



TVA Energy Right Solutions for Business  
Presentation



# Why Greater Energy Efficiency?

## Balanced Energy Strategy



**Low Bills**

Reduce customer bills by \$350 M/Yr



**Reliable Electricity**

Greater reliability

More flexibility



**Economic Development**

Economic engine for the Valley

Creates thousands of jobs



**Cleaner Air**

Reduces air emissions

Potential to avoid 19.3 million tons of CO<sub>2</sub>



Consistent with Integrated Resource Plan

Part of a diverse mix of energy generation sources

**Goal to be Southeast Leader**



# TVA's Integrated Resource Plan

## Recommendations

 Nuclear generation

 Coal capacity idled

 Natural gas as an intermediate supply source

 **Energy efficiency and demand response**

 Cost-effective renewable energy

 Pumped storage hydro capacity

**Recommended path provides low cost, diversity and flexibility**

Note: TVA's IRP is located at <http://www.tva.gov/environment/reports/irp/>

# Our Key Focus Areas

*“One of the Nation’s **Leading** providers of low-cost and cleaner energy **by 2020**”*



Cleaner Air



High Reliability



**Greater Energy Efficiency**



Low Rates



More Nuclear Generation

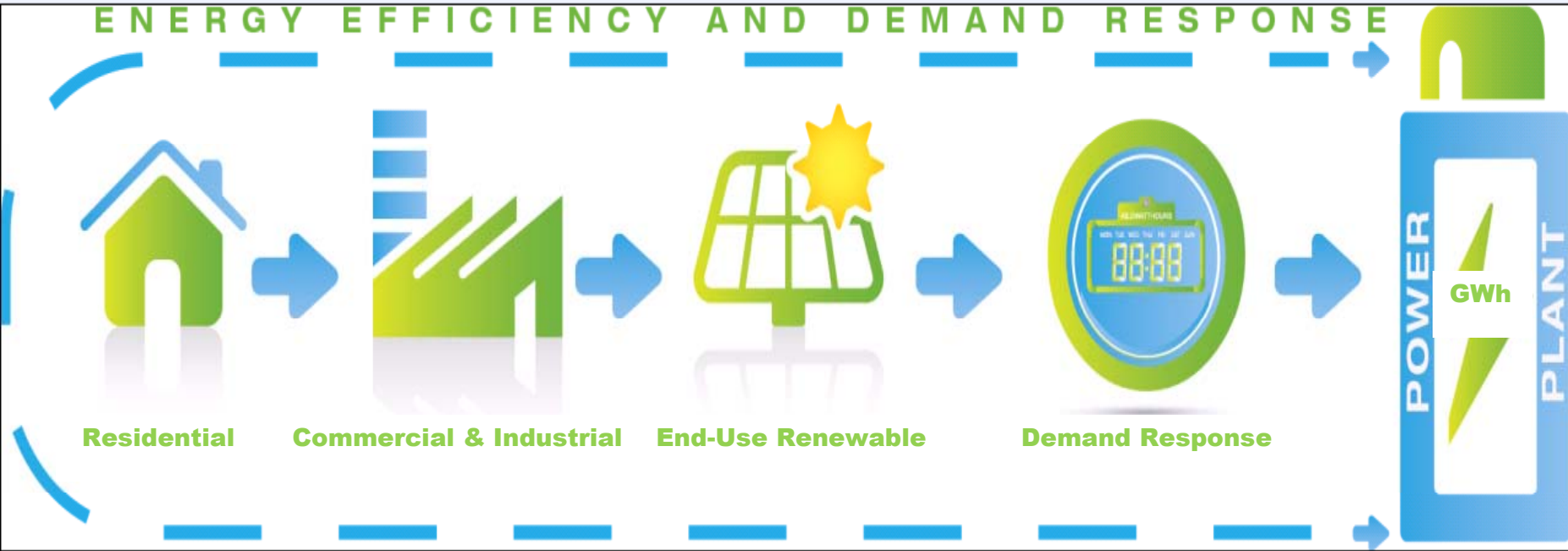


Responsible Stewardship

Acting to meet the region’s needs for the future, while improving our core business today

# Energy Efficiency and Demand Response (EEDR) Programs

# Building an EEDR Virtual Power Plant



IS YOUR ENERGY USAGE  
THROUGH THE ROOF?

