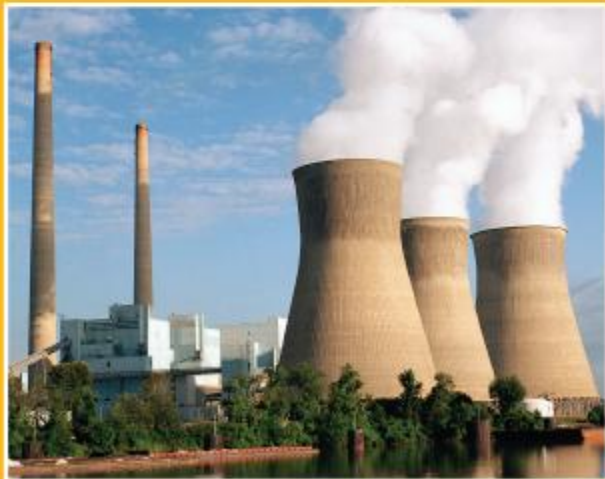


# West Virginia *Energy*



**DIVISION OF ENERGY**



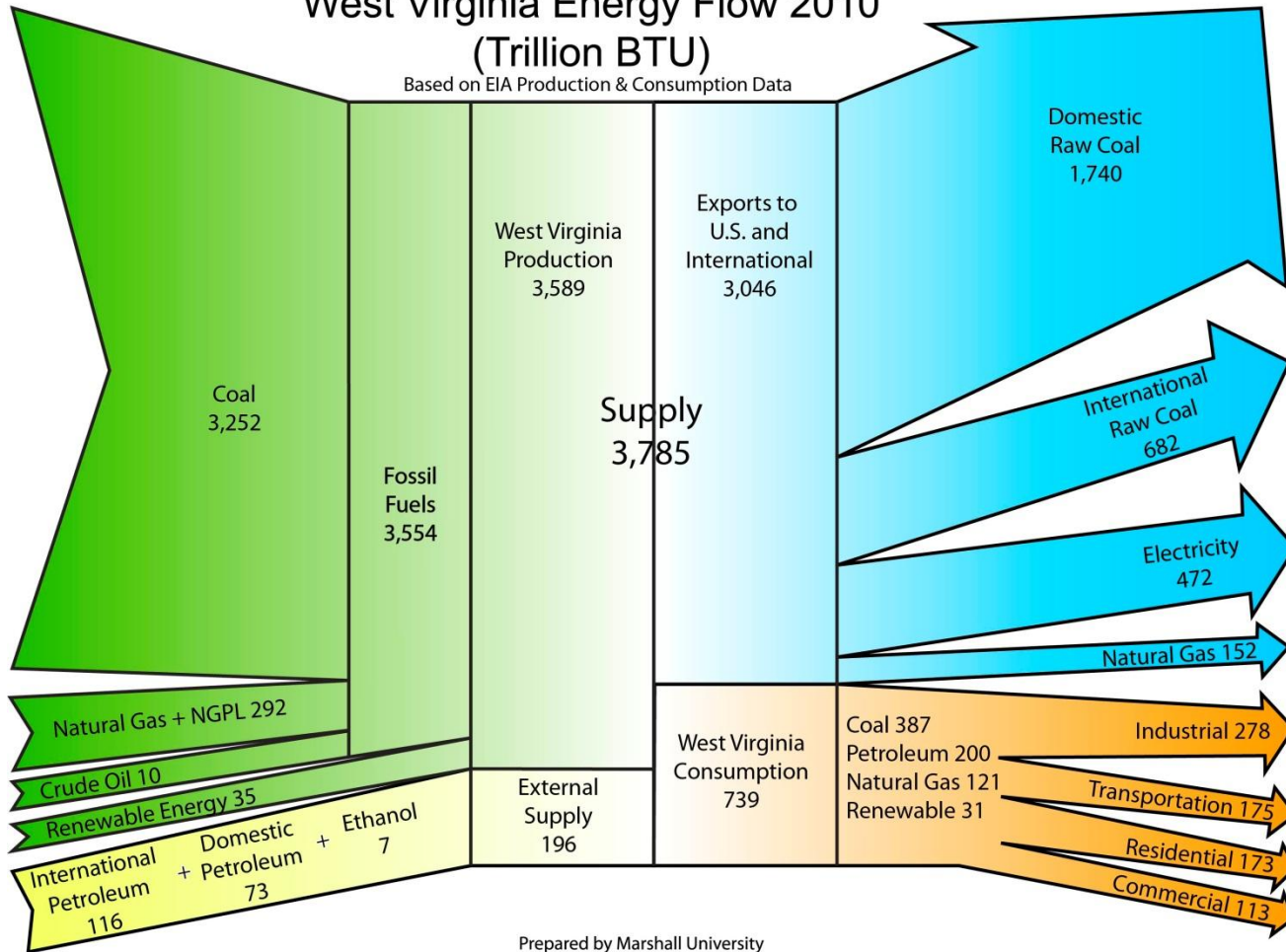
*West Virginia*  
**WEST VIRGINIA**

# Energy Efficiency Efforts at