



# American Physical Society Energy Efficiency Report Highlights

## OVERARCHING CONCLUSIONS

- » Improving energy efficiency is a relatively easy and inexpensive way to significantly reduce the nation's demand for imported oil and its greenhouse gas emissions without causing any loss of comfort or convenience.
- » Numerous technologies exist today to increase the efficiency of our vehicles and buildings in ways that could save individual consumers money. But without federal policies to overcome market barriers, the U.S. is unlikely to capitalize on these technologies.
- » Far greater increases in energy efficiency are available in the future, but realizing these potential gains will require a larger and better focused federal research and development program than exists today.

## TRANSPORTATION

- » Technologies are available to safely move beyond the 35 mpg Corporate Average Fuel Economy (CAFE) standard mandated by law by the year 2020. The federal government should establish policies to ensure that new light-duty vehicles average 50 mpg or more by 2030.
- » Plug-in hybrids require more efficient and more durable batteries, able to withstand deep discharges that are not yet in commercial large-scale production. Given the technical difficulties, plug-in hybrids will not replace the standard American car in the near future.
- » Hydrogen fuel cell vehicles have the potential to eliminate gasoline usage, but they also require scientific breakthroughs, including advances in fuel cells, catalysts and on-board hydrogen storage systems.

## BUILDINGS

- » Energy use by buildings could be no higher in 2030 than it is today if technologies that are available or in the pipeline are installed in a cost-effective manner.
- » Widespread, cost-effective construction of residential zero energy buildings (ZEB) — buildings that use no net energy — is feasible by 2020, except in hot, humid climates.
- » Widespread, cost-effective construction of ZEB commercial buildings by 2030 — a current goal in law and of many groups — will not be possible without an intensified federal program of research, development and demonstration.
- » Current green building rating systems such as Leadership in Energy and Environmental Design (LEED) do not appear to give sufficient weight to energy efficiency.

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