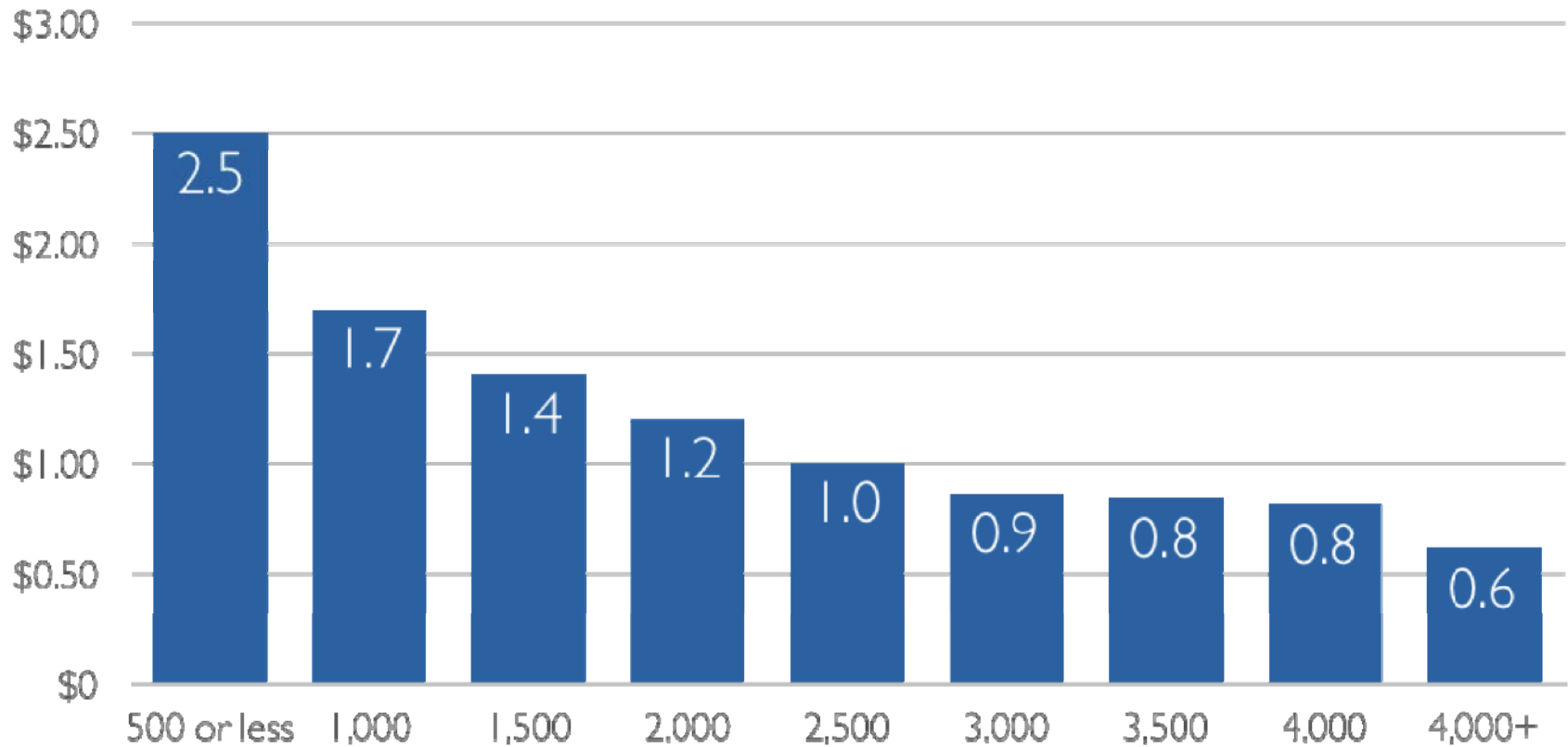


**energyright**<sup>®</sup>  
solutions **TVA**

# In-Home Energy Evaluation

- Whole-house evaluation by TVA-trained professional
- Customized recommendations
- Rebates or financing for energy efficiency improvements
- Quality Contractor Network

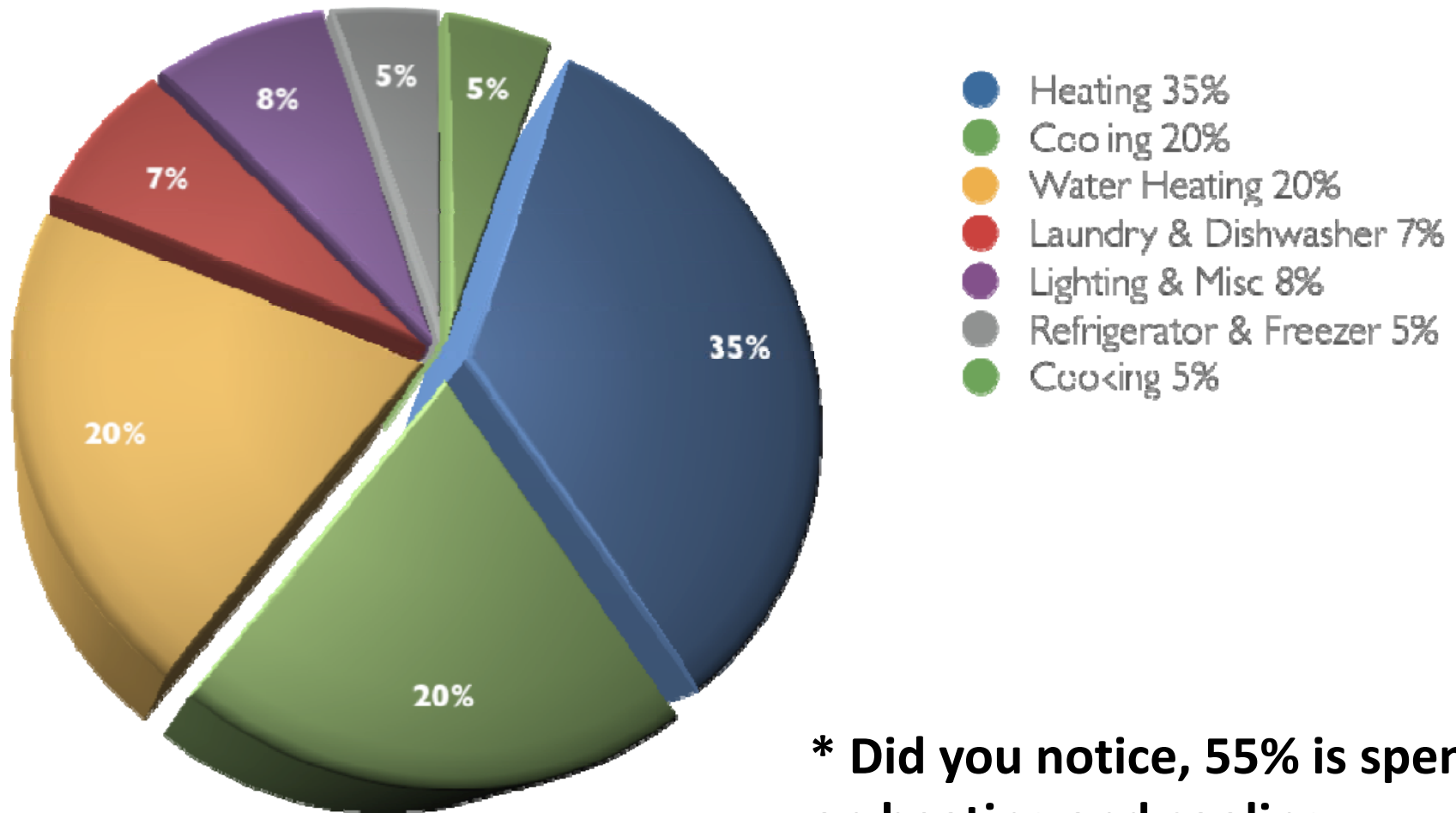
# Where does your home stack up?



