Behavior, Energy and Climate Change Conference

James Goldstene's Panel on:
Science, Policy Design, and Political Leadership
November 8, 2007
Sacramento

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http://www.energy.ca.gov/commission/commissioners/rosenfeld.html

or just Google "Art Rosenfeld"

Challenge: How to get people to buy, and manufacturers to make, better products

- Taxes and Policies Beyond “Education” and “PR”
- Transport
  - CAFÉ and Policies to “Sweeten” CAFE
  - Feebates for new cars.
  - Pay-As-You Drive or Pay-At-the-Pump **Insurance**
- Buildings
  - Insurance
  - Comparisons with Peers, Benchmarking
  - Home Energy Saver and its user survey.

Aligning Terms & Conditions with Risk-reducing Behavior

- Insurance discounts of up to 40% for low mileage:
  - ***GMAC***
  - ***Progressive***
  - ***Norwich Union***
  - ***Polis Direct***
  - ***Rheinland***
  - ***Versicherungen***
  - ***Aioi***
  - ***Axa***
  - ***Hollard***
  - ***Gerling***
  - ***Unigard***
  - ***Sompo* and *Tokio Marine & Nichido***

General Motors Acceptance Corporation (GMAC) PAYD discount schedule.

Some use GPS --> stolen-vehicle recovery; avoids reporting fraud

250,000 policies in Europe as of 2007. $700M revenues projected by 2010

For more info on Insurance, visit
Evan Mills' page
http://insurance.lbl.gov

Innovative Buildings Products

- ***AIG:*** first-ever residential “Green-Buildings” insurance being launched this year
  - Rebuilding to green standards after loss
- ***Fireman’s Fund***: first-ever commercial “Green-Buildings Insurance”
  - 5% premium credits for green features
  - Rebuild green after loss
- ***Lloyds of London (Naturesave)***: personal lines; commercial lines
  - 10 percent of premiums donated to environmental projects
  - environmental performance surveys offered to policyholders

AB 1103(Saldaña) Energy Benchmarking
Chapter Number 533, Statutes of 2007

[the CEC has worked with EPA to adapt EPA's " Portfolio Manager" to CA Commercial End Use Survey – CEUS]

January 1, 2009

- Electric and gas utilities must maintain records of the energy consumption data of all nonresidential buildings to which they provide service, in a format compatible for uploading to Energy Star Portfolio Manager, for at least the most recent 12 months.
- Upon authorization of building owner or operator, electric or gas utility must upload all of the energy consumption data for a building to the Energy Star Portfolio Manager.

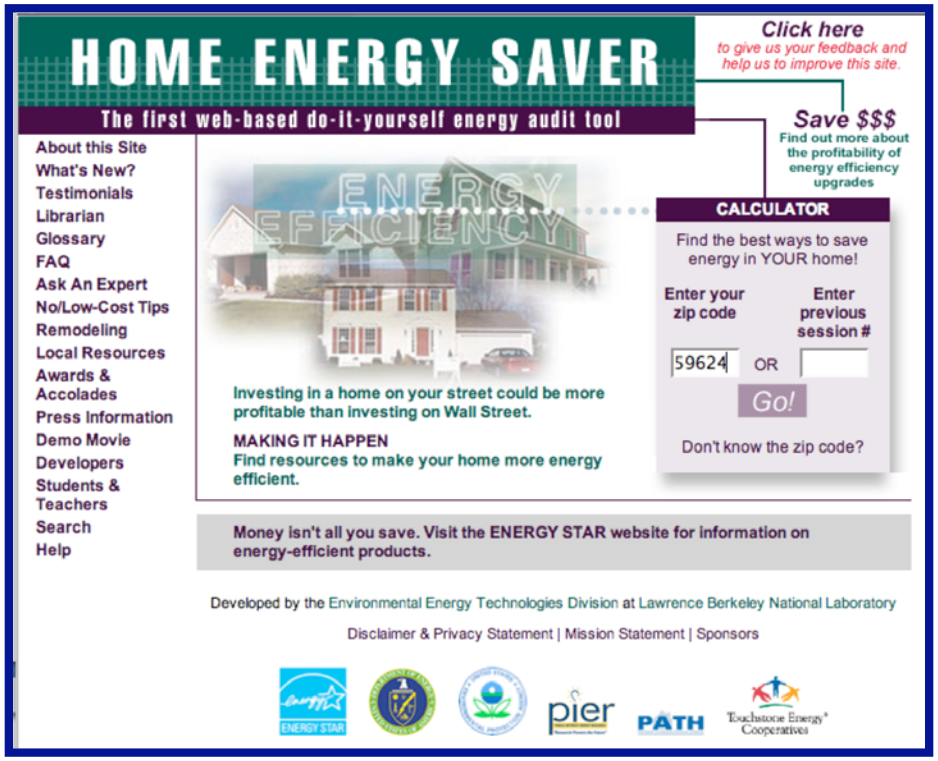
January 1, 2010

- Nonresidential building owner or operator must disclose Energy Star Portfolio Manager benchmarking data and ratings, for the most recent 12-month period, to a prospective buyer, lessee, or lender.

