

GRAPHIC GALLERY

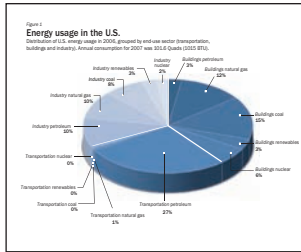


Figure 1
Energy usage in the U.S.

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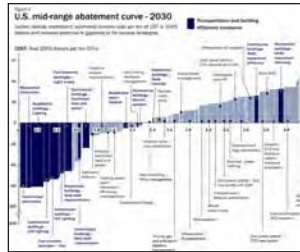


Figure 2
U.S. mid-range abatement curve – 2030.

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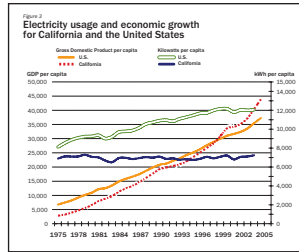


Figure 3
Energy efficiency and economic growth

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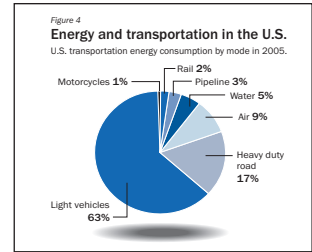


Figure 4
Energy and transportation in the U.S.

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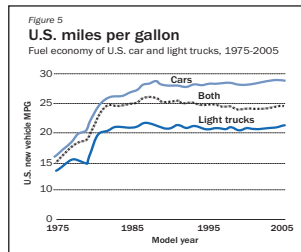


Figure 5
U.S. miles per gallon

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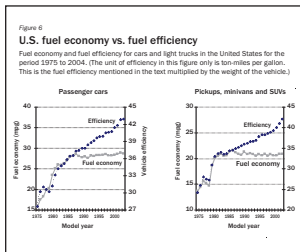


Figure 6
U.S. fuel economy vs. fuel efficiency

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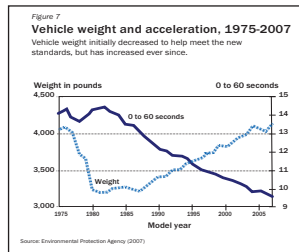


Figure 7
Vehicle weight and acceleration

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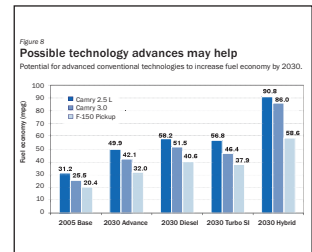


Figure 8
Possible technology advances may help

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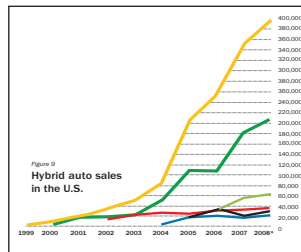


Figure 9
Hybrid auto sales in the U.S.

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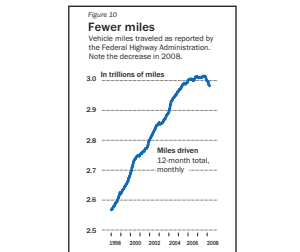


Figure 10
Fewer miles traveled

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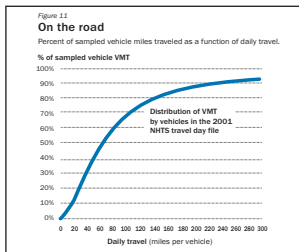


Figure 11
On the road

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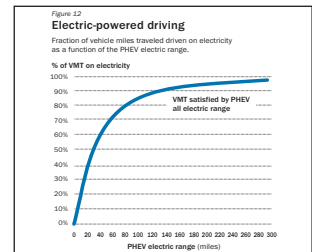


Figure 12
Electric-powered driving

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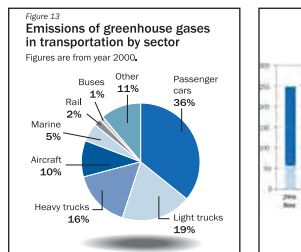


Figure 13
Transportation greenhouse gas emissions

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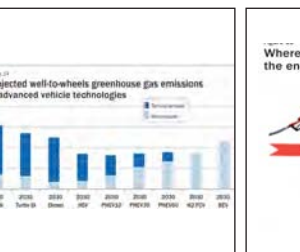


Figure 14
Projected well-to-wheels greenhouse gas emissions

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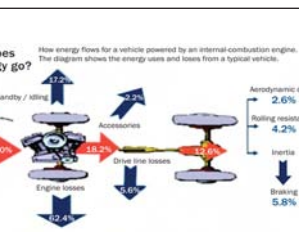


Figure 15
Where does the energy go in an automobile.