Average Annual Household Energy Costs in Dollars per Square Foot



# Average home energy usage

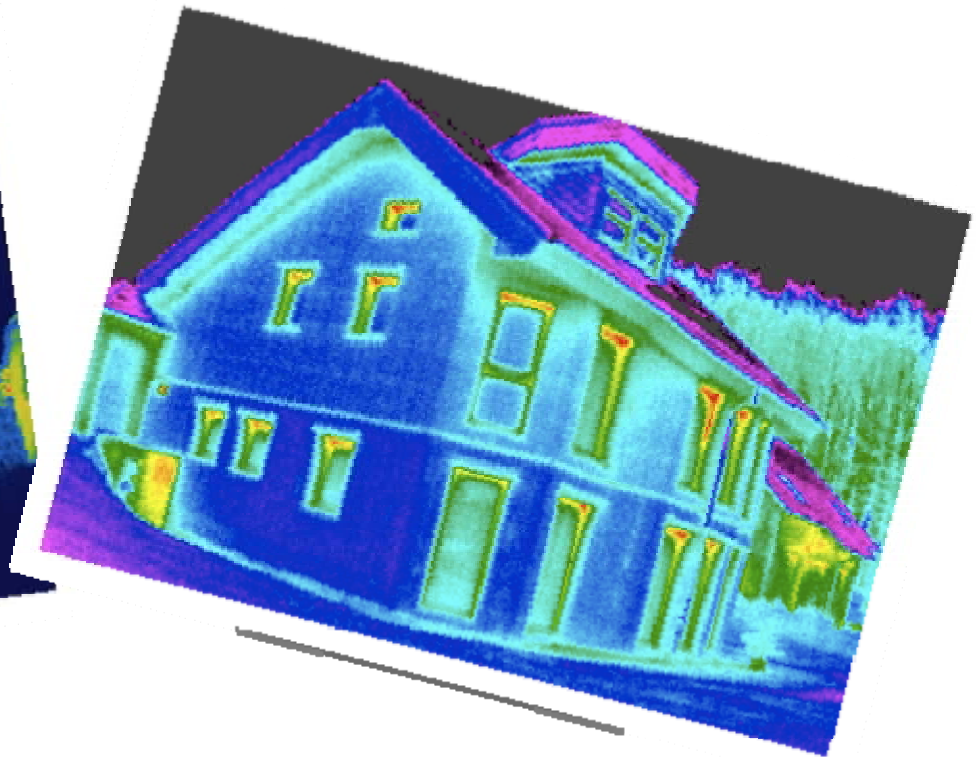


**\* Did you notice, 55% is spent on heating and cooling**

# What IHEE focuses on

1. Your home's ability to minimize heat flow.
  - ✓ Insulation
  - ✓ Air Sealing
  - ✓ Windows/Doors
2. Your HVAC's ability to produce conditioned air efficiently.
  - ✓ HVAC replacement
  - ✓ HVAC Tune Up
3. Your duct's ability to distribute that air efficiently.
  - ✓ Duct Sealing
  - ✓ Duct Insulation

