Introduction to an

Energy Audit

Why It's a Useful First Step

solaripedia

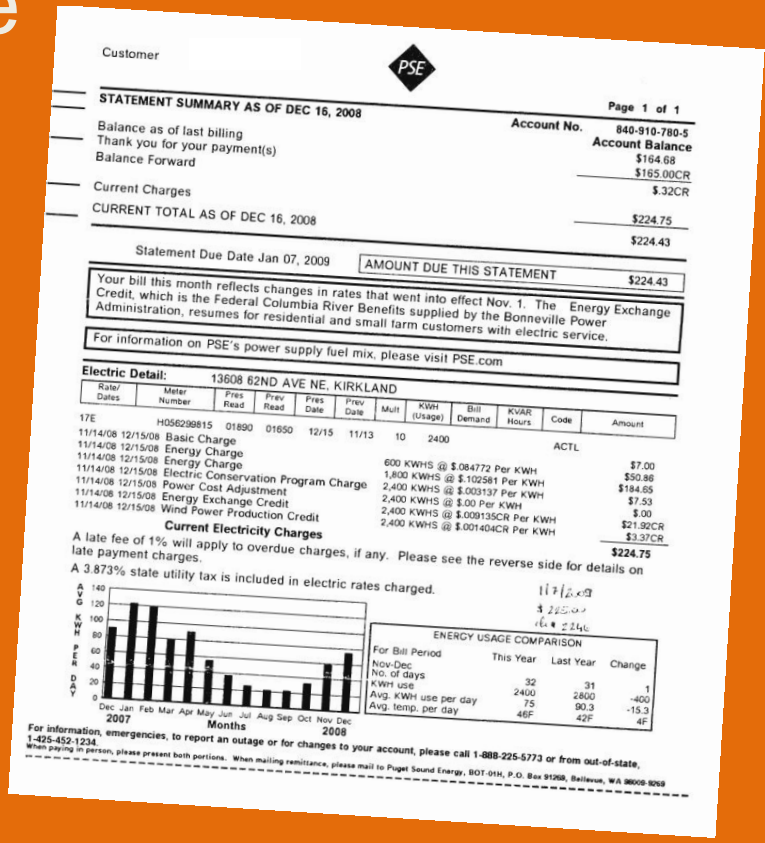
What's the Motivation?

- Utility savings?
- Improve comfort?
- Save the earth?
- Cool factor?
- Techno geek?

ToonPool

Issues to Address

- Current electric bills/usage
- Energy audit to find heat losses
- Payback on investment
- Comfort provided?
- How long will you live in the home?



Customer

PSE

STATEMENT SUMMARY AS OF DEC 16, 2008 Page 1 of 1

Account No. 840-910-780-5

	Account Balance
Balance as of last billing	$164.68
Thank you for your payment(s)	$165.00CR
Balance Forward	$.32CR
Current Charges	$224.75
CURRENT TOTAL AS OF DEC 16, 2008	$224.43

Statement Due Date Jan 07, 2009 — AMOUNT DUE THIS STATEMENT $224.43

Your bill this month reflects changes in rates that went into effect Nov. 1. The Energy Exchange Credit, which is the Federal Columbia River Benefits supplied by the Bonneville Power Administration, resumes for residential and small farm customers with electric service.

For information on PSE's power supply fuel mix, please visit PSE.com

Electric Detail: 13608 62ND AVE NE, KIRKLAND

Rate/ Dates	Meter Number	Pres Read	Prev Read	Pres Date	Prev Date	Mult	KWH (Usage)	Bill Demand	KVAR Hours	Code	Amount
17E	H056299815	01890	01650	12/15	11/13	10	2400			ACTL	
11/14/08 12/15/08	Basic Charge										$7.00
11/14/08 12/15/08	Energy Charge						600 KWHS @ $.084772 Per KWH				$50.86
11/14/08 12/15/08	Energy Charge						1,800 KWHS @ $.102581 Per KWH				$184.65
11/14/08 12/15/08	Electric Conservation Program Charge						2,400 KWHS @ $.003137 Per KWH				$7.53
11/14/08 12/15/08	Power Cost Adjustment						2,400 KWHS @ $.00 Per KWH				$.00
11/14/08 12/15/08	Energy Exchange Credit						2,400 KWHS @ $.009135CR Per KWH				$21.92CR
11/14/08 12/15/08	Wind Power Production Credit						2,400 KWHS @ $.001404CR Per KWH				$3.37CR
	Current Electricity Charges										$224.75

A late fee of 1% will apply to overdue charges, if any. Please see the reverse side for details on late payment charges.

A 3.873% state utility tax is included in electric rates charged.

