

Massachusetts \$ Savings and Job Gains from Energy Efficiency in Buildings & Transportation

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Average Direct Energy Costs for Mass. Households in 2008

Space and Water Heating	\$1,700
Electricity	\$1,300
Gasoline	\$2,200
Total energy costs	\$5,200

Massachusetts Energy Spending By Type, Average Over 2007 - 2009

	\$ millions
Heating fuel oil	\$2,300
Diesel motor fuel	\$1,500
Gasoline	\$8,000
Jet fuel	\$900
Residual fuel oil	\$300
Other petroleum	\$400
Natural gas	\$4,800
Coal	\$300
Nuclear	\$20
Biomass	\$40
Retail electric excluding fuel use	\$6,600
Total including electricity	\$25,300

Mass. Economic Losses to Out-of-State Energy Costs, Average 2007-2009

	low estimate	high estimate
average energy spending 2007-2009, \$ millions	\$25,300	\$25,300
% of total energy spending going out-of-state	77%	81%
energy spending going out-of-state, \$millions	\$19,500	\$20,600
spending out-of-state per state resident	\$3,100	\$3,200
spending out-of-state per household	\$8,000	\$8,400
spending out-of-state as % of gross state product	5.3%	5.6%

Note: Spending per person and per household include energy spending by households, businesses, government agencies, and other institutions in the Commonwealth.

MA Energy & Climate Policy

- Green Communities Act of 2008 requires electric and gas utilities to fund all energy efficiency that is less expensive per unit than new electric or gas supply
- Global Warming Solutions Act of 2008 requires reduction of GHG emissions by 10% to 25% below 1990 levels in 2020, 80% in 2050.
- December 2010 Clean Energy & Climate Plan sets 2020 reduction requirement at 25%.

Consumer, Business Savings from Policies in Clean Energy & Climate Plan

\$ millions energy cost savings in 2020	
Electric efficiency	\$2,500
Natural gas efficiency	\$800
Fuel oil efficiency	\$200
Building codes	\$100
Appliance & product standards	\$400
Federal & Calif. vehicle efficiency standards	\$1,700
Clean car incentives	\$200
Pay-by-the-mile auto insurance	\$400
Overall total	\$6,300

Modeling Tools for Job Calcs

Input – Output models – do not capture dynamics of labor, product markets

- IMPLAN – probably easiest to use, \$500 +
- RIMS II (U.S. Dept. of Commerce) – requires more knowledge from user, \$225+ (just for data)

Econometric – capture dynamics, but more expensive and time-consuming to use

- REMI - reasonable cost, “transparent” assumptions
- Proprietary econometric models – tend to be expensive, “black boxes” on the assumptions/equations, only owners can manipulate them

How Cutting Energy Costs Creates Jobs

- Creates direct jobs in efficiency industries (construction, consulting, manufacturing)
- Keeps more money in the geographic region, if energy is imported
- Households and businesses can take money not spent on energy and use on other expenses that tend to be more locally-based
- Efficiency programs tend to be more labor-intensive than energy supply costs
- Payments for capital costs (debt service, stock ownership) go to owners anywhere in world

Type of spending by Massachusetts households	Jobs in Mass. per million dollars of spending
General household spending	9.1
Natural gas	0.7
Electricity	1.1
Fuel oil	1.0
Gasoline	0.7

Data Sources for Multipliers

- RIMS II Multipliers, Bureau of Economic Analysis, U.S. Department of Commerce
- Consumer Expenditure Survey, Northeast States, U.S. Bureau of Labor Statistics (for constructing the household spending multiplier)
- Gross Domestic Product by Industry for Massachusetts 2009, U.S. Dept. of Commerce (for estimating industry shares of state energy consumption)

Sources of Job Changes

- Most job gains from reduced spending by households and business on energy imports
- Substantial job gains from efficiency programs for buildings
- Job losses due to lower spending on fuel distribution, electric system, and results of auto accidents (medical costs, insurance, auto repairs all fall as VMT is reduced)

Job increases in 2020 from Mass. *Clean Energy and Climate Plan*

Federal, Calif. vehicle efficiency & GHG standards	6,000
Federal efficiency standards medium, heavy duty vehicles	1,000
Mileage-based auto insurance	3,000
Clean car consumer incentives	2,000
Smart growth policy package	1,000
subtotal — transportation	13,000
Electric efficiency programs	10,000
Natural gas, heating oil efficiency programs	9,000
Advanced building energy codes	3,000
Federal appliance & product standards	1,000
subtotal — buildings efficiency	23,000
Renewables (solar, wind, biomass, biofuels)	6,000 - 12,000
Total	42,000 - 48,000

For further information:

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