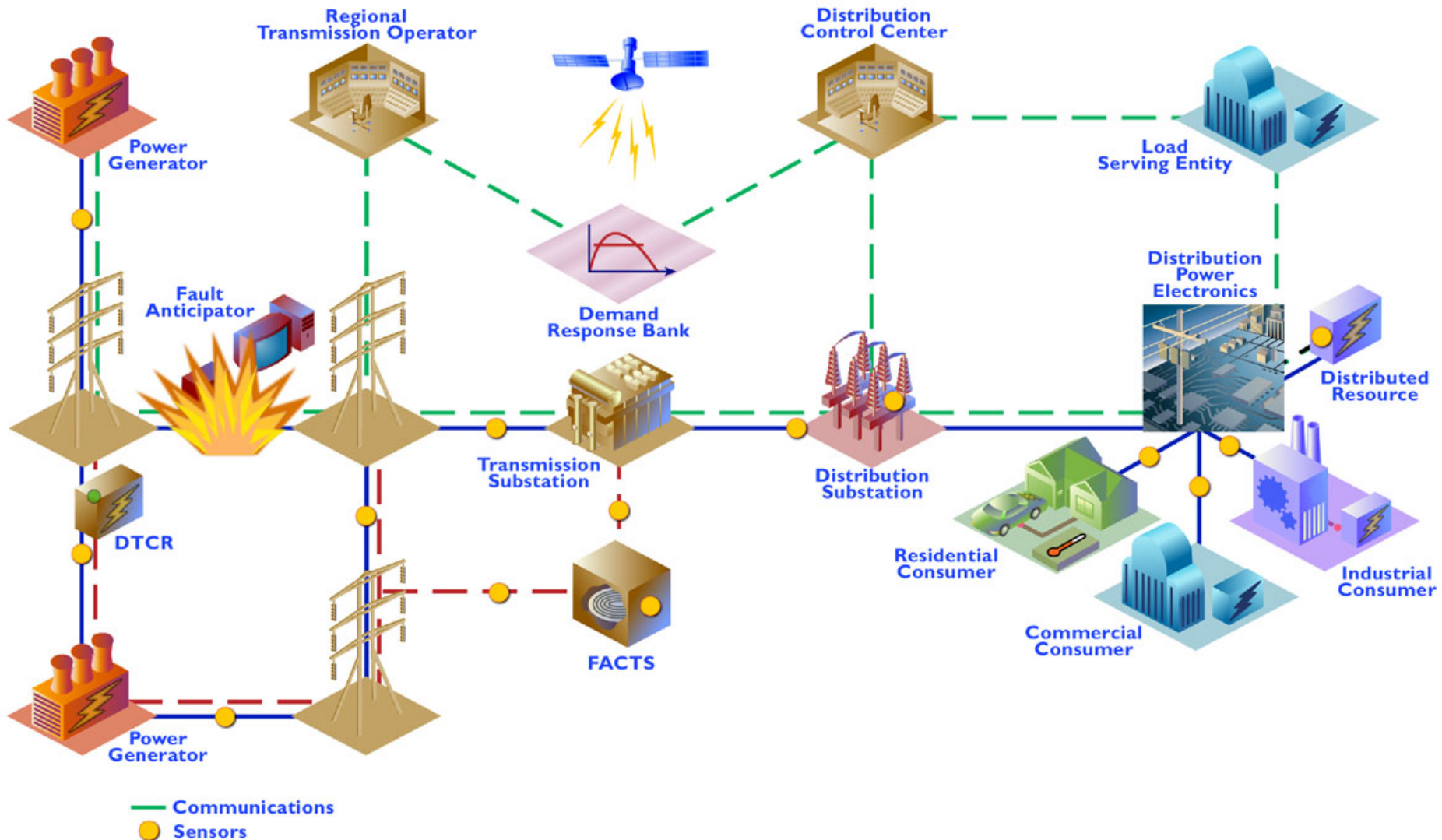
- Risk aversion
 - Smaller utility: Don't have resources to risk being on "bleeding edge" of technology deployment
 - Larger utility: "Careful pilots, careful implementation"
 - Business models not proven
- Questions remain about technology
 - Quality compared with other broadband technologies
 - Live up to hype? "*Show me what it can do*"
 - Scaling issues
 - Integration with meters a problem

