Alan Shark, chair for this meeting, called the meeting to order at 9:10 a.m. All attendees introduced themselves.

Alan advised those present of an FCC rulemaking to take place tomorrow, 14 October, that will affect this work and the balance of interests involved. He also advised that a PCLA conference will take place 28-29 October 2004 in Old Town Alexandria, Virginia; the program is available at www.plca.net.

1. **Goal(s) for this meeting**

   a) Develop a set of recommendations for the IEEE  
   b) Compile a report and conclude with recommendations  
   c) Moving forward with a unified effort  
   d) A roadmap is required

The role of the IEEE Standards Association was discussed, including the requirement of a sponsor(s) (society, etc.) for a standards project. A defined scope of work is also required before the IEEE-SA or societies can commit resources. Don Heirman, IEEE-SA President Elect, also cautioned about restraint of trade issues, and to avoid discussion about costs, industry alliances, etc.

Collaboration is required within the IEEE Society structure. Primary involvement is with the Power Engineering Society (PES) Power System Communication Committee (PSCC), Power System Relaying Committee (PSRC), and Transmission and Distribution Committee (T&D), the IEEE Communications Society (ComSoc), and the Electromagnetic Compatability Society (EMC). Another affected society is the IEEE Antennas and Propagation (AP) Society.

Key parameters should be defined and then determine the appropriate place within the IEEE structure for work to be developed.

The development of a white paper, as determined at the July 2004 meeting, was discussed. An overarching white paper is needed to provide a road map for determination of necessary standardization.

It was requested that the BPL website hosted by the IEEE be easier to locate on the IEEE-SA website. The url for the BPL website is http://grouper.ieee.org/groups/bl/
2. Presentations were given by the following: (rough summary notes follow)

**Ed Hare, ARRL**
“Analysis of Differences of Opinion.” There is a conflict between people who use test equipment and people who use receivers to measure emissions. There are differences between the point source and line source (peak).

ARRL position is that differences are a matter of incomplete perspective. The solution to any problem does not come from incomplete engineering. Limits are set arbitrarily high, which measurements fall within range. Limits need to be tightened under the protection for “harmful interference.” Ed indicated that issues should be addressed through normal channels, via cooperation.

BPL standards must appropriately address EMC issues. The IEEE EMC Society should be directly involved in the EMC aspects of any IEEE standards affecting the BPL industry. The EMC components of a standard should balance the needs of the BPL industry to have a workable environment in which to manufacture and market BPL technology with the need for licensed radio services to operate in a house environment that does not result in harmful interference.

Recommendation – Ed’s recommendation is to refer this to IEEE-EMC, the goal for that body to set a level to which most interference can be eliminated.

**Alex Gelman, Panasonic**
The power meter is a natural candidate for the residential gateway. Panasonic says QoS must be preserved in the home, with the home network taking priority, and whatever else is provided with remaining bandwidth.

Panasonic sees three levels of BPL:

Economy (mass market) 64-384 kb/s  
Business class (selected markets) - 1-2 Mb/s  
Premium (not practical for mass market) - 10 Mb/s, QoS

Consumer-centric case for standardization:  
-90% of consumers not networked today  
-BPL promises mass market more than any other access technology due to ubiquity.

Alex proposed a recommendation that a report be completed for the IEEE-SA, including BPL MAC and physical layers, interference management, and safety standards.

**Aron Viner**
Aron prepared a table listing global standards that are applicable. It was recommended that this table be appended to the report, labeled that these standards “may apply.” Also need to confirm with listed organizations on the table that they are indeed in the works.
John identified the following areas needed for standardization:

- **Construction and safety, P1675 (IEEE PES/PSCC)**
- **Media** – whether this topic can or should develop a standard is open to debate; however, a practice or guide would be of use to the industry. Recommend to give to IEEE Antennas and Propagation Society and PES T&D working groups.
- **Physical layer and MAC layer** – operational chairs of BPL systems, from the ISP to the in-house modem. Standardization of modem, network architectures, etc. would be covered under these standards. Most likely area for a standard on frequency coordination with HomePlug. Recommend IEEE ComSoc to take lead on this.
- **Emissions** – question of whether a standard, practice, or guide would be the best vehicle. Primarily working group would provide information on testing methods used to assure compatibility with FCC rulings on BPL emissions. Recommend IEEE EMC and IEEE PES/PSCC.

**Mike Macenka, PPL**

Mike discussed electric utility goals and interfacing BPL with the electric grid. Broadband is treated as a foreign attachment. Broadband needs to acquire its own right of way.

**Integration standards**

1. equipment standards—equipment made to consumer standards and large protective box eats up space on poles
2. NESC standards
3. product testing
4. installation issues
5. service restoration and maintenance

Include in white paper the enhanced utility operations which add benefit in terms of utility management thus making interface with Electric Utility much more attractive for BPL. (Amperion slide – Bruce Renz)

**Oleg Logvinov, HomePlug**

Co-existence—a level of services

“Standards provide the fundamental framework within which all of these competing services can co-exist without interfering with one another.”

