



Home Performance Coalition

Key Energy Efficiency Policy, Program and
Technology Trends in U.S. Residential and
Commercial Buildings

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- **A merger of two existing organizations:**
 - Affordable Comfort, Inc. (ACI)
 - The National Home Performance Council (NHPC)
- **With formal MOUs and sub-Agreements with:**
 - Efficiency First (EF)
 - Building Performance Institute (BPI)
- **Mission and Objective:**
 - To unite the many voices of the home performance and weatherization industry to create energy-efficient, healthy, sustainable homes through education, training, advocacy, and outreach.

General Trends in the Building Arena

- Building energy statistics: 33% and \$300B to \$680B
- Rural population movement to cities; strong in developing countries and Asia in particular
- Electrification of buildings is increasing; sensors & controls add new dimension
- Building Energy Codes becoming more stringent and proliferating and Building labels, voluntary and mandatory, are increasing
- More integration of solar PV and thermal as well as other renewables into buildings
- Innovative financing for “Green Buildings” expanding



Implications of Trends

- Rural to Urban population movement
 - Cities become denser as commercial and residential buildings fill in city centers
 - Cities experience sprawl at the same time as outer areas are developed
 - Infrastructure demand becomes critical; roads, light rail, subways as well as energy, water, and health demand rises
- Therefore, Energy Efficiency must be integrated into city planning as the key to meeting the increasing energy demand



Implications of Trends

- Electrification of buildings is increasing
 - Air conditioning in buildings rising throughout the world
 - Electric appliances and equipment increasing the plug load
 - Whole Building retrofits of existing buildings increasing; ESCO opportunities exist
 - More innovative building design and energy storage leading to more building efficiency
- Coupling energy efficiency with renewables leads to Net Zero Energy Buildings



Implications of Trends

- Building Energy Efficiency Codes becoming more stringent and proliferating and Building labels, voluntary and mandatory, are increasing
 - U.S. BEEC increased 30% btw 2006 & 2012
 - Singapore's Green Mark program began in 2005; 17 Green buildings then, 2,300 now
 - BEECs originally prescriptive; now some have performance pathways – compliance issues abound
 - Building labels; Asset, Operational, or both



Implications of Trends

- More integration of solar PV and thermal as well as other renewables into buildings
 - Solar PV generation cost now approximately U.S. .10/kWh (less than oil)
 - With net-metering, PV helps manage demand and lowers/slows utility generation investment
 - Battery storage offers commercial buildings opportunity to cut grid purchased electricity by 75%
 - Coupled with aggressive energy efficiency, a pathway to Net Zero Energy Buildings exists



Implications of Trends

- Innovative financing for “Green Buildings” expanding rapidly
 - Value of Energy Efficiency more than just the resulting cost reduction
 - U.S. utility energy efficiency programs still growing (\$7 Billion)
 - Innovative private financing schemes increasing



Concluding Thoughts

- Energy Efficiency in Buildings will continue to grow & be critical to countries' EE programs
- More collaboration on building energy efficiency programs, ideas, research, education & training and policies among countries
- Energy Efficiency will be broadly recognized as the key solution to many societal problems related to energy production and consumption
- Energy Efficiency's role in GHG reductions will further increase its value world-wide



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Thank you!

- Supporting interoperability and reducing program costs through development of national data standards
- Making the value of energy efficient homes visible in the real estate transaction
- Finding intersections between smart grid and device technologies and home performance
- **Reforming cost-effectiveness screening practices**