The Home Energy Saver

Do-it-Yourself Audit

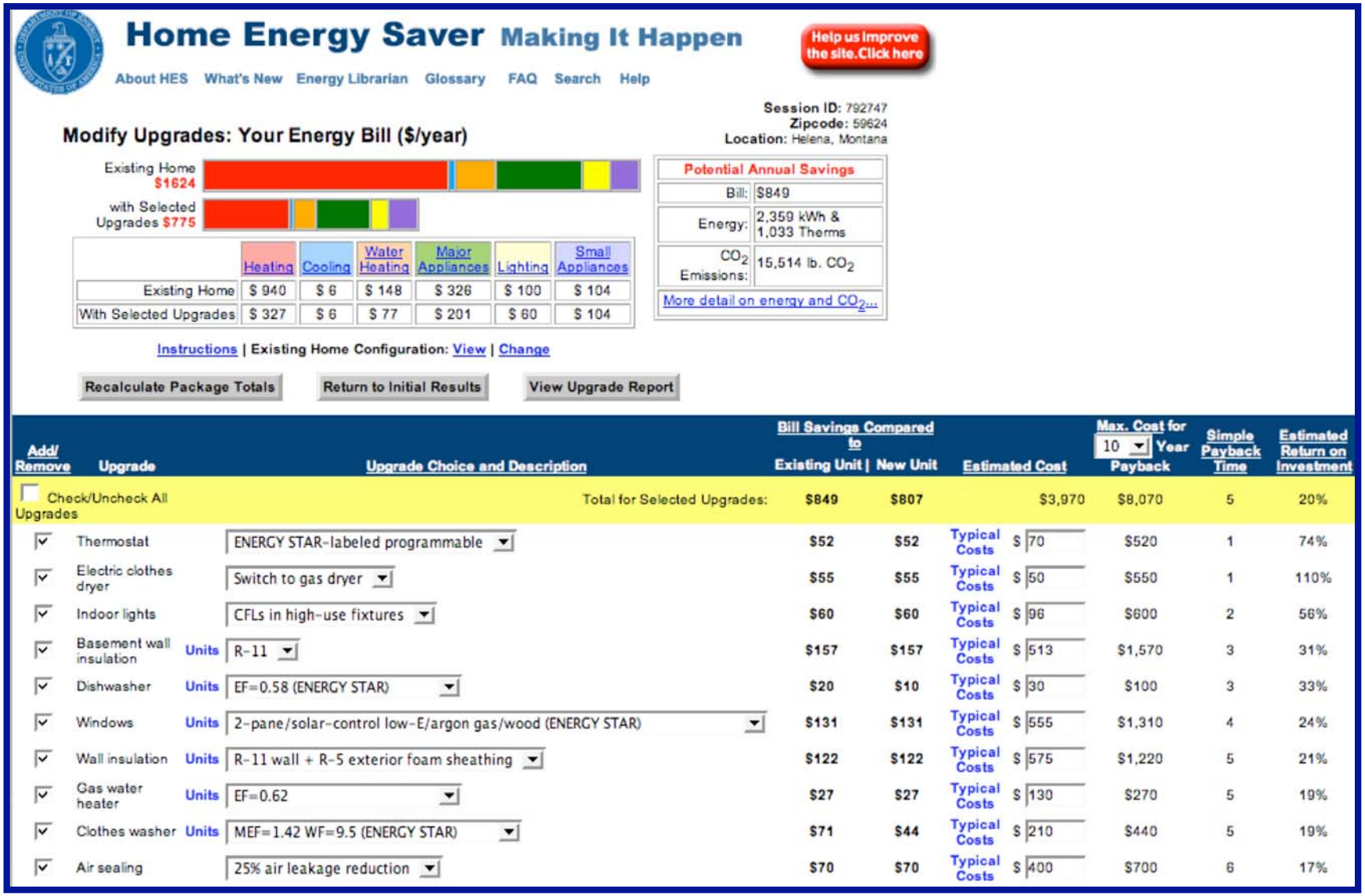
http://HomeEnergySaver.lbl.gov



Evan Mills, Ph.D. & Rich Brown

Lawrence Berkeley National Laboratory

Upgrades ranked by payback time: user can adjust costs & building design



Home Energy Saver Making It Happen

Help us improve the site. Click here

About HES | What's New | Energy Librarian | Glossary | FAQ | Search | Help

Session ID: 792747
Zipcode: 59624
Location: Helena, Montana

Modify Upgrades: Your Energy Bill ($/year)