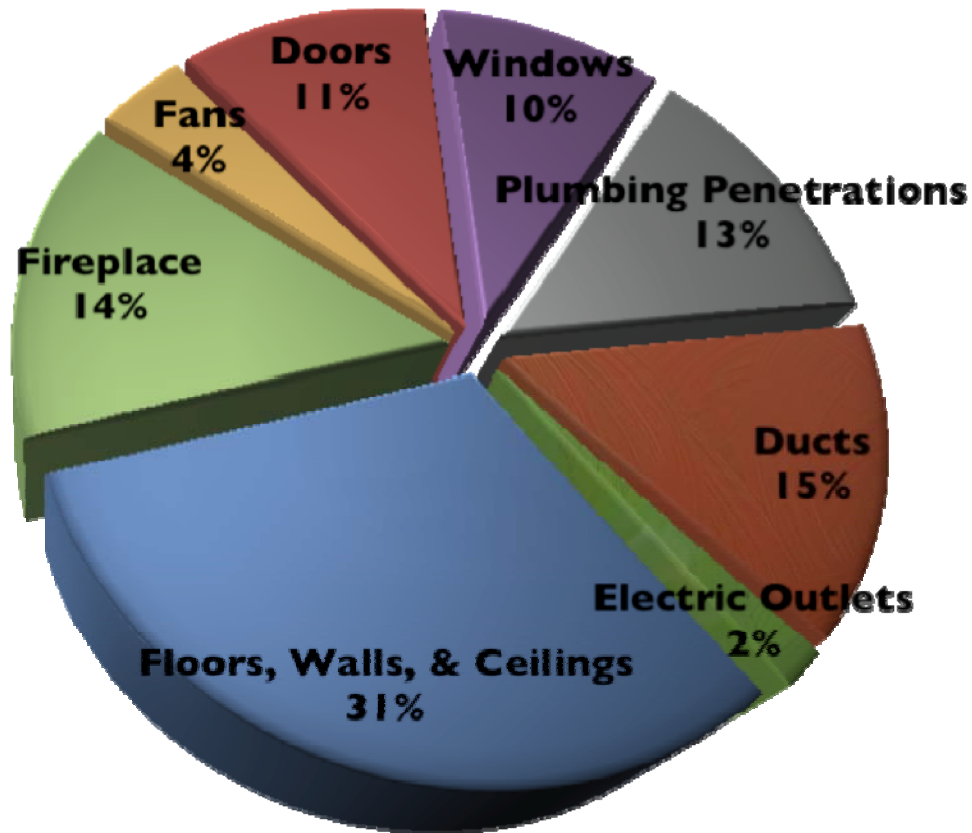
# Problems with Air Leakage



- 25% average heat loss in a new home
- 40% average heat loss in an existing home

Source: ENERGY STAR

# Typical Air Leaks in a home



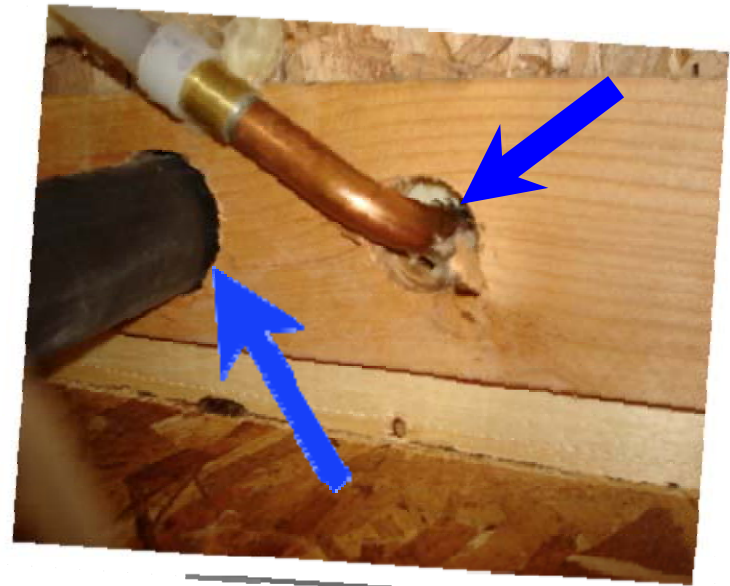
Most home owners think windows are the leading cause of air leakage but the truth is floors, walls, and ceilings are where the real deficiencies are.

# Floors, Walls, and Ceilings



Air leaks through gaps around sewer pipes and electrical wires in your attic

Also around gas pipes and water lines.



# Insulation



Insulation is the cornerstone to energy conservation:  
a poorly insulated house wastes energy

# Recommended Insulation Levels

Zone	Attic or Vaulted Ceiling	Insulation Depth
AL,MS,West TN	R-30	Approx 10"
TN,KY,GA	R-38	Approx 13"

- Homes built before 1975 have little to no insulation.
- Homes built between 1975-85 have approximately half of today's insulation codes.
- Current homes have the bare minimum, according to the U.S. Department of Energy.

# Unit Replacement

ENERGY STAR® suggests replacing your A/C or Heatpump if it's older than 12 years. It typically cuts your energy costs by 30% or more.



U.S. Department of Energy says that you will spend more money on the operation of your unit than on the initial cost of purchase.



# HVAC Tune Up

- A dirty condenser coil causes 16% reduced efficiency.
- The correct amount of refrigerant can increase efficiency by 20%.
- The average home owner can expect an increased efficiency of 27% by having a thorough tune-up.