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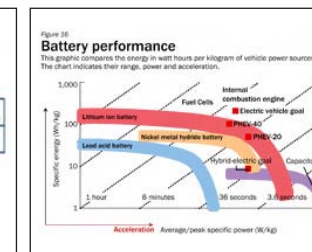


Figure 16
Battery performance

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GRAPHIC GALLERY

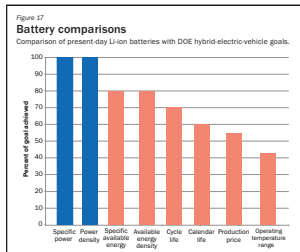


Figure 17
Battery comparisons

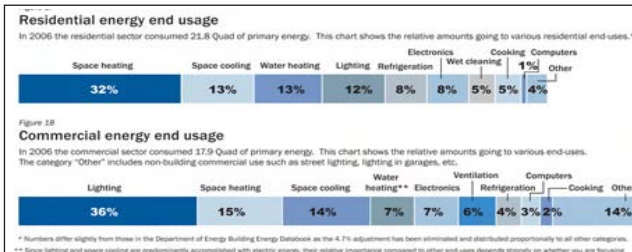


Figure 18
Residential energy end usage

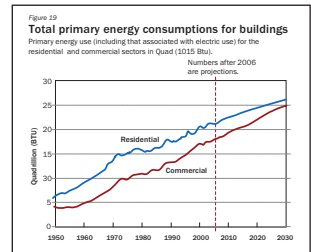


Figure 19
Total primary energy consumptions for buildings

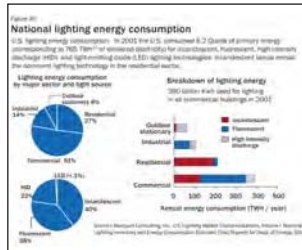


Figure 21
National lighting energy consumption.

