

Energy and Telecommunications Interim Committee

Energy Policy: “Promoting Conservation” and
“Promoting Energy Efficiency Incentives”

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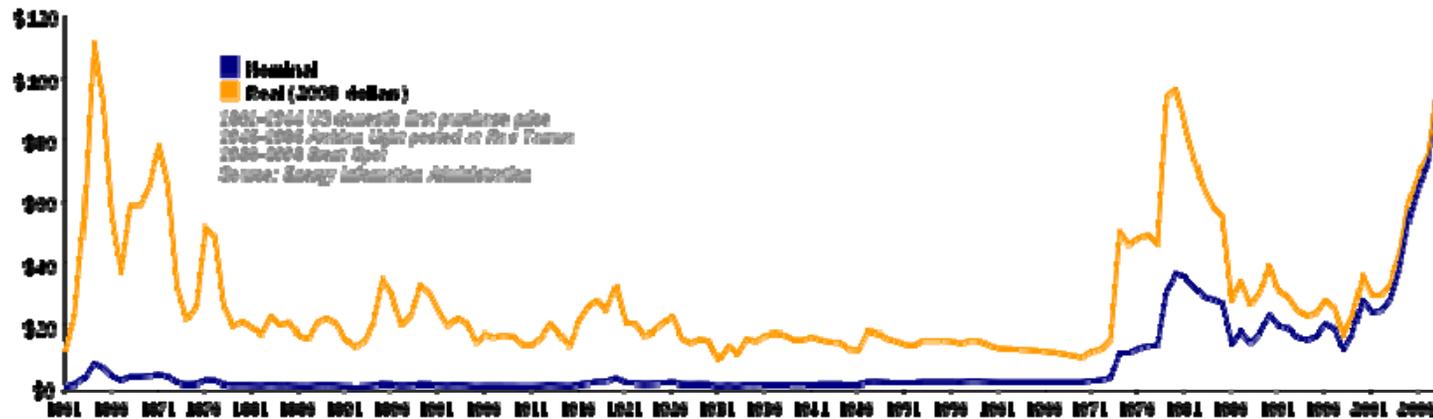
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Energy Efficiency as Economic Development

Jobs, self reliance, energy price
stability and local economic
activity.

The First Energy Crisis 1973-1980



Response: Partnership between innovation
+ Legislation.

Result: Stable energy prices for 20 years.

Lapsed efforts contributed to current crisis.

The current crisis includes energy supply issues, an economic recession and a housing crisis.

Energy efficiency measures address all of these issues.

"The road to energy independence, economic recovery and reductions in greenhouse gas emissions runs through the Building Sector."

– Edward Mazria, founder Architecture 2030

Response: Innovation:



Adapting to market demands.



Maturing energy package.



Energy & Economics

Example #1:



Super-Insulated House: ca. 1983

No Tax Credits

- Very high insulation levels (double the code levels), modest passive solar, air tight construction, mechanical ventilation.
- 5% Additional construction costs.(\$3,600 in 1983)
- Annual heating costs (electric @ \$.035/kWh) = +/--\$1-200/year (1983).
- Payback: 5-7 years
- Cumulative energy savings since 1983: \$35,000

Energy & Economics

Example #2:



Un-insulated 1914 House

- NorthWesternEnergy Energy Audit including Blower Door Test
- Air tightening, attic & basement insulation, 4 new windows. Work by owner.
- Construction cost: \$4,380
- Net cost after tax credits & incentives: \$1,295
- Energy Savings: \$3-400/year. Payback 3-4 years.
- Tax credits exhausted. House is 50% insulated.

Energy & Economics

Example #3:

2009 MT Energy Code Study House

- 1600 sqft, single floor w/ unfinished basement.
- 3 bedroom, 2 bath.
- Montana weather & utility costs.
- 6 modest efficiency improvements.
- Construction costs from experienced builders.



2009 MT Energy Code Study House Economic Summary *w/o* Tax Credits

- Construction cost estimate: \$4,115
- 1st year energy savings: \$336, about 8% over 2009 IECC, 16-20% over 2006 IECC.
- 1st year net cash flow: +\$96
- 1st year ROI: 8.2%
- 20 year energy savings: \$11,110
- 20 year net savings: \$6,310

2009 MT Energy Code Study House Economic Summary *with* Tax Credits

- Net construction cost estimate: \$1,115
- 1st year energy savings: \$336, about 8% over 2009 IECC, 16-20% over 2006 IECC.
- 1st year net cash flow: +\$250
- 1st year ROI: 22.4%
- 20 year energy savings: \$11,110
- 20 year net savings: \$9,382

2009 MT Energy Code Study House Effect on Montana's economy

- +/-2500/yr. average annual Building Permits. (Double if including rural areas).
- \$867,000 in 1st year annual Energy Savings
- \$11mil. annual additional Construction activity each year.
- 165 additional jobs each year.
- Energy Savings accrue exponentially .