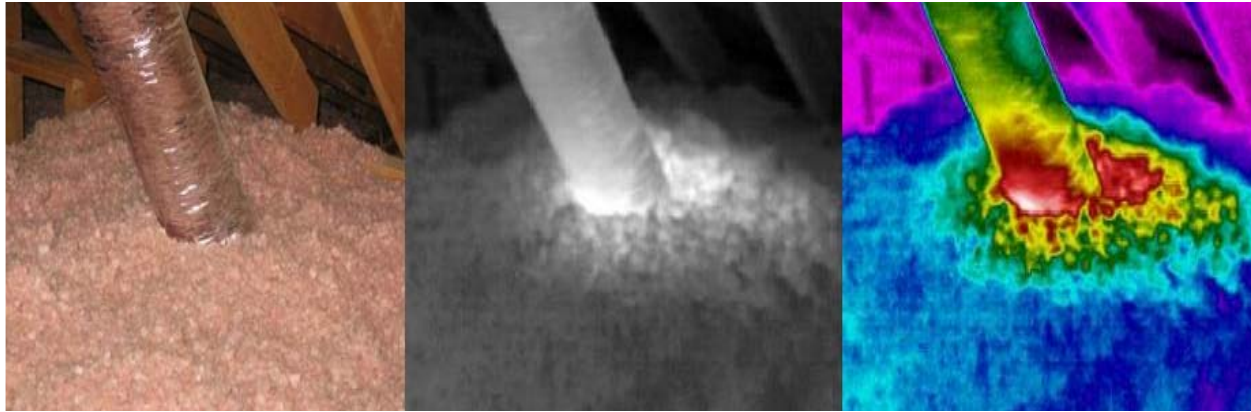
# Got Dust?



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Air Leakage and Duct Leakage is the leading cause for most household dust.

# HVAC Duct Problems



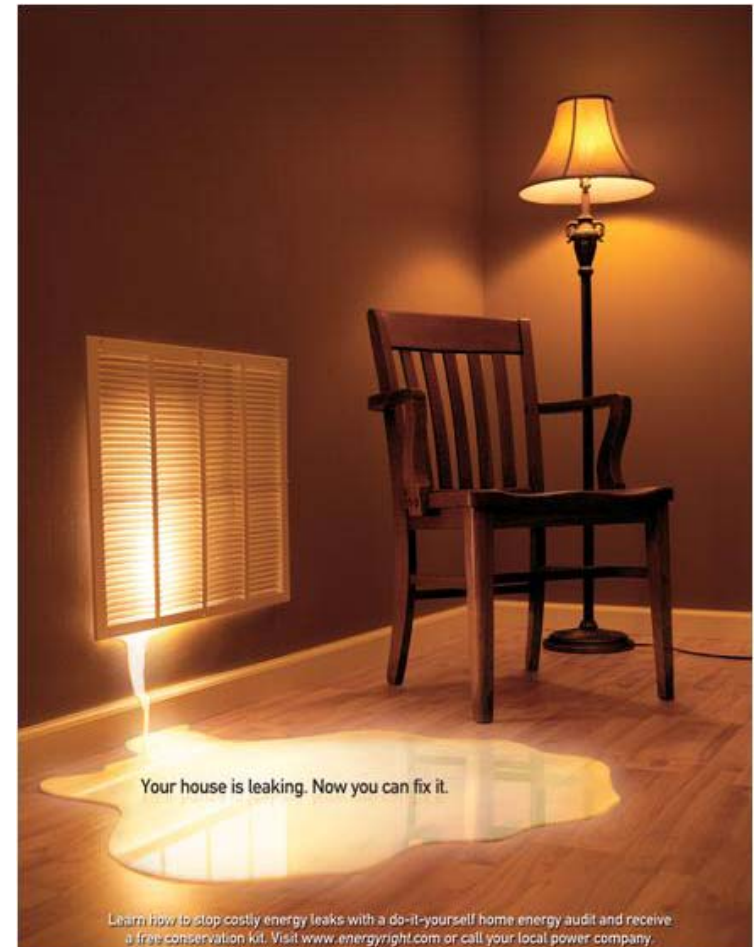
The typical duct system in an attic or crawlspace loses **25% to 40%** of heated or cooled air that passes through it --- **costing you hundreds of dollars every year.**

# Program Rebates

ELIGIBLE IMPROVEMENTS		
✓	ENERGY EFFICIENCY MEASURE	CASH INCENTIVE
	Replace windows (must be ENERGY STAR®)	\$500
	Storm windows	\$500
	Duct repair/replacement and sealing (existing HVAC only)	\$500
	Rehabilitation work (minor repair work such as broken glass, glazing, or prime door replacement, with distributor pre-approval)	\$250
	Replace HVAC (must be ENERGY STAR®) <ul style="list-style-type: none"> <li>• All heat pumps included</li> </ul> Ask your evaluator if your power distributor allows: <ul style="list-style-type: none"> <li>• Dual-fuel heat pumps</li> <li>• Air conditioning (with gas pack or gas split)</li> </ul>	\$250
	Attic insulation/ventilation (must be nonpowered)	\$500
	Floor or perimeter insulation, and ground cover	\$500
	Exterior wall insulation	\$500
	Water heater insulation (electric only)	\$50
	Air sealing (including weatherstrip and caulk)	\$500
	<i>Self-installed</i> insulation, caulk, weatherstrip, rehabilitation (as defined above) – material cost only, with distributor pre-approval	\$250
	HVAC tune-up	\$150

# Self Audit

- Online at [energyright.com](http://energyright.com)
- Recommendations based on customer's energy usage
- Conservation kit mailed to customer at no cost