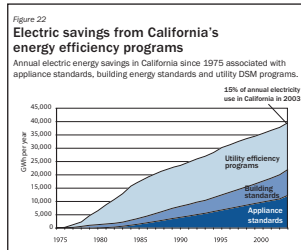


Figure 22
Electric savings from Calif.'s energy efficiency programs

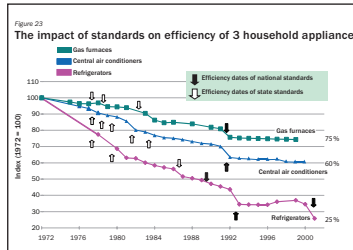


Figure 23
The impact of standards on efficiency of 3 household appliances

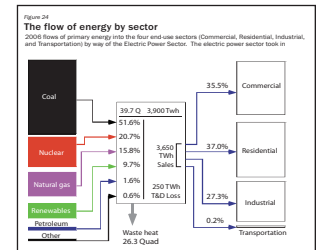


Figure 24
The flow of energy by sector

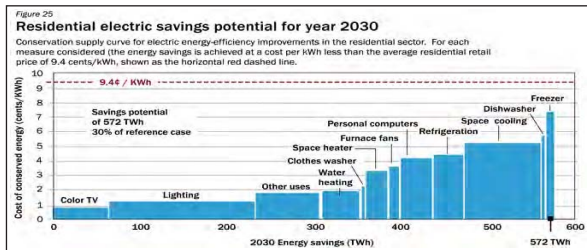


Figure 25
Residential electric savings potential for year 2030

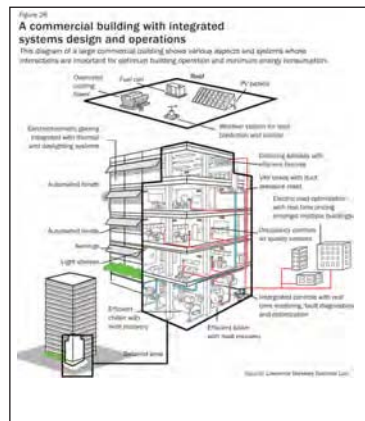


Figure 26
A commercial building with integrated systems design and operations

TABLES

Table 1
Energy density per volume and per weight

| Energy density per volume | |
|------------------------------------------------------------------------------|---------------------------------------|
| Gasoline | 38.6 MJ/m ³ (0.77 lbs/gal) |
| Propane | 58.8 MJ/m ³ (1.27 lbs/gal) |
| Ethanol | 24.0 MJ/m ³ (0.49 lbs/gal) |
| Hydrogen at 8 atmospheric pressure (0.000101 m ³ = 0.00353 cu ft) | |
| Hydrogen at 68,000 psi | 8.1 MJ/m ³ (0.174 lbs/gal) |
| Liquid hydrogen | 81.1 MJ/m ³ (1.74 lbs/gal) |
| Compressed hydrogen (3500 psi) | 18.0 MJ/m ³ (0.39 lbs/gal) |
| Lithium-ion battery (current tech) | 120 MJ/m ³ (2.63 lbs/gal) |
| Lithium-ion battery (ideal) | 1 MJ/kg (2.2 lbs) |

| Energy density per weight | |
|------------------------------------------------------------------------------|-------------------------|
| Gasoline | 114 MJ/kg (2.54 MJ/lb) |
| Propane | 51.8 MJ/kg (11.5 MJ/lb) |
| Ethanol | 33.4 MJ/kg (7.4 MJ/lb) |
| Hydrogen at 8 atmospheric pressure (0.000101 m ³ = 0.00353 cu ft) | |
| Hydrogen at 68,000 psi | 2.4 MJ/kg (0.53 MJ/lb) |
| Liquid hydrogen | 12.1 MJ/kg (2.67 MJ/lb) |
| Compressed hydrogen (3500 psi) | 5.1 MJ/kg (1.12 MJ/lb) |
| Lithium-ion battery (current tech) | 150 MJ/kg (33.1 MJ/lb) |
| Lithium-ion battery (ideal) | 1 MJ/kg (2.2 lbs) |

Table 2
Primary usage of energy in U.S.

| Energy Source | Residential | | Commercial | | Total |
|---------------|----------------|---------------------|----------------|---------------------|-------------|
| | Energy (Quads) | Electricity (Quads) | Energy (Quads) | Electricity (Quads) | |
| Petroleum | 1.4 | 0.2 | 0.2 | 0.0 | 1.6 |
| Natural Gas | 4.5 | 2.3 | 3.1 | 2.7 | 10.6 |
| Coal | 0.0 | 7.6 | 0.1 | 7.3 | 14.9 |
| Nuclear | 0.5 | 1.4 | 0.1 | 1.4 | 3.4 |
| Renewables | 0.0 | 3.0 | 0.0 | 2.9 | 5.9 |
| Total | 6.4 | 14.5 | 3.4 | 14.0 | 28.9 |

Table 3
Demand-side management programs

| Year | Energy efficiency program cost (\$B) | Load reduction (\$B) | Total energy savings (\$B) |
|--------------|--------------------------------------|----------------------|----------------------------|
| 1995 | \$1,400 | \$560 | \$1,960 |
| 1996 | \$2,075 | \$830 | \$2,905 |
| 1997 | \$262 | \$105 | \$367 |
| 1998 | \$760 | \$304 | \$1,064 |
| 1999 | \$620 | \$248 | \$868 |
| 2000 | \$938 | \$375 | \$1,313 |
| 2001 | \$2,098 | \$839 | \$2,937 |
| 2002 | \$1,007 | \$403 | \$1,410 |
| 2003 | \$807 | \$323 | \$1,130 |
| 2004 | \$729 | \$291 | \$1,020 |
| 2005 | \$1,349 | \$539 | \$1,888 |
| 2006 | \$1,294 | \$517 | \$1,811 |
| TOTAL | \$12,128 | \$4,896 | \$17,024 |