the State of West Virginia



## West Virginia Energy Flow 2010 (Trillion BTU)

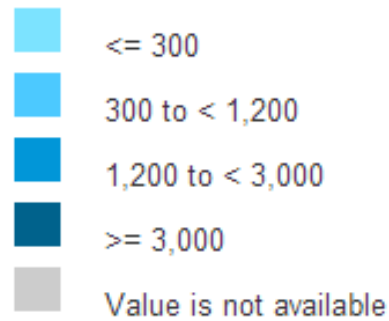
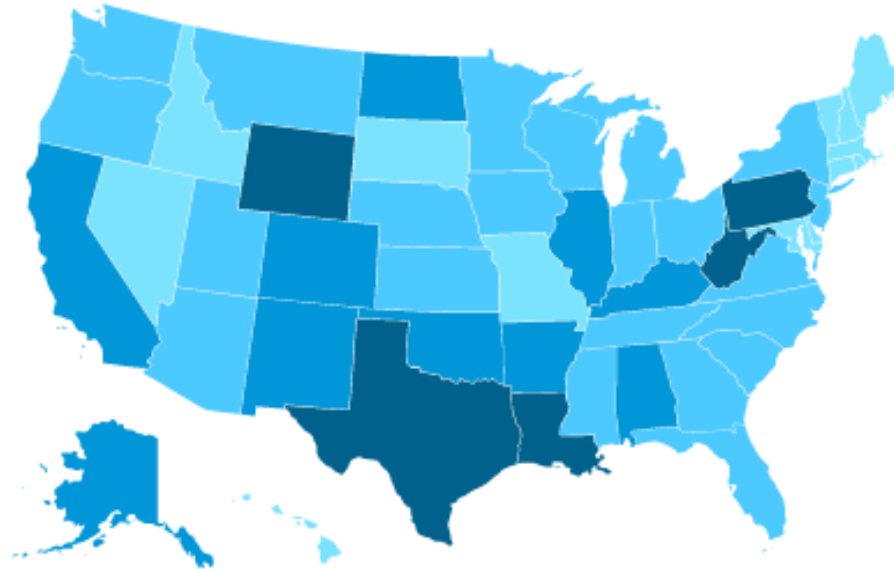
Based on EIA Production & Consumption Data