Existing Home $1624

with Selected Upgrades $775

	Heating	Cooling	Water Heating	Major Appliances	Lighting	Small Appliances
Existing Home	$ 940	$ 6	$ 148	$ 326	$ 100	$ 104
With Selected Upgrades	$ 327	$ 6	$ 77	$ 201	$ 60	$ 104

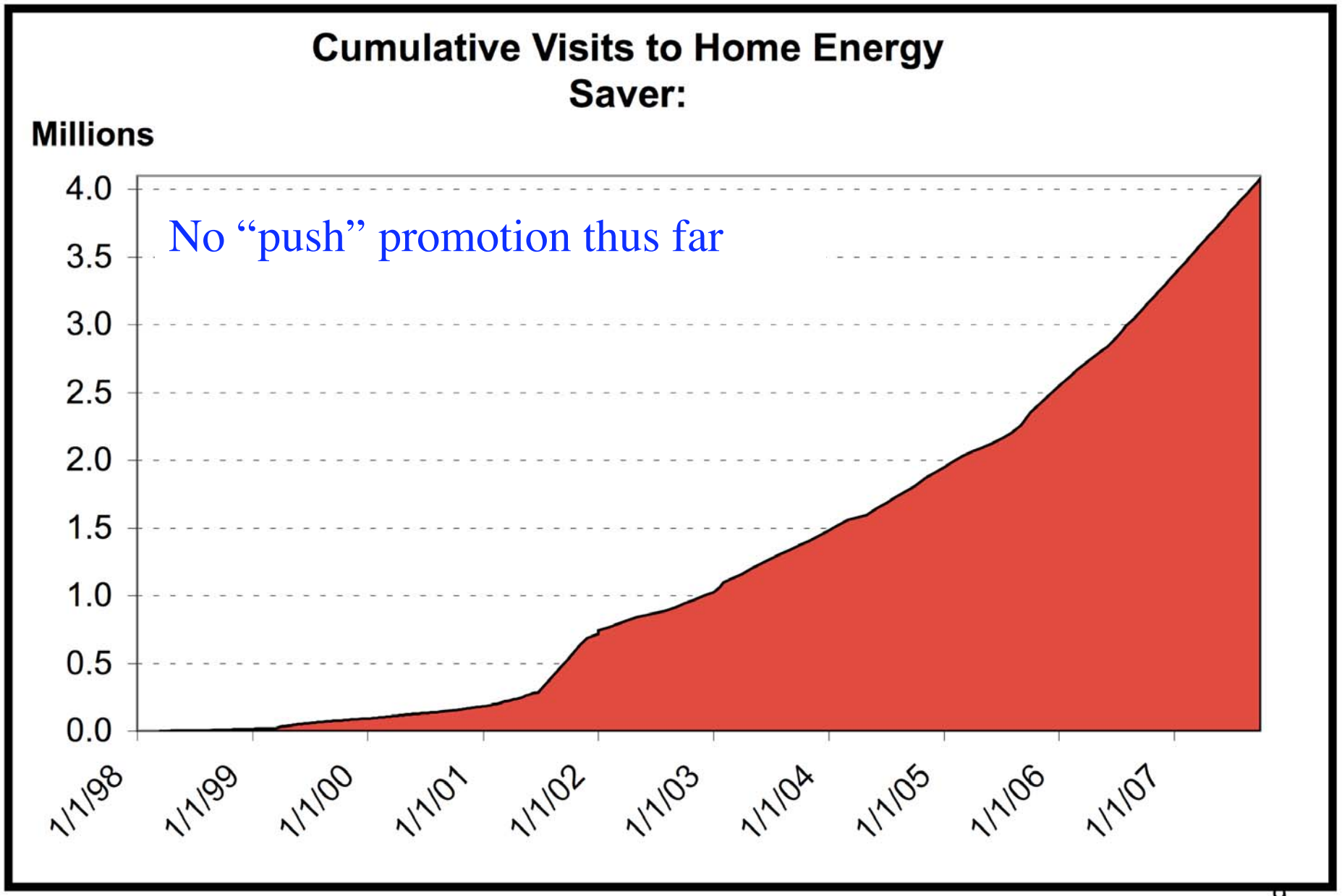
Potential Annual Savings	
Bill:	$849
Energy:	2,359 kWh & 1,033 Therms
CO_2 Emissions:	15,514 lb. CO_2

More detail on energy and CO_2...

