

# VIRGINIA'S NATURAL GAS RESOURCE



# VOGA

## Virginia Oil & Gas Association



85 Companies  
making it happen from

Drill Bit to Burner Tip



Land Agents

Attorneys

Surveyors

Engineering Firms

Environmental Firms

Construction Companies

Supply Companies

Quarries

Drilling Rigs

Wireline Companies

Completion Companies

Completions Rigs

Consultants

Roustabouts

Compressor Sales

Producers

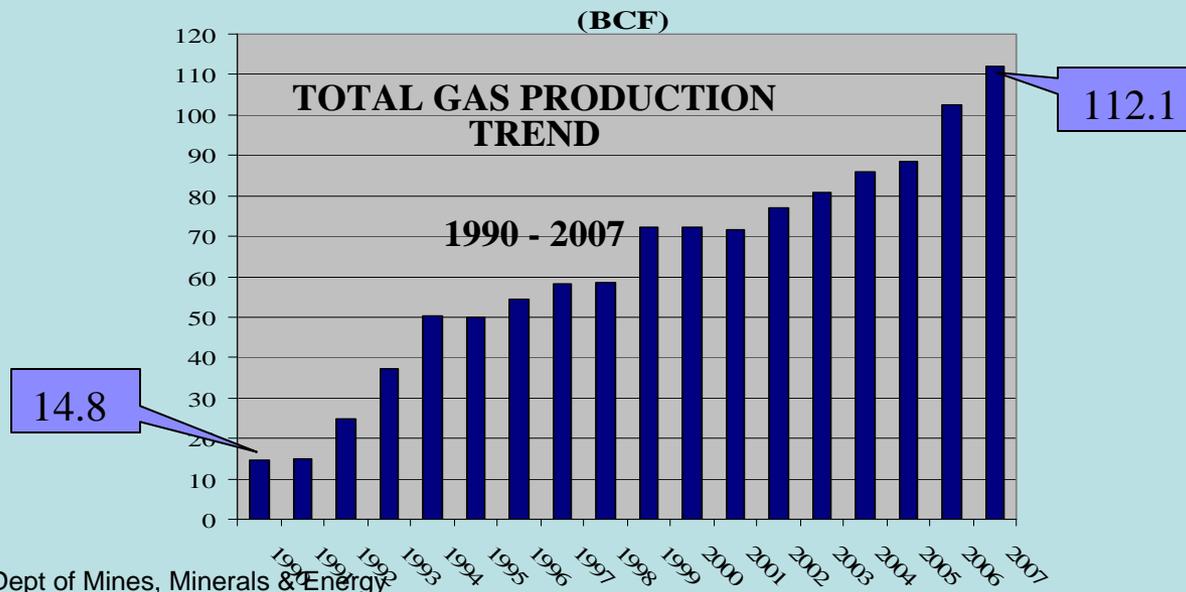
Pipeline Transmission

Distribution Pipelines

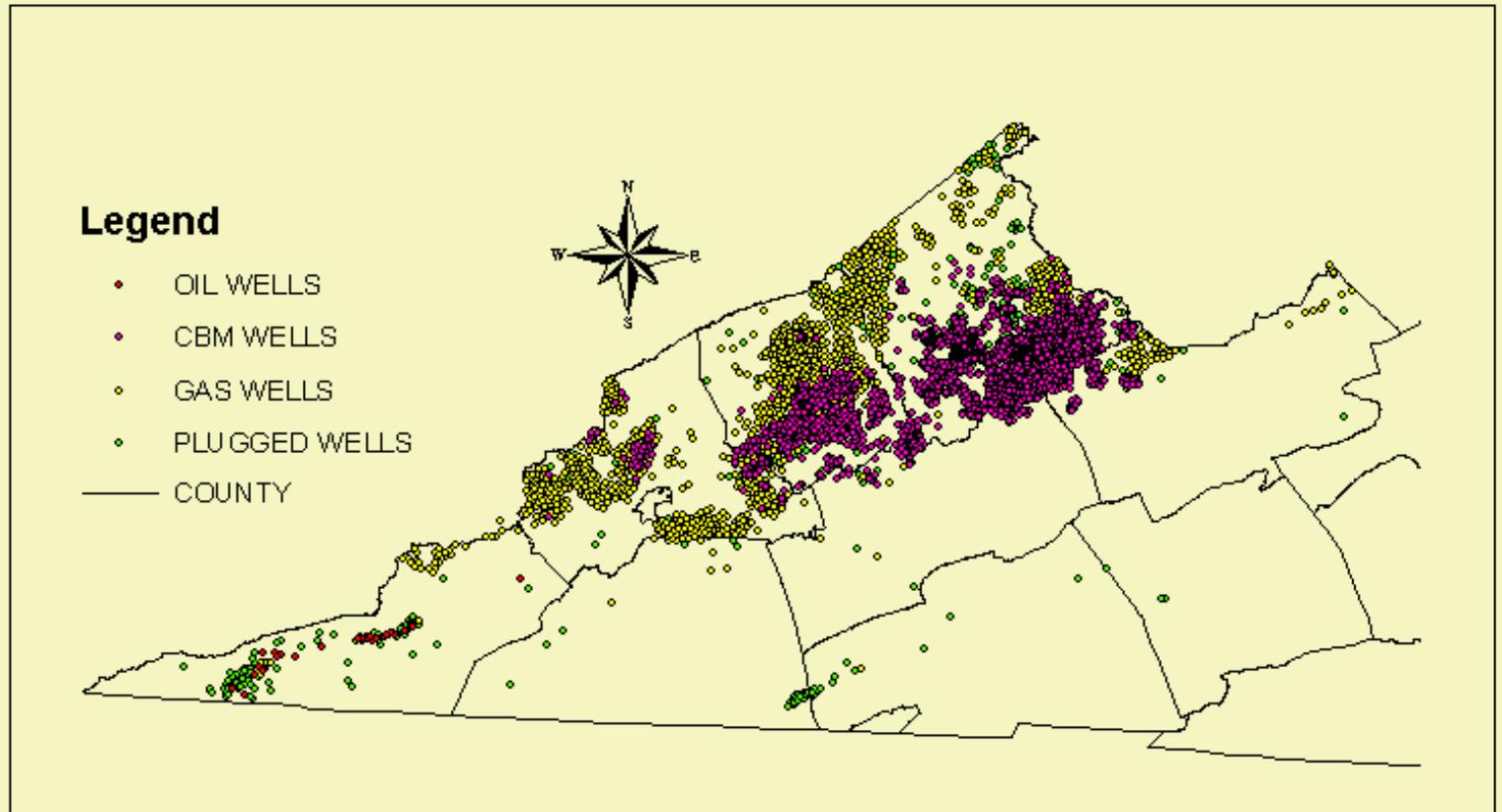


# 2007 – Another Record Year in VA

- **TOTAL GAS PRODUCTION - 112.1 BCF**
  - representing a 9.2% increase over 2006
  - representing a 38.7% increase over past 5 years
  - 112 Bcf = 20 million Bbls oil
- **5,735 PRODUCING WELLS**
  - representing a 10.7% increase over 2006