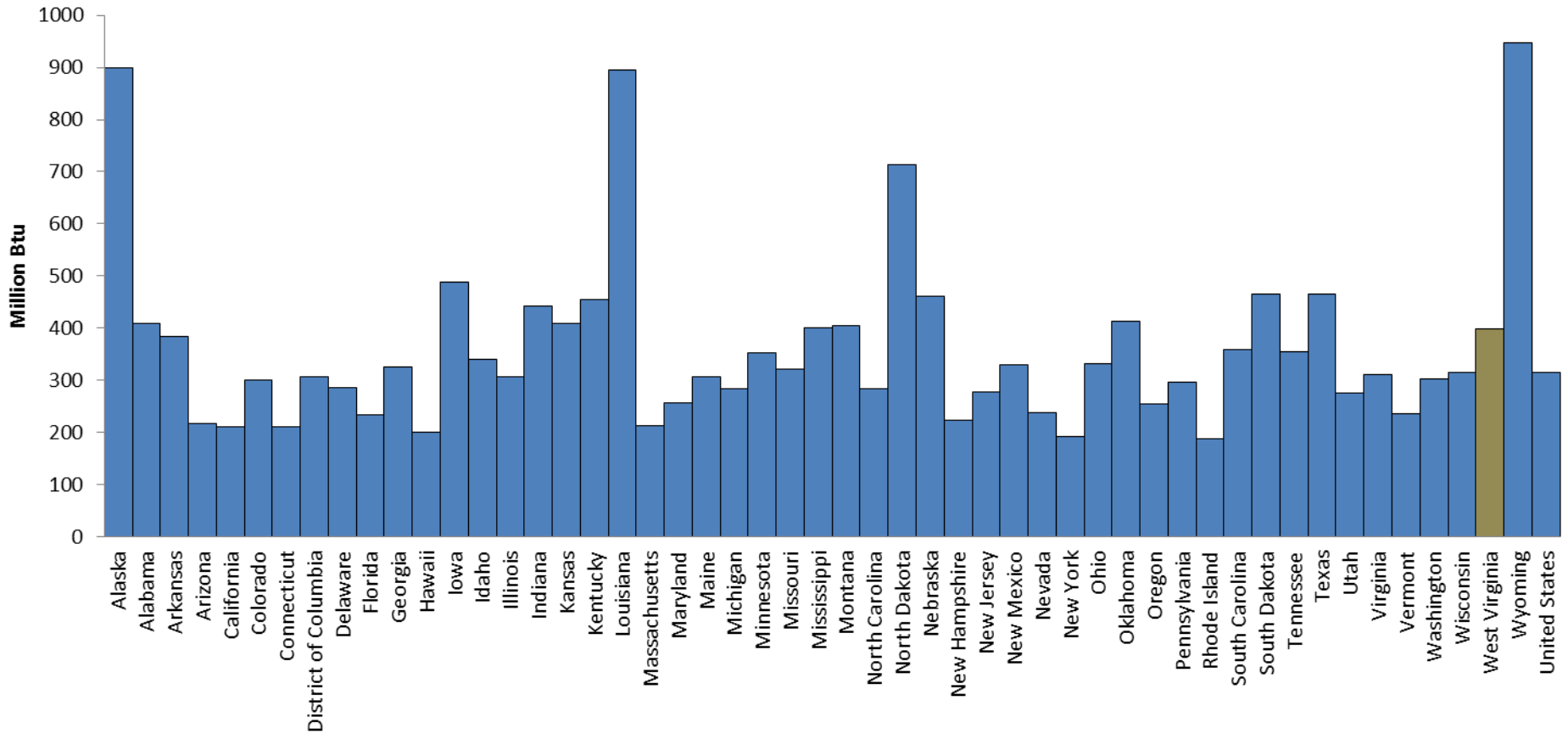
Prepared by Marshall University  
under contract to WV Division of Energy