# New Homes



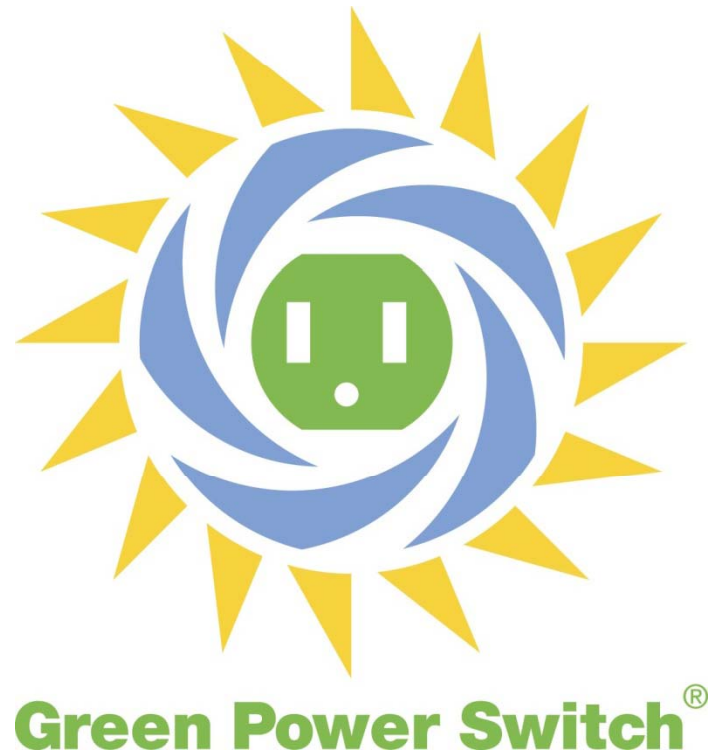
- Incentives for builders
- Up to \$800 per new home, depending on energy efficiency rating
- Each home rated by accredited raters using computer modeling software

# Heat Pumps

- On-bill financing available
- Promotional interest rates for ENERGY STAR equipment
- Quality Contractor Network



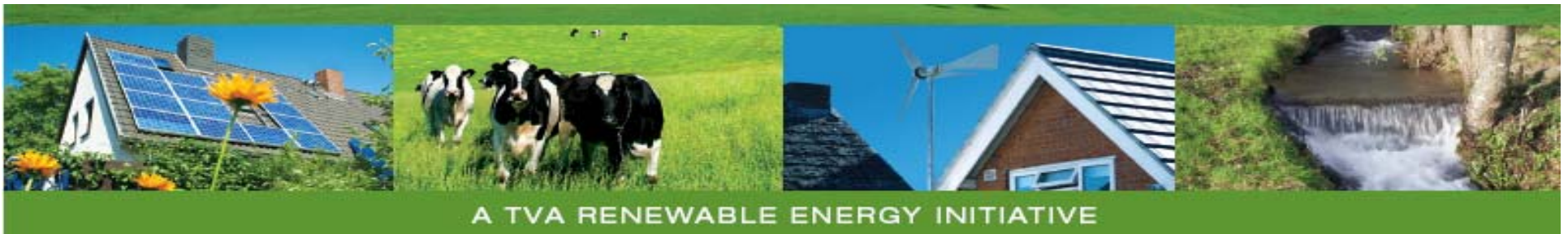
- Option to financially support renewable generation in the Valley
- \$4 per 150 kWh
- Sold as premium product
- Open to both Residential & Commercial Customers





# Generation Partners

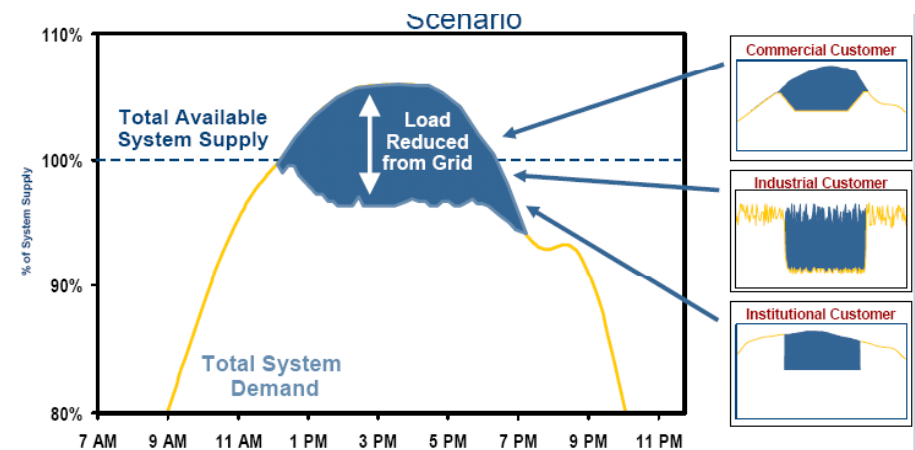
- Incentives for installation and operation of renewable energy resources (provides power for GPS)
- \$0.03 per kWh premium (non-solar)
- \$0.12 per kWh premium (solar)
- .50 kW up to 50 kW of capacity per site
- \$1,000.00 Incentive (off set start-up costs)



# Demand Response



- Facilitated by EnerNOC
- Customer payments to curtail load when requested by TVA
- Real-time demand and energy information provided to participants.