ENERGY USAGE COMPARISON

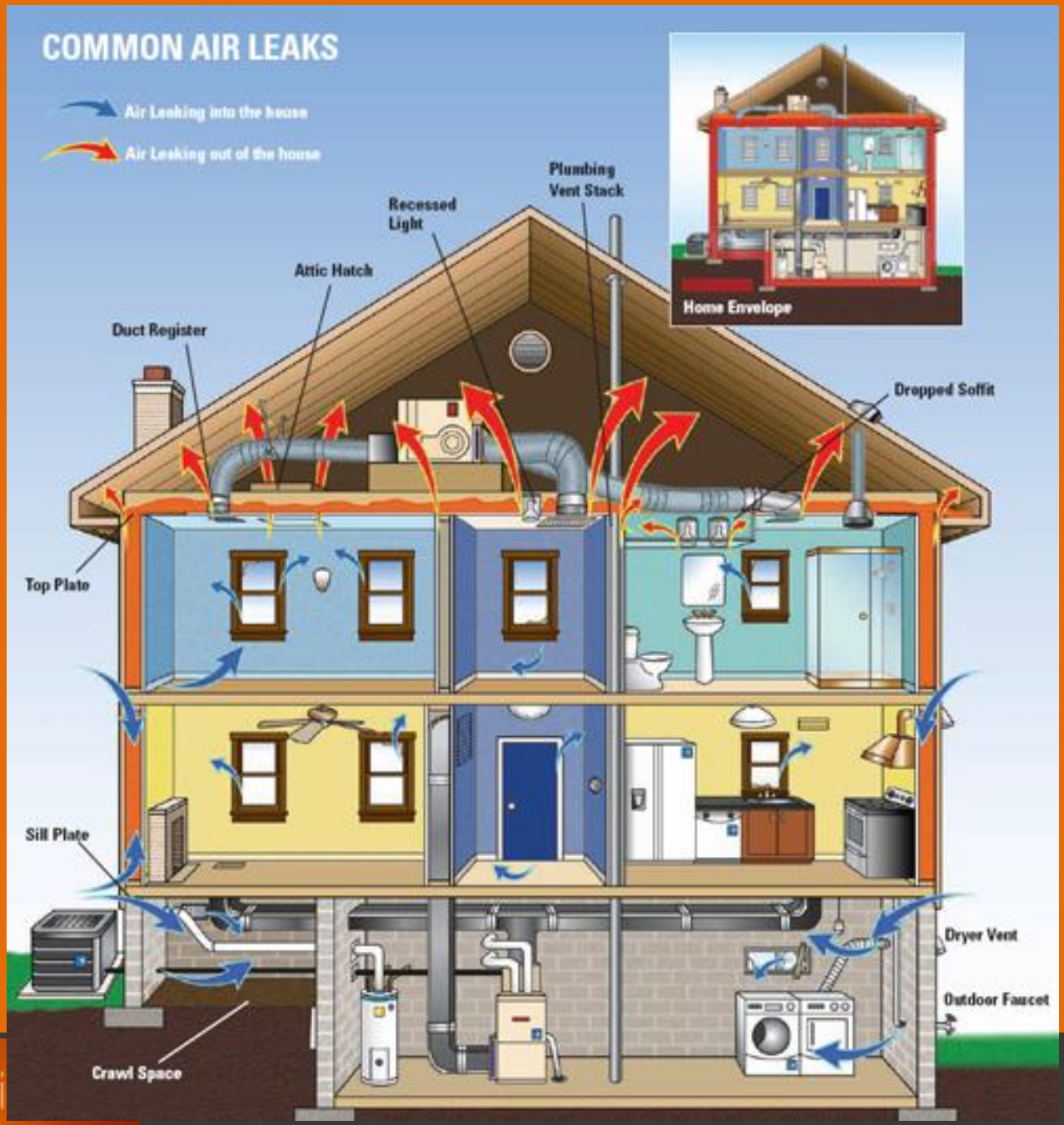
For Bill Period	This Year	Last Year	Change
Nov-Dec			
No. of days	32	31	1
KWH use	2400	2800	-400
Avg. KWH use per day	75	90.3	-15.3
Avg. temp. per day	46F	42F	4F

For information, emergencies, to report an outage or for changes to your account, please call 1-888-225-5773 or from out-of-state, 1-425-452-1234

When paying in person, please present both portions. When mailing remittance, please mail to Puget Sound Energy, BOT-01H, P.O. Box 91269, Bellevue, WA 98009-9269

Energy Saving Basics

- Improve the envelope – first line of defense
  - Insulation, windows, air/vapor sealing, siding
- Reduce energy consumption inside
  - Appliances, furnace, water heater, lighting