HomePlug AV is in the final stage of the spec development. Access and in-home must be managed so they do not collide.

### 3. Study Group Continuity/Leadership

Discussion on the continuity of the study group took place. A straw vote was taken on the appropriate leadership: should there be a rotating (co-chair) arrangement (7 votes), or a permanent chair (8 votes)? It was determined that Brett Kilbourne will chair the next meeting, and a decision will be made at the next meeting to select a permanent chair or keep rotating chairs.
Those present at the meeting with IEEE Society roles, offices, or affiliations are asked to communicate what has been identified at this meeting for work intended for a particular society to that society for action.

The group was advised by Edward Rashba, Manager, New Technical Programs, IEEE-SA, that it is within this group’s purview to develop appropriate scope(s) for project(s) for completion of an IEEE Project Authorization Request (PAR). A PAR is the mechanism for submitting a proposed standards project to the IEEE for approval under the procedures of the IEEE Standards Association.

4. Deliverables
It was determined that the study group will pursue two deliverables:

1) a recommendation to the IEEE outlining work to be pursued;
2) a white paper on BPL, defined at the July 2004 meeting as “a united IEEE position on the state of technology, service and supplier values chains and IEEE-SA’s role in standardization of core technology.”

Recommendations for standardization, including persons responsible and society sponsorship to be pursued, are identified as follows:

1) Emissions (Jean-Philippe Faure, Jeff Boksiner), EMC, PES
   a. Measurement and mitigation
   b. Immunity
   c. Compatibility with wireline services
2) MAC and PHY (Victor Dominguez, Oleg Logvinov), ComSoc
3) Safety and construction, P1675 (Terry Burns, Yehuda Cern) PES/PSCC
4) Media (Aron Viner, Bruce Renz) APS, T&D
   a. Channel characterization
   b. Topologies
5) Education – (John Newberry), IEEE/Education

Schedule for Development of the Recommendation to the IEEE-SA:
- One page or less, including background, should be developed for each topic.
- Attachments can be included. All input shall be submitted to Brett Kilbourne (brett.kilbourne@UPLC.ORG)
- Due date for this information is Tuesday, 27 October 2004, at 5:00 pm EST.
- Brett will prepare the recommendation and submit to the larger body for review by 3 November 2004
- Brett will submit to Sue Vogel for transmittal to the IEEE-SA Standards Board chair by 10 November 2004

Schedule for Development of White Paper
The white paper input is outlined as follows from the 20 July meeting:

3.1 Discovery/positions of stakeholders (include summary of each position) – Alan Shark
   - Amateur radio concerns (Paul Rinaldo)
• Safety (Yehuda Cern)
• Access/in-home compatibility (Oleg Logvinov)
• Service management (ISP, utility, ASP, CP supplier) (Brian Wenger)
• Compatibility with other wireline services (DSL, cable, etc.) (Jeff Boksiner)
• Technology suppliers (open call) (Jim Mollenkopf)
• Compatibility with utility distribution systems (Mike Macenka)
• PLC professional profile (John Newbury)
• Security and privacy, authentication (Brian Wenger)
• Compatibility with wireless services (Fred Marks*)

*tentative

3.2 BPL

3.2.1 Use Cases
- Consumer (Alex Gelman)
- Business (Keith Brightfield)
- Utility services (Ram Rao, Bruce Renz)

3.2.2 Possible service architectures and service value chains (Keith Brightfield)
(open access, last mile, transformer bypass vs transmission through the transformer, backhaul, resilience)

3.2.3 System elements and associated possible service value chains (Victor Dominguez Richards)
(OSS, EMS, NMS, data collection, ISP equipment, couplers, network nodes, CPE, chip sets, power distribution equipment [separable connectors, power cable, fuse disconnect]
OSS = provisioning installation, fault isolation, network planning, SLA’s

3.2.4 PLC and other applicable standards and specifications map (Aron Viner)
regulatory map (quantifiable data only – no value add)

3.3 Recommendation for IEEE-SA role (Terry Burns)
Existing projects (PES P1675; others?)
Future projects

Brett Kilbourne will be the coordinator for the white paper. Deadlines are as follows:
- Submit all input for white paper to Brett by 8 December 2004.
- Brett will complete compilation by 12/15, and submit to the larger group for review.
- Comments are due back from the group by 1 January 2005.

4. Next Meeting
The next meeting of the IEEE BPL Study Group is scheduled as follows:

Friday, January 14, 2005, 9:00am – 5:00 pm
Marriott del Mar, San Diego, CA
In conjunction with IEEE PES/PSRC meeting

5. Adjournment
The meeting was adjourned at 4:00 pm.