- **Network of trade allies pre-screened by TVA**
- **Delivery of energy efficiency products and services to consumers**
- **Includes ESCOs, Mechanical Contractors, HVAC Contractors, Weatherization contractors, Lighting Contractors, Architects, Engineers**



- Manufacturers at least 5 MW or greater
- Customized program
- Industrial process assessments
- Incentives to help reduce payback
- TVA Project Manager

## Major Industrial Program



# EnergyRight® Solutions for Business

- Complimentary initial energy assessment
- Financial incentives through standard rebates & custom offerings (\$0.10/kWh on first year savings up to 70% of project cost)

## Standard Rebate

- Standard Rebate offers:
  - [Lighting](#)
  - [HVAC](#)
  - [Motors](#)
  - [Food Services](#)
- Applications randomly selected for Pre and Post Measurement Review
- ALL applications require final receipts and invoices
- Rebate payments made by customer support center
- Must receive Application Approval Letter before beginning

## Custom Incentive

- Custom Incentives are available for projects that don't fall under the Standard Rebate
- Application initiates project scoping meeting
- Approval based on project potential (measurement cost <10% of project savings)
- Requires a Project Savings Estimate
- Requires customer approval of Project Savings Estimate
- TVA to perform all Pre and Post Measurement
- Incentive payment based +/- 10% of Project Savings Estimate
- Incentive payment based on \$0.10 per kWh saved

# Application Steps

1. End Use Customer Submits Application to Call Center.
2. Call Center Obtains Power Distributor Approval.
3. Pre Measurement Activity Initiated, if Applicable.
4. Call Center Communicates Pre Measurement Results and Install Instructions.
5. End Use Customer Contact's Call Center Once Installation is Complete.
6. Post Measurement Activity Initiated , if Applicable.
7. Project Approval Notice and Payment Made.



# Success Story: CEMEX

*“Energy efficient production was our goal, and TVA’s Major Industrial Program helped us make it a reality.”*

– Antonio De Luca (Plant Manager, CEMEX, Knoxville, TN)

## Compressed Air System Replacement (2009)

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CEMEX is a global building materials company that provides high quality products and reliable service to customers and communities throughout the Americas, Europe, Africa, the Middle East, and Asia.

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- **159 kW** Demand Reduction
- **1,900,000 kWh** Annual Energy Reduction
- **\$15,900** Incentive
- **\$93,500** Annual Energy Savings