# Total Energy Production, 2010

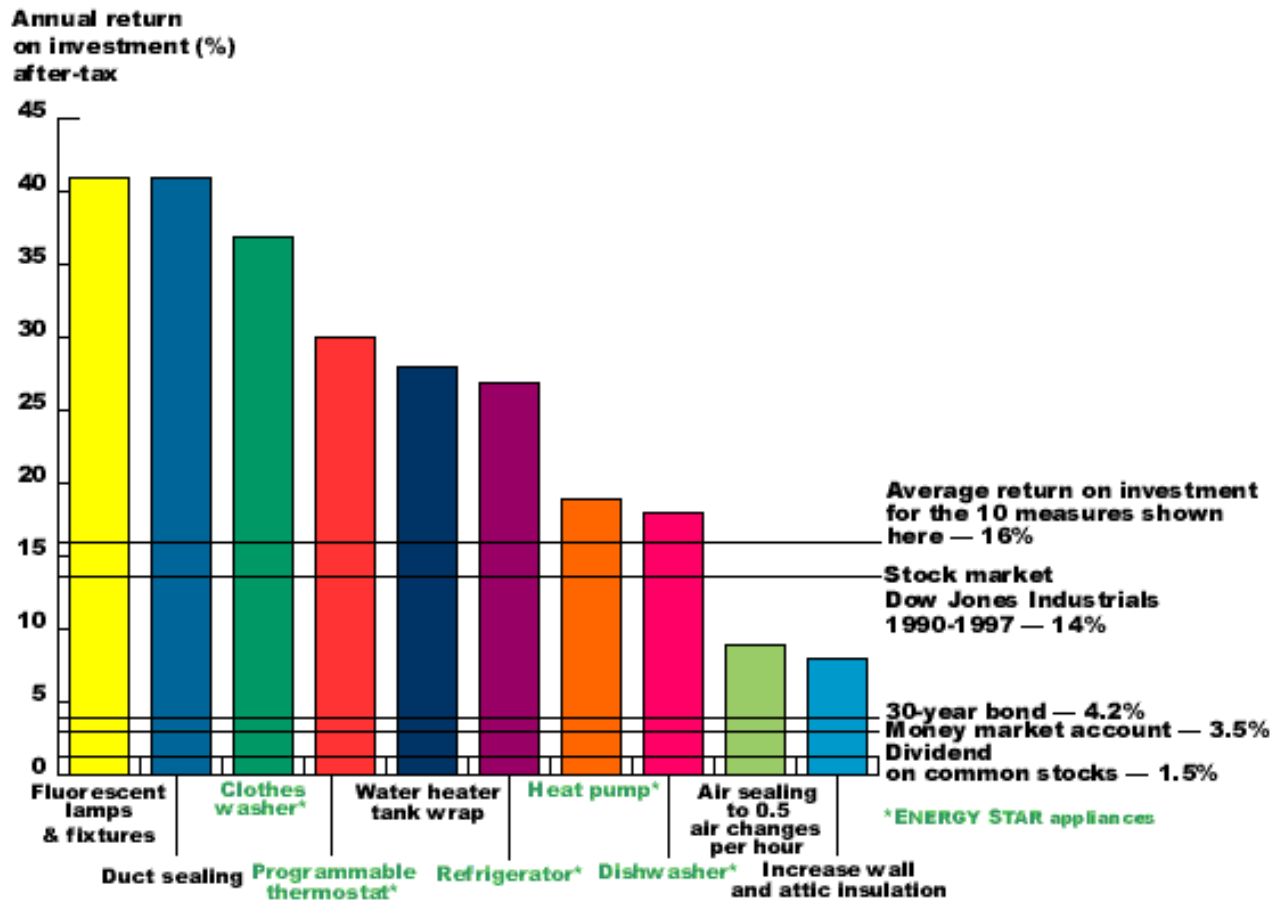
Units in TBtu



# Energy Use per Capita 2010



# Energy Efficiency as an Investment



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# Energy Savings

Energy Efficiency Upgrade	Extra cost <sup>1</sup>	Annual Bill Savings <sup>2</sup>	Simple Payback (yrs)	Rate of Return
Fluorescent Lamps & Fixtures	\$200	\$80	2.5	41%
Duct sealing	\$250	\$95	2.6	41%
ENERGY STAR Clothes washer	\$194	\$66	2.9	37%
ENERGY STAR Programmable Thermostat	\$107	\$29	3.7	30%
Water Heater Tank Wrap (R-12)	\$85	\$23	3.7	28%
ENERGY STAR Refrigerator	\$97	\$23	4.2	27%
ENERGY STAR Heat Pump	\$692	\$126	5.5	19%
ENERGY STAR Dishwasher	\$29	\$5	5.5	18%
Air sealing to 0.5 air changes per hour	\$522	\$38	13.7	9%
Increase wall and attic insulation	\$1,784	\$111	16.1	8%
<b>Total</b>	<b>\$3,960</b>	<b>\$597</b>	<b>6.6</b>	<b>16%</b>

Total bill savings as % of baseline bill<sup>3</sup> 36%

NOTES: Assumes typical house with air-source heat pump, electric water heating, clotheswasher, clothes dryer, and dishwasher. Purchase prices and annual bill savings for efficiency measures are in nominal 1997 dollars. The rate of return assumes 3% annual inflation in residential electricity prices. After-tax rates of return assume a 28% marginal income tax rate.

<sup>1</sup> Purchase price of clothes washer, dishwasher, thermostat, and heat pump measures is incremental to the price of existing "NAECA" appliance standards. All other prices reflect the full cost of the measure, including installation.

<sup>2</sup> Bill savings assume average electricity cost of 8.8¢ per kilowatt-hour. Bill savings of equipment measures are relative to a NAECA standard unit.

<sup>3</sup> Heating and cooling consumption values are from LBNL energy modeling using DOE-2; other enduse consumptions are from the U.S. Department of Energy's Residential Energy Consumption Survey (RECS).

West Virginia Division of Energy

# **ENERGY EFFICIENCY PROGRAMS**



# Stimulus

- Funded by the American Recovery and Reinvestment Act (ARRA) and the Energy Efficiency and Conservation Block Grant (EECBG).
