

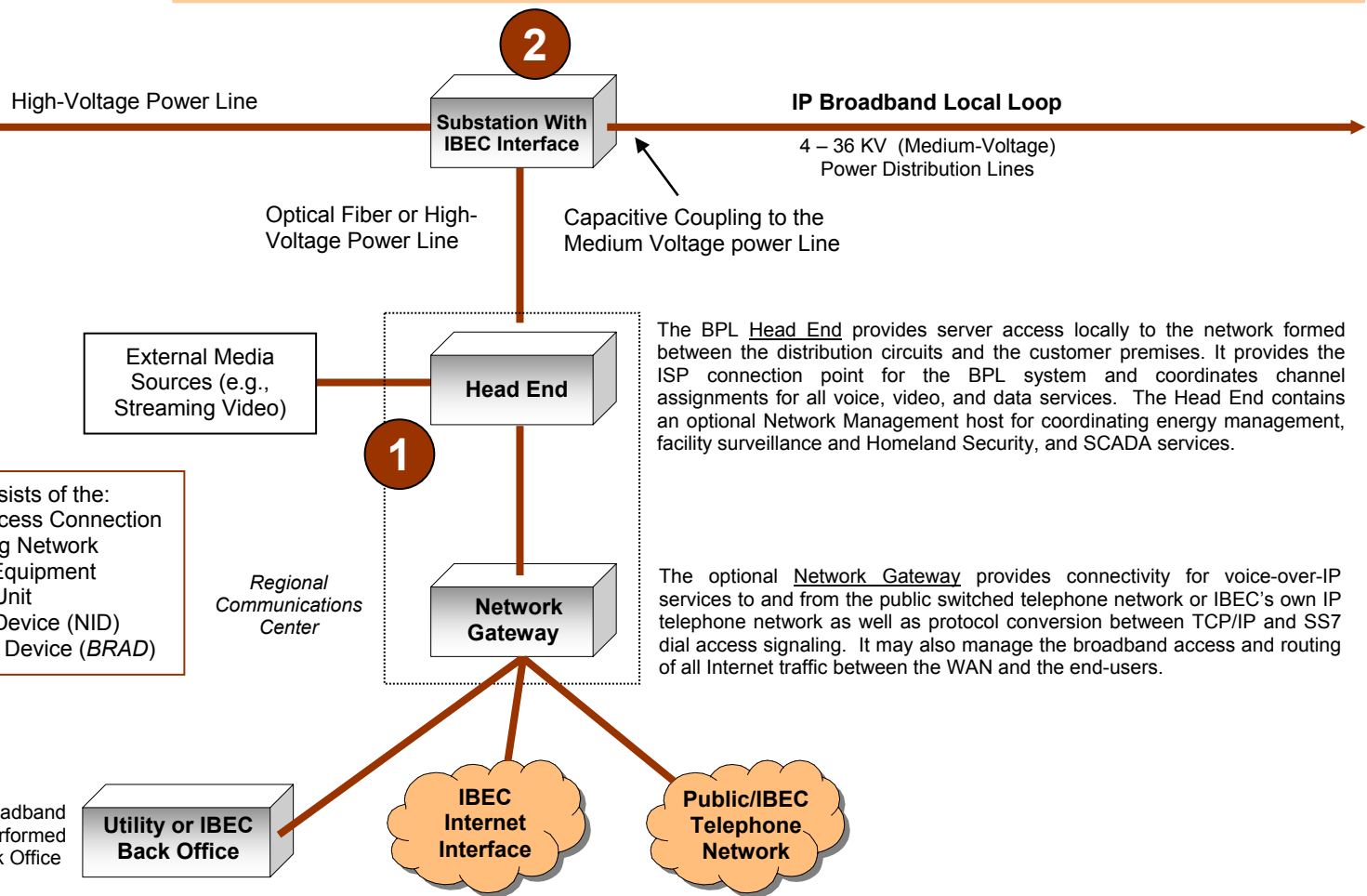
# IBEC BROADBAND-OVER-POWERLINE (BPL) ARCHITECTURE AND TECHNOLOGY

Economical Broadband Access for Home and Business Subscribers Everywhere

High-speed, high-quality, IP-based broadband Internet over the existing electric power distribution network

- Data
- Voice
- Video

The IBEC System is fully HomePlug Powerline Alliance (HPA) compliant and is architecturally similar to that of a two-way, hybrid fiber/coax cable data system. It uses the existing components already installed in the medium-voltage electrical power network, allowing cost-effective and rapid deployment. Broadband Internet access is available directly at the customer's power outlet or wirelessly to the personal computer, providing maximum flexibility and eliminating the need for any new wires. This same network provides broadband internal utility and security applications. IBEC is uniquely positioned to provide these services to utility customers via the power lines.



- The IBEC System consists of the:
1. Head End / ISP Access Connection
  2. Substation Coupling Network
  3. Line Conditioning Equipment
  4. Customer Access Unit
  5. Network Interface Device (NID)
  6. Broadband Access Device (BRAD)

Customer billing and broadband account services are performed in the Utility or IBEC Back Office

The BPL Head End provides server access locally to the network formed between the distribution circuits and the customer premises. It provides the ISP connection point for the BPL system and coordinates channel assignments for all voice, video, and data services. The Head End contains an optional Network Management host for coordinating energy management, facility surveillance and Homeland Security, and SCADA services.

The optional Network Gateway provides connectivity for voice-over-IP services to and from the public switched telephone network or IBEC's own IP telephone network as well as protocol conversion between TCP/IP and SS7 dial access signaling. It may also manage the broadband access and routing of all Internet traffic between the WAN and the end-users.

## IBEC BROADBAND-OVER-POWERLINE ARCHITECTURE AND TECHNOLOGY

Powerful Network Management, SCADA, AMR, and Security Systems for Electric Utilities

Within the medium-voltage network, BPL can be used for internal utility purposes such as AMR, SCADA, system management and control, and the critical application of video surveillance and asset security. Broadband end-user Internet access is provided to the customer's power outlet or via Wi-Fi.