# FY 11 Highlights

**559 GWh Achieved**  
**373 MW Reduction**

## Generation Partners

**55.82 GWh**

## EnergyRight Solutions for Business

121 GWh and 18.6 MW saved

**908** projects

## Self Audit

New record set in August with 5,827 participants

Exceeded goal, with **35,591** audits

60.64 GWh saved

## Heat Pump Program

**10,011** installations

## EnerNOC

104 participating Power Distributors

725 customer sites with **222.9 MW** nominated load

## Major Industrial Program (> 5 MW)

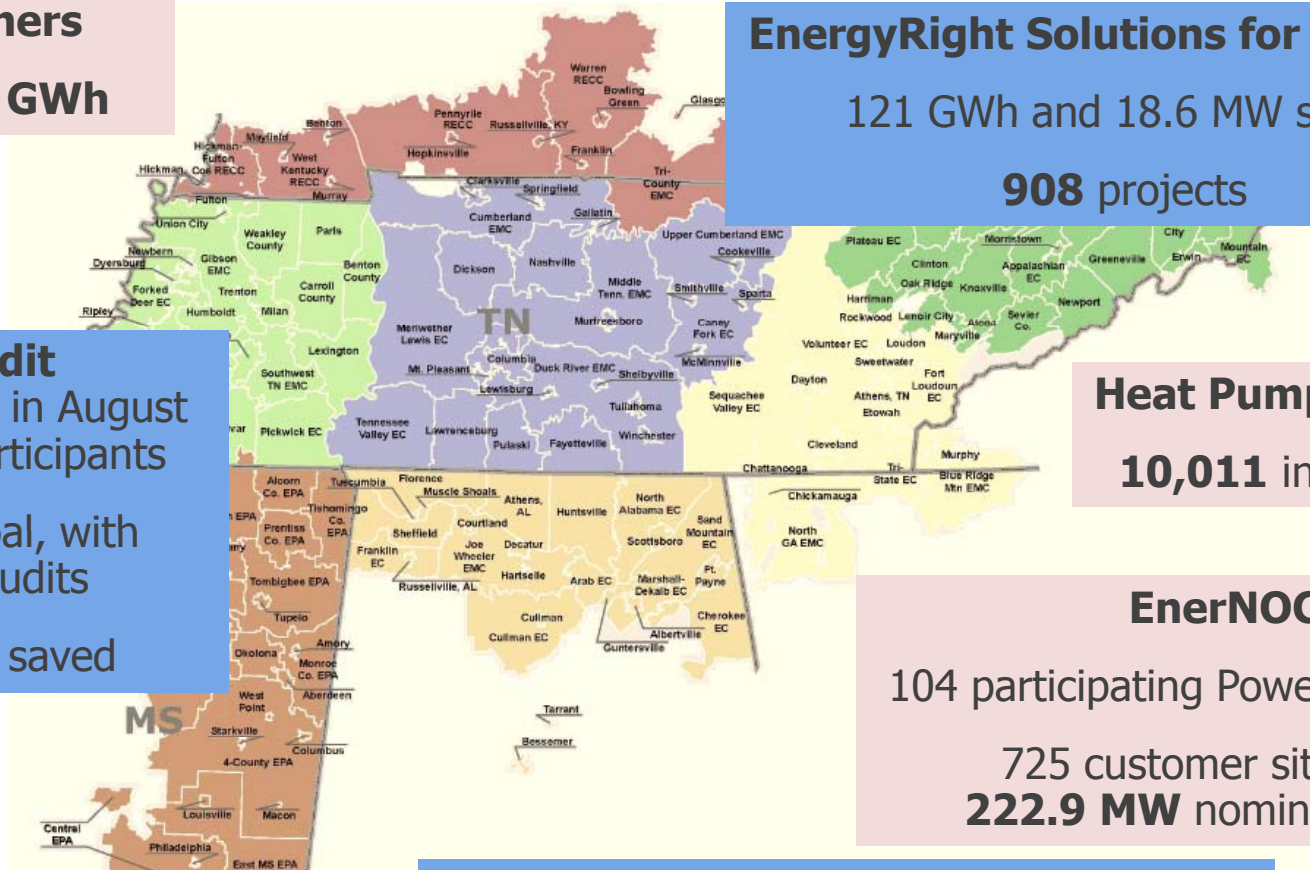
**133 GWh** and 14.3 MW saved

**38** projects

## In-Home Energy Evaluations

Over 25,000 since program inception, April 2009

145 Participating Power Distributors





# FY 12 NE District Highlights

## Generation Partners

16.75 GWh and  
3.04 MW saved  
109 projects

## Self Audit

2,296 audits

1.74 GWh  
0.41 MW saved

## Major Industrial Program (> 5 MW)

14.48 GWh and  
1.42 MW saved  
15 projects

## In-Home Energy Evaluations

Over 3,400 in FY 12 and 9,382 since program inception, April 2009  
5.30 GWh and 1.50 MW (in FY12)  
23 Participating Power Distributors

## EnergyRight Solutions for Business and Industry

35.13 GWh and  
5.41 MW saved  
424 projects

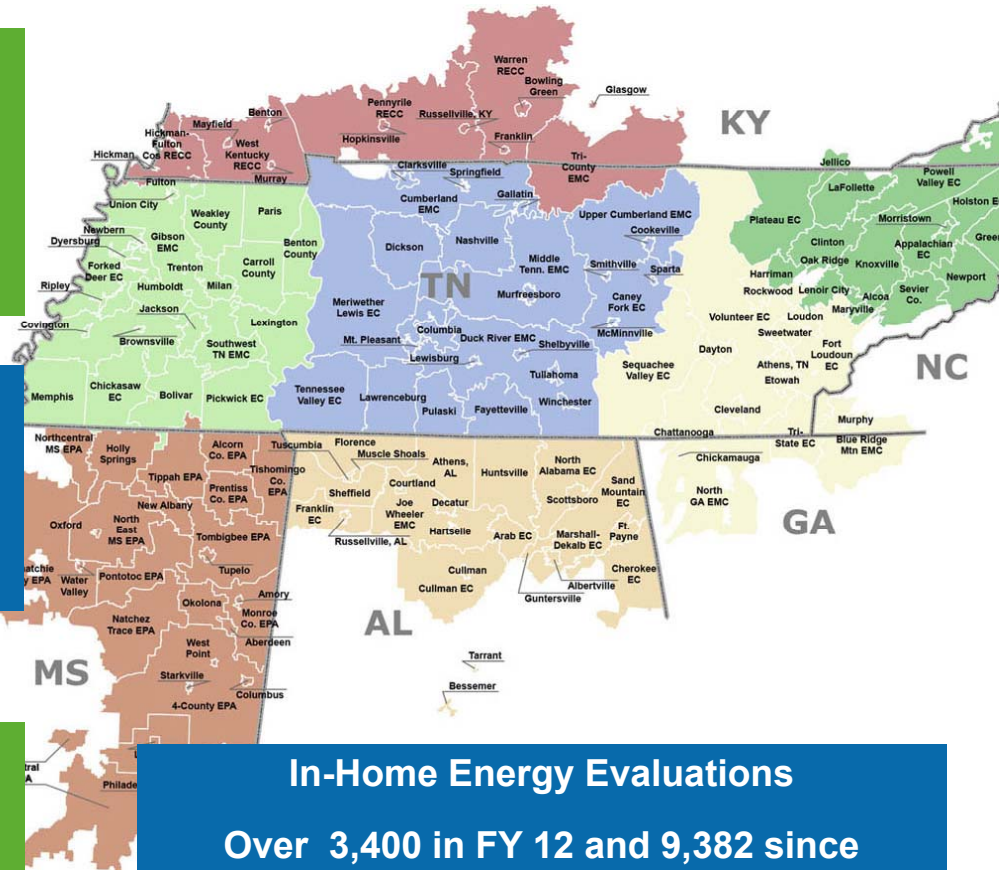
## Heat Pump Program

1,538 installations

5.22 GWh  
2.48 MW

## EnerNOC

20 participating Power Distributors  
181 customer sites with  
44.8 MW nominated load





# Going Forward... What you can do

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- Provide us input on your needs and wants regarding energy efficiency
- Help us understand what is working and what is not working
- Will you help me help you help me? –  
[www.energyright.com](http://www.energyright.com)
- Can I call you when I need you? (866) 366-7820 or  
[www.enernoc.com/solutions](http://www.enernoc.com/solutions)
- Thank You!

# Cost Comparison

	Lifespan	Cost	kWh of Electricity Used over 50,000 hrs	Cost of Electricity* (\$0.10/kWh)
60 Watt Incandescent	1,200 hrs/2 yrs.	\$0.60	3,000	\$300
14 Watt CFL	10,000 hrs/13 yrs.	\$3.95	700	\$70
6 Watt LED	50,000 hrs/68 yrs.	\$35.95	300	\$30