- \$38 million invested in state and local energy efficiency projects.
- Projects ranged from lighting upgrades to geothermal HVAC installations.
- Kelly Bragg and Bill Willis on agenda to discuss projects.



# Local Energy Efficiency Grant Program

- Provides grant funding to local units of government with community projects intended to assist business owners and homeowners with becoming more energy efficient.
- This program supports projects such as:
  - Energy Assessments (Residential/Commercial)
  - Educational Activities (Expos, Fairs, Conferences, Workshops, Etc.)
- 5 grant recipients for the current program year.
- Next years grant will support 10 projects.
- Cullen Naumoff on the agenda to discuss the Charleston project.



# Industrial Programs

## Economy-Energy-Environment (E3)

- Contracted through the West Virginia Manufacturing Extension Partnership.
- Provides energy and environmental services to industries in West Virginia.
- Gerald Biser on agenda to discuss program.



**E3: ECONOMY - ENERGY - ENVIRONMENT**  
A SUSTAINABLE GROWTH STRATEGY

# Industrial Programs

## Industrial Assessments

- Contracted through the West Virginia Industrial Assessment Center.
- Performs walk through energy evaluations of West Virginia industrial facilities.
- Dr. Gopalakrishnan on agenda for further discussion.



# USDA REAP Grants

(Rural Energy for America Program)

## WV Rural Business Energy Efficiency Initiative

- Contracted with Natural Capital Investment Fund, Inc.
- Hannah Vargason on agenda to discuss NCIF's program.

## WV Small Business Energy Assessments

- An additional 250 energy audits for small businesses around West Virginia



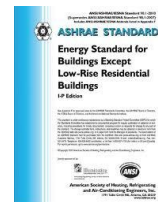
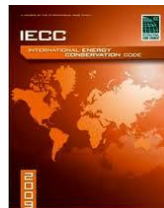
# Projects with Industry

- Housed out of the WVU and WVU Tech.
- Designed as a senior capstone design experience, PWI utilizes engineering students to provide on-site technical assistance to West Virginia Industry.
- Services focus on process efficiency improvements.
- Examples of assisted industry:
  - Allegheny Wood Products
  - Lockheed Martin
  - PPG Industries
  - Bayer Crop Sciences

