資料2

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Innovative techologies and designs for profitable low-carbon society

エイモリ・B・ロビンス

Amory B. Lovins, Chairman and Chief Scientist

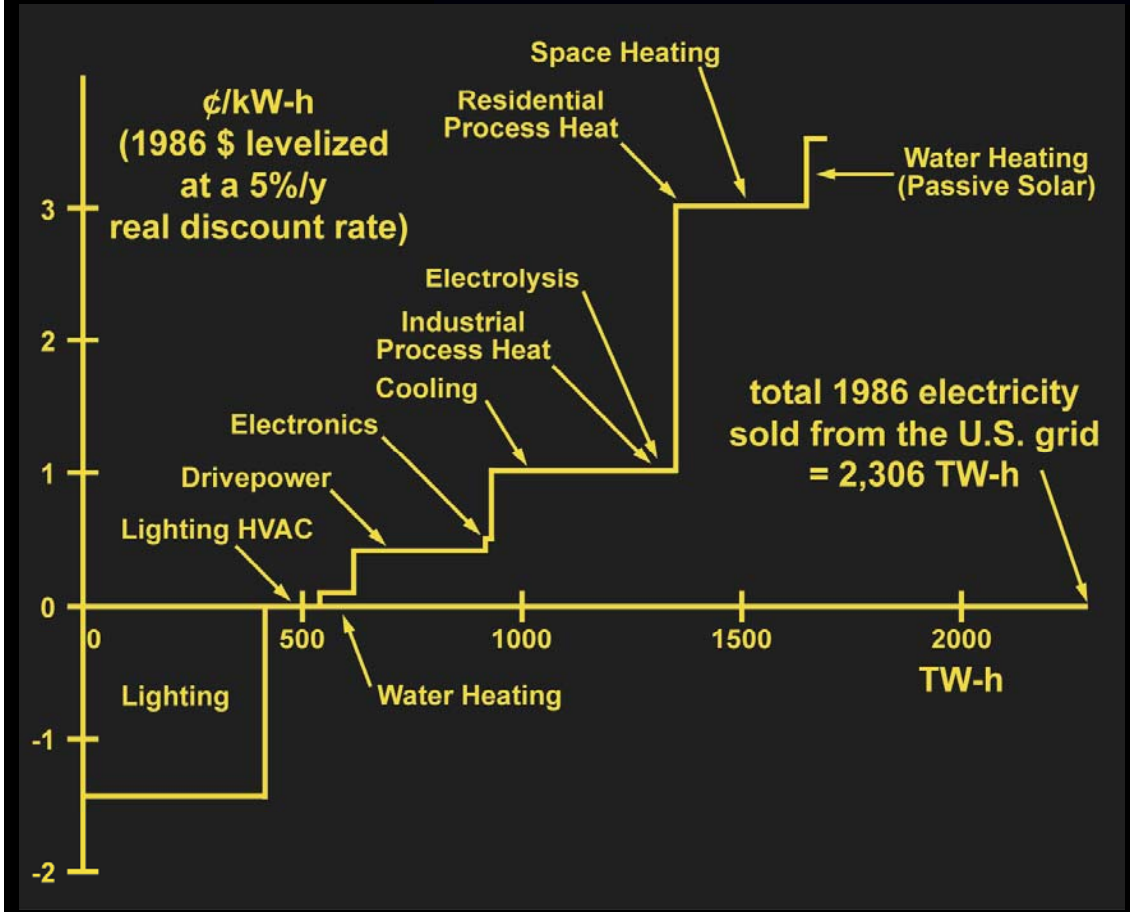
Rocky Mountain Institute, www.rmi.org

ablovins@rmi.org

What has reduced energy intensity already done? What more can it do?

- During 1975–2006, the U.S. made a dollar of real GDP with 48% less total energy, 54% less oil, 64% less directly used natural gas, 17% less electricity, and two-thirds less water
  - Despite stagnant light-vehicle efficiency for >20 years, and perverse incentives rewarding electricity sales in 48 states
  - Nobody noticed: U.S. hasn't paid attention since the mid-1980s
- Today's best end-use efficiencies could deliver better U.S. energy services at 1/6 the cost while saving:
  - half the oil, at a sixth of its world price
  - half the natural gas, at an eighth of its U.S. price
  - three-fourths of the electricity, at an eighth of its U.S. av. price
- NIES: "Japan has the technological potential to reduce its CO_2 emissions by 70% compared to the 1990 level, while satisfying the expected demand for energy services in 2050." Extra cost: ~0.1% of GDP

1989 supply curve for saveable U.S. electricity (*vs.* 1986 frozen efficiency)



Best 1989 commercially available, retrofittable technologies

EPRI found 40–60% saving 2000 potential

Similar S, DK, D, UK…

Now conservative: savings keep getting bigger and cheaper faster than they're being depleted

Measured technical cost and performance data for ~1,000 technologies (RMI 1986–92, 6 vol, 2,509 pp, 5,135 notes)

Can Japan do even better?

“Japan’s energy efficiency level is unlikely to improve much, since it is already the best in the world.”

—*Yomiuri Shimbun*, 7 January 2006

But a realistic assessment in *kaizen* spirit shows that although *some* Japanese industries and vehicles are among the world’s most efficient, Japan’s *average* vehicles are about as inefficient as, and its *average* buildings are *less* efficient than, those in the United States…which are not very good