Conclusions

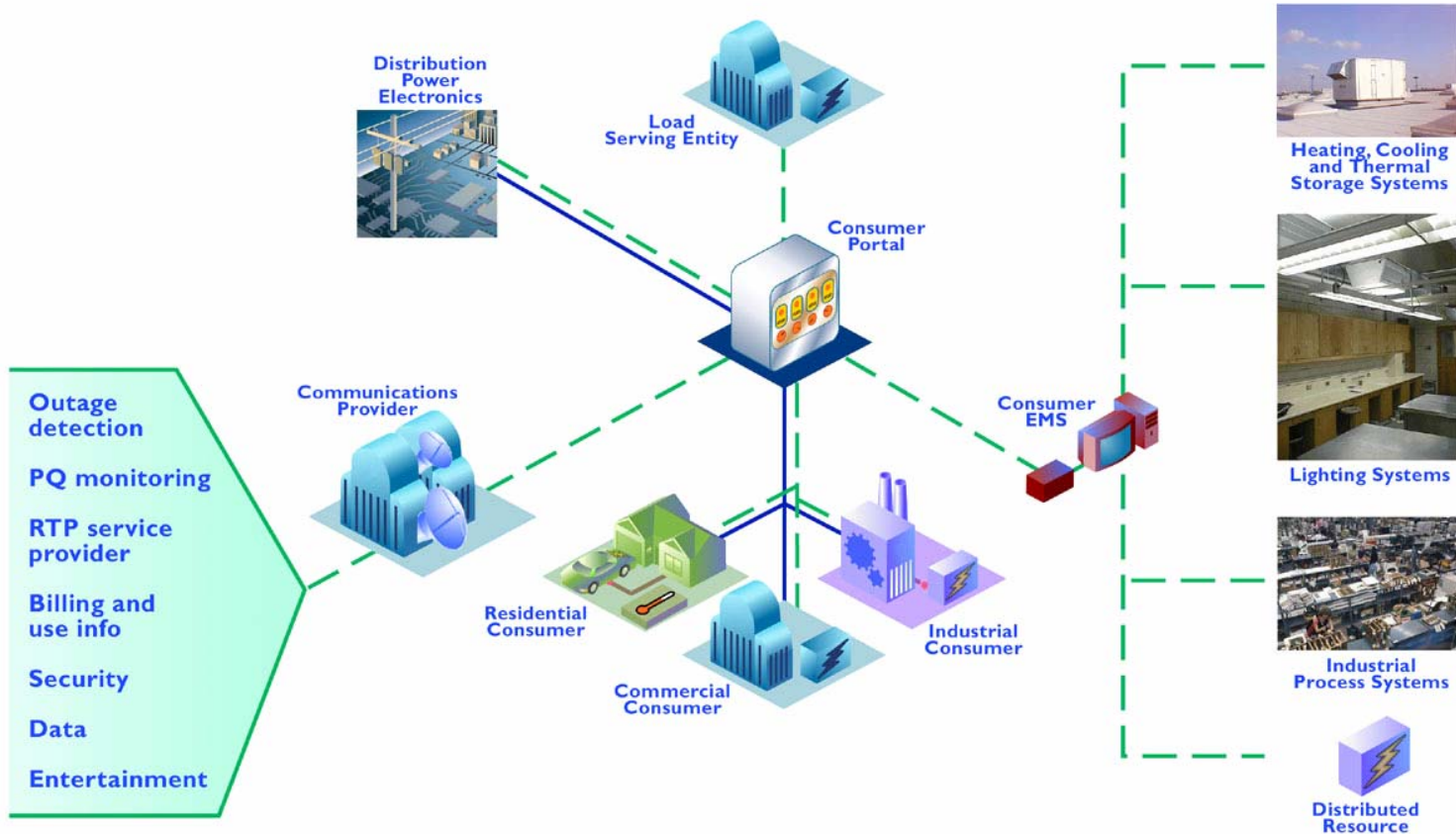
- Regulatory matters are not a strong driver to BPL responses
- Strong drivers:
 - Management approach to new business opportunities and risk; CEO philosophy
 - Technical characteristics of BPL
 - Business considerations
 - ROI
 - Risk tolerance

Responses are driven by individual company attitudes and business performance measures

The Grid of the Future: IntelliGrid



The Consumer Portal



“A combination of hardware and software that enables two-way communication between energy service organizations and equipment within the consumers’ premises.”

Technical Issues

- **Some Remain:**
 - **Standardization**
 - **Compatibility with new classes of assets**
 - **Radiated Noise?**
- **One Approach:**
 - **Interest Group forming to address long term technical issues**
- **Interested?**
 - **Contact MLAUBY@epri.com**