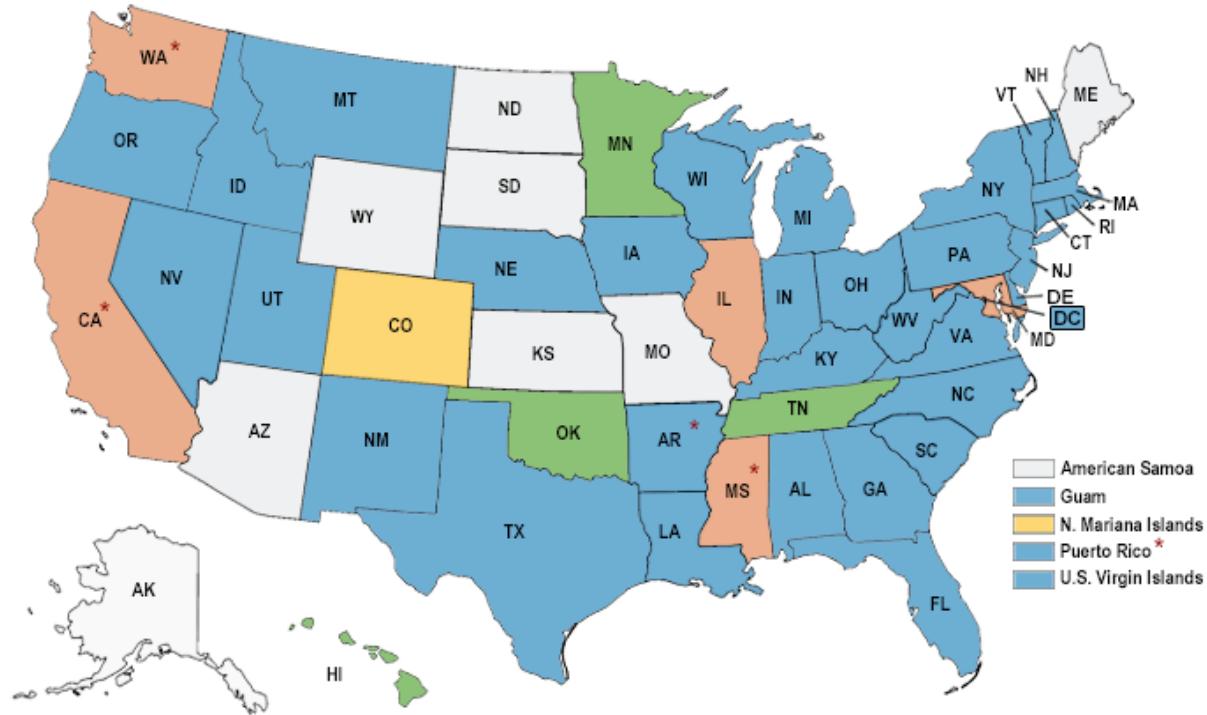


# Energy Code Adoption and Training

- In 2013, facilitated the adoption of the 2009 International Energy Conservation Code for residential and the 2007 ASHRAE 90.1 for commercial buildings.
- Five year effort.
- Training opportunities made available through Pierpont Community and Technical College (residential) and West Virginia University (commercial).
- Workshops held at various locations around West Virginia.



# Status of State Energy Code Adoption



<b>5</b> ASHRAE 90.1-2010/2012 IECC equivalent or more energy efficient	<b>36</b> ASHRAE 90.1 - 2007/2009 IECC equivalent or more energy efficient	<b>4</b> ASHRAE 90.1 - 2004/2006 IECC equivalent or more energy efficient
	<b>2</b> ASHRAE 90.1 - 2001/2003 IECC equivalent or less energy efficient	<b>9</b> No Statewide Code

\* Adopted new Code to be effected at a later date

As of May 2013



Thank you