



# Home Energy Management Systems and Reduced Consumption

IBACOS, Inc., Duncan Prahll

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# Context

- In a world of overload, people don't want to think.
- More and more things can communicate independently of people.
- People adopt technology that makes their life simpler or meets a need.
- Technology becomes obsolete
  - Betamax → VHS → DVD → streaming to computer → streaming to web-enabled TV → streaming to iPad/phone.





## Technical Approach

- Observation of a field trial of a system that uses cloud-based computing and two-way communications to better control systems in the house
- Realized 7% annual savings simply from intelligent control of the HVAC system

## Recommended Guidance

- When it comes to AHEM, don't invest in hardware-driven systems that require the customer (or a technician) to program them.
- The power will be in the analytics and control algorithms.
- Uncertainty still exists relative to “winners and losers.”
- Networking protocols.
  - Zigbee vs. Z-Wave vs. IPv6.

## Value

- Utilities will likely drive this market for overall control of system and usage (peak).
- System does all the thinking for the customer.
- System allows predictive failure analysis and out-of-range operation.
- System can “audit” the house through energy consumption analysis if everything that uses energy is able to be tracked.





## Market Readiness

- E3 is launching a 600-home pilot program at Fort Campbell, Kentucky, in Q4 of 2012.
- Consort running pilots/commercialization in a number of markets with utilities.
- Not really applicable to the individual consumer or builder.

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# Pros and Cons

- Pros:
  - Ease of use for consumer
  - Saves energy
  - Predictive abilities
- Cons
  - Companies seem to be startups (but big companies are watching)
  - Typically available only through large mass purchase from someone with a vested interest (e.g., utility, rental property owner with utility included rents / master meter)
  - Proprietary vs. open protocols and solutions



## References

- [http://en.wikipedia.org/wiki/IEEE\\_802.15.4](http://en.wikipedia.org/wiki/IEEE_802.15.4)
- <http://en.wikipedia.org/wiki/IPv6>
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