2009 MT Energy Code Study House Cash Flow Analysis

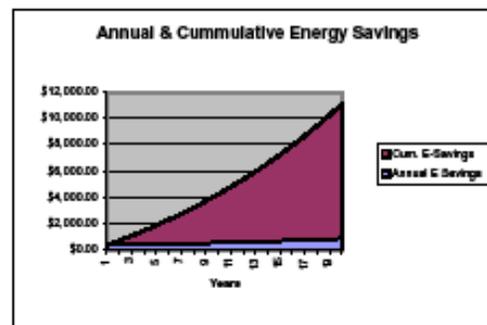
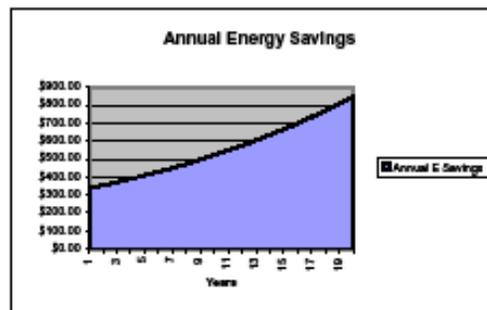
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CASH FLOW SUMMARY

Base House #1Tot-A w/o Tax Credits

Energy rate of inflation: 105%

Year	Annual E Savings	Cum. E-Savings	Const. Cost	R.O.I.	Cum. Mortgage Cost	Cum Mort.T Credit	Cum. Net Savings
1	\$336.00	\$336.00	\$4,115.00	-91.8%	\$300.00	\$60.00	\$96.00
2	\$352.80	\$688.80		-83.3%	\$600.00	\$120.00	\$208.80
3	\$370.44	\$1,059.24		-74.3%	\$900.00	\$180.00	\$339.24
4	\$388.96	\$1,448.20		-64.8%	\$1,200.00	\$240.00	\$488.20
5	\$408.41	\$1,856.61		-54.9%	\$1,500.00	\$300.00	\$656.61
6	\$428.83	\$2,285.44		-44.5%	\$1,800.00	\$360.00	\$845.44
7	\$450.27	\$2,735.71		-33.5%	\$2,100.00	\$420.00	\$1,055.71
8	\$472.79	\$3,208.50		-22.0%	\$2,400.00	\$480.00	\$1,288.50
9	\$496.43	\$3,704.93		-10.0%	\$2,700.00	\$540.00	\$1,544.93
10	\$521.25	\$4,226.17		2.7%	\$3,000.00	\$600.00	\$1,826.17
11	\$547.31	\$4,773.48		16.0%	\$3,300.00	\$660.00	\$2,133.48
12	\$574.87	\$5,348.15		30.0%	\$3,600.00	\$720.00	\$2,468.15
13	\$603.41	\$5,951.56		44.6%	\$3,900.00	\$780.00	\$2,831.56
14	\$633.58	\$6,585.14		60.0%	\$4,200.00	\$840.00	\$3,225.14
15	\$665.26	\$7,250.40		76.2%	\$4,500.00	\$900.00	\$3,650.40
16	\$698.52	\$7,948.92		93.2%	\$4,800.00	\$960.00	\$4,108.92
17	\$733.45	\$8,682.36		111.0%	\$5,100.00	\$1,020.00	\$4,602.36
18	\$770.12	\$9,452.48		129.7%	\$5,400.00	\$1,080.00	\$5,132.48
19	\$808.62	\$10,261.11		149.4%	\$5,700.00	\$1,140.00	\$5,701.11
20	\$849.06	\$11,110.16		170.0%	\$6,000.00	\$1,200.00	\$6,310.16



Tax Credits & Incentives for New Houses

- Federal:
 - \$2,000 Builder Credit for 50% EE over 2004 IECC.
 - 30% Tax Credit for Renewables through 2016.
- Montana:
 - \$500/1000 for “more EE than current Code.
 - \$500/1000 for Renewables.
- Northwestern Energy:
 - \$2-300 for boiler, thermostat, hot water, lights.

Tax Credits & Incentives for Existing House Improvements

- **Federal:**
 - \$1,500 Credit for insul, windows, HVAC, etc. through 2010.
 - 30% Tax Credit for Renewables through 2016.
- **Montana:**
 - \$500/1000 for “more EE than current Code.
 - \$500/1000 for Renewables.
- **Northwestern Energy:**
 - Energy Audits w/ blower door tests.
 - \$2-300 for boiler, hot water, thermostat.
 - \$ 4-800 for attic, basement insulation.

Mazria's 14X Stimulus Proposal

www.architecture2030.org

- Local and state gov'ts use Stimulus funds
- Mortgage buy-down program
- Lower interest rates tied to energy improvements = HERS 50 & 70 rating.
- Each \$ in stimulus creates
 - \$14 in private spending
 - 14X the number of jobs
 - \$4 in tax revenue

Advantage for Montana Homeowner

Current 6% Mortgage

14X 4% Mortgage

Principal:	\$184k	\$200k
Payment:	\$1259	\$955
Energy Svgs:	\$0	\$100
Total Svgs:	\$0	\$404

Plus: add'l comfort & increased property values

Comparative Advantage to local governments

	With 14X Plan	Without 14X Plan
Gov't Spending:	\$1.0 mil	\$1.0 mil
Private Spending:	\$14.0 mil	negligible
Jobs Created:	226	16
Local Gov't Tax Rev.:	\$1.0 mil	\$.07 mil
Federal Tax Rev.:	\$3.0 mil	\$0.22 mil

General Recommendations

- Promote jobs and economic development through energy efficiency.
- Use the synergistic effect of improved Codes, Tax Credits, Loan rates & Utility incentives to penetrate the market.
- Achieve the largest savings & market advantages by early implementation.
- Focus on the political and economic barriers, the technical issues are largely solved.

Specific Recommendations

- Establish stronger Energy Codes for Montana. Support thorough inspections, expand authority to rural areas.
- Increase Tax Credits for efficiency measures.
- Enlarge Utility audit & incentive programs.
- Create financial programs that promote EE.
- Document insulation levels and energy performance.