Instructions | Existing Home Configuration: View | Change

Recalculate Package Totals | Return to Initial Results | View Upgrade Report

Add/ Remove	Upgrade	Upgrade Choice and Description	Bill Savings Compared to Existing Unit	Bill Savings Compared to New Unit	Estimated Cost	Max. Cost for 10 Year Payback	Simple Payback Time	Estimated Return on Investment
Check/Uncheck All Upgrades		Total for Selected Upgrades:	$849	$807	$3,970	$8,070	5	20%
☑	Thermostat	ENERGY STAR-labeled programmable	$52	$52	Typical Costs $ 70	$520	1	74%
☑	Electric clothes dryer	Switch to gas dryer	$55	$55	Typical Costs $ 50	$550	1	110%
☑	Indoor lights	CFLs in high-use fixtures	$60	$60	Typical Costs $ 96	$600	2	56%
☑	Basement wall insulation Units	R-11	$157	$157	Typical Costs $ 513	$1,570	3	31%
☑	Dishwasher Units	EF=0.58 (ENERGY STAR)	$20	$10	Typical Costs $ 30	$100	3	33%
☑	Windows Units	2-pane/solar-control low-E/argon gas/wood (ENERGY STAR)	$131	$131	Typical Costs $ 555	$1,310	4	24%
☑	Wall insulation Units	R-11 wall + R-5 exterior foam sheathing	$122	$122	Typical Costs $ 575	$1,220	5	21%
☑	Gas water heater Units	EF=0.62	$27	$27	Typical Costs $ 130	$270	5	19%
☑	Clothes washer Units	MEF=1.42 WF=9.5 (ENERGY STAR)	$71	$44	Typical Costs $ 210	$440	5	19%
☑	Air sealing	25% air leakage reduction	$70	$70	Typical Costs $ 400	$700	6	17%


Cumulative Visits to Home Energy Saver:
Millions
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
No "push" promotion thus far
1/1/98
1/1/99
1/1/00
1/1/01
1/1/02
1/1/03
1/1/04
1/1/05
1/1/06
1/1/07

Resulting Actions to Save Energy
(N=5,738 responses as of 10/31/07)

	Homeowners	Renters
Took action to save energy based on experience at the site	33%	27%
of which: behavioral	28%	44%
of which: equipment	27%	6%
of which: both	45%	50%
Other preliminary actions (e.g. professional energy audit, called contractor, did more research)	10 %-points	7 %-points

How to convince people to buy (sensible) CO2 Offsets?

www.TerraPass.com

PGE.com/ClimateSmart

Clean Development Mechanism - CDM

For more information and reading

Visit my web page –

(Just Google “Art Rosenfeld”)

For 30 year perspective, biography

“The Art of Energy Efficiency”.

Two papers in Word format, on Calif. Successes and Policy

Many Power Point presentations.

One 2001 paper comparing energy and CO2 (saved or used) with use by US cars, homes, and power plants.

Table 3: CO2 Released by Cars, Homes, Power Plants (Units: metric tons of CO2)

	A	B	C	D
	Typical Annual Use (Rounded)	**Conversion to CO2***	**Annual Use (CO2)**	**CO2 used in units of one million cars**
1.Passenger Cars, Vans, SUVs, Light Trucks	US Stock (Private and Commercial): 200 million†			
Typical Car	500 gal‡	1 gal = 8.8 kg**	4.4 t	
One million cars	500 million gal	"	4,4 Mt	1
2.Homes	US Stock: 100 million††			
Typical Home (Electricity + Gas/Oil)	200 million Btu	1 million Btu = 55 kg‡‡	11 t	
One million homes	200 trillion Btu	"	11 Mt	2.5
3.Power Plants	US Stock: 3300 TWh*** ≡ 1320 Plants (½ GW)			
Typical Plant (½ GW × 5000 hours/year)	2.5 Twh	1 Twh = 0.6 Mt†††	1.5 Mt	0.34

Tables to Convert Energy or CO2 (saved or used) to Familiar Equivalents - Cars, Homes, or Power Plants (US Average Data for 1999). *Arthur H. Rosenfeld and Satish Kumar May 2001*
http://www.energy.ca.gov/commission/commissioners/rosenfeld_docs/