COMMON AIR LEAKS
Air Leaking into the house
Air Leaking out of the house
Home Envelope
Plumbing Vent Stack
Recessed Light
Attic Hatch
Duct Register
Dropped Soffit
Top Plate
Sill Plate
Dryer Vent
Outdoor Faucet
Crawl Space

Blower Door Test

- Helps find air leaks at windows, doors, can lights, floors, vents, etc.

http://apps1.eere.energy.gov/consumer/your_home/energy_audits/index.cfm/mytopic=11190

Pressure Pan Duct Test

- Suction to test ducts

Infrared Scan

- Shows major air leaks throughout house, especially where there's poor insulation

Weatherization Basics

- #1 Seal cracks around windows, doors – blower test before and after
- Upgrade insulation in walls, attic, floors/crawl space
- Insulate (or replace) water heater tank, pipes
- Test duct performance and seal with mastic
- Add shading to keep out summer sun
- Replace old windows with openable Energy Star
- Replace furnace if it's 15+ years

Landscaping

- Deciduous trees for shade in summer, let sun through in winter
- Proper orientation of house on site
- Keep sun off glazing first
- Use solar-powered lighting
- Collect rainwater and gravity-feed to landscape

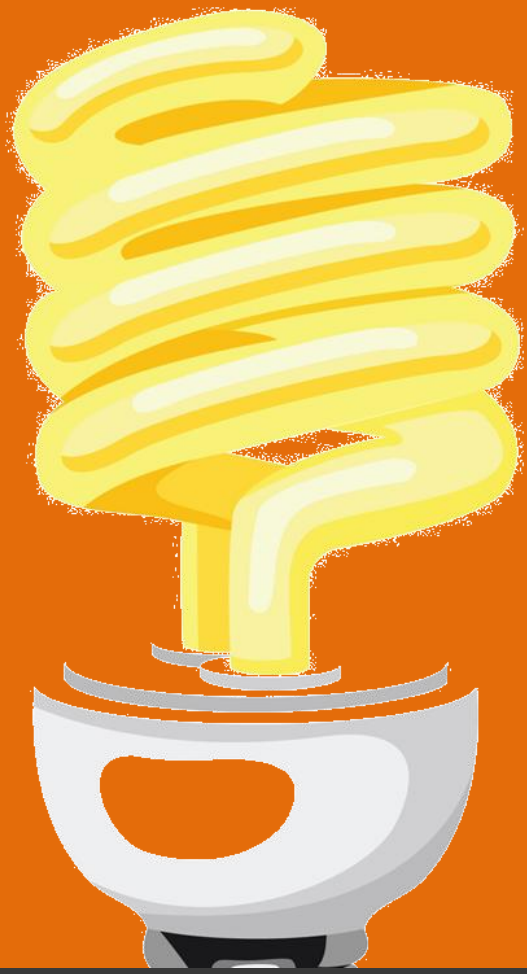
Phase the Work

- Energy audit
- Seal ducts and clean ducts, furnace
- Improve insulation in easy spaces
- Replace windows
- Replace furnace/water heater

- …Renewable energy such as PV

Immediate Payback, Low Cost

- Insulate water heater – 10% savings
- Seal ducts – 30% savings
- Replace dishwasher – 25% energy (+800 gpy water savings)
- Replace lights with CFL or reduce bulb wattage – 66% energy savings – *lighting is ~10% of electric bills*
- Programmable thermostat – pays for itself 1st yr
- Lower water heater to 120 degrees – 10% savings over 140 degrees



Moderate Effort & Cost

- Replace windows – 15% energy savings
- Upgrade insulation – 20-50% energy savings
- Replace water heater – 32% ROI ($4/mo)
- Replace furnace
- Seal air leaks – 25% reduction
- Solar attic fan and garden path lights
- Replace clothes washer – 50% less energy

Advanced Reach & Cost

- Radiant floor heat
- Overhangs added on south, west
- Solar water heater
- Geothermal heat
- Upgraded roof or vegetated roof
- Photovoltaics or wind generator
- Passive – thermal mass floors
- Vestibule to temper

Renewable Energy Retrofits

- Solar study – Trees? Buildings?
- Wind study - >10-15 mph average? Height?
- Geothermal drilling space?
- Biomass source?

Renewable & Energy Incentives

- DSIRE Website – Washington State http://www.dsireusa.org/library/includes/map2.cfm?CurrentPageID=1&State=WA&RE=1&EE=1'
- Federal tax credits for energy efficiency http://www.energystar.gov/index.cfm?c=products.pr_tax_credits

Online Resources

www.solaripedia.com