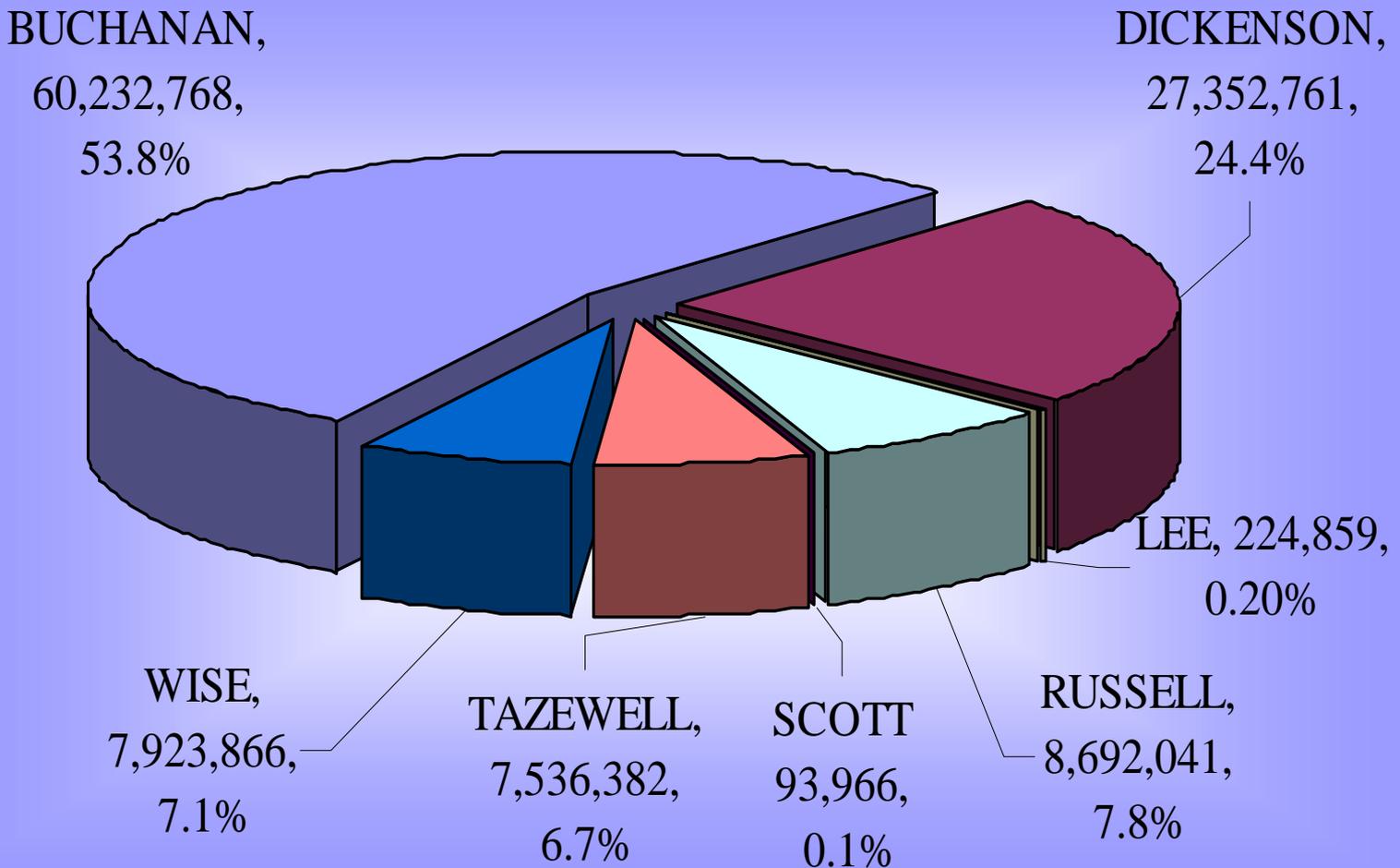


# SOUTHWEST VIRGINIA GAS AND OIL WELLS



**Production concentrated in 7 counties:  
Buchanan, Dickenson, Wise, Russell, Tazewell, Scott, Lee**

# TOTAL PRODUCTION BY COUNTY 2007



# Types of Gas Wells in Virginia

- ***Coalbed Methane (CBM) Wells***
  - Natural gas in coal seams
  - Produced above 3,000 ft
  - Accounts for 80% of Virginia's production
- ***Non-Coal Gas Wells***
  - Sandstone, limestone, shale
  - Deeper than 3,000 ft (typically 3,000-6,000ft)
  - Accounts for 20% of Virginia's production
- ***Horizontal Wells***
  - New Technology

# VIRGINIA is **UNCONVENTIONAL**

- Coalbed Methane
- Tight Gas Sands
- Gas Shales

## **Unconventional = Non Traditional Reservoirs**

- Low permeability (tight) sands, shales and coal

Now accounts for 47% of gas in the U.S.

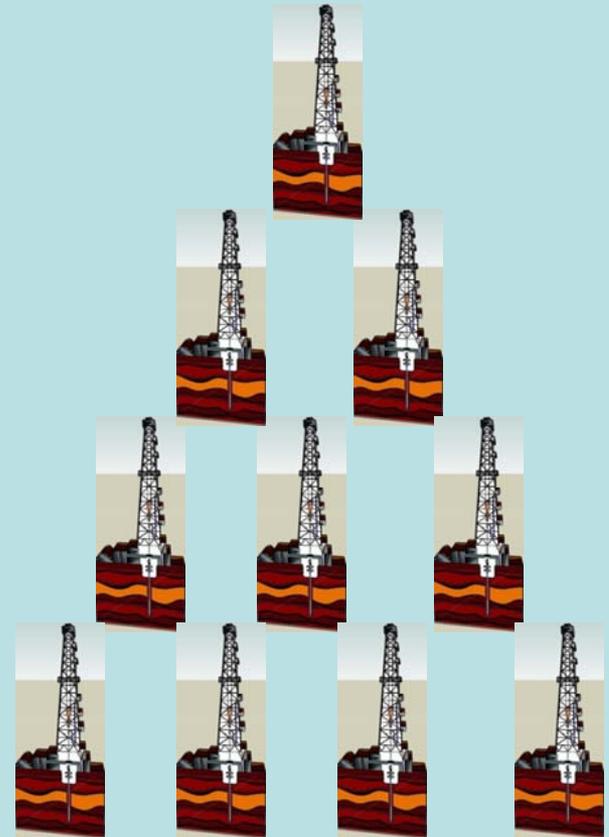
# Texas

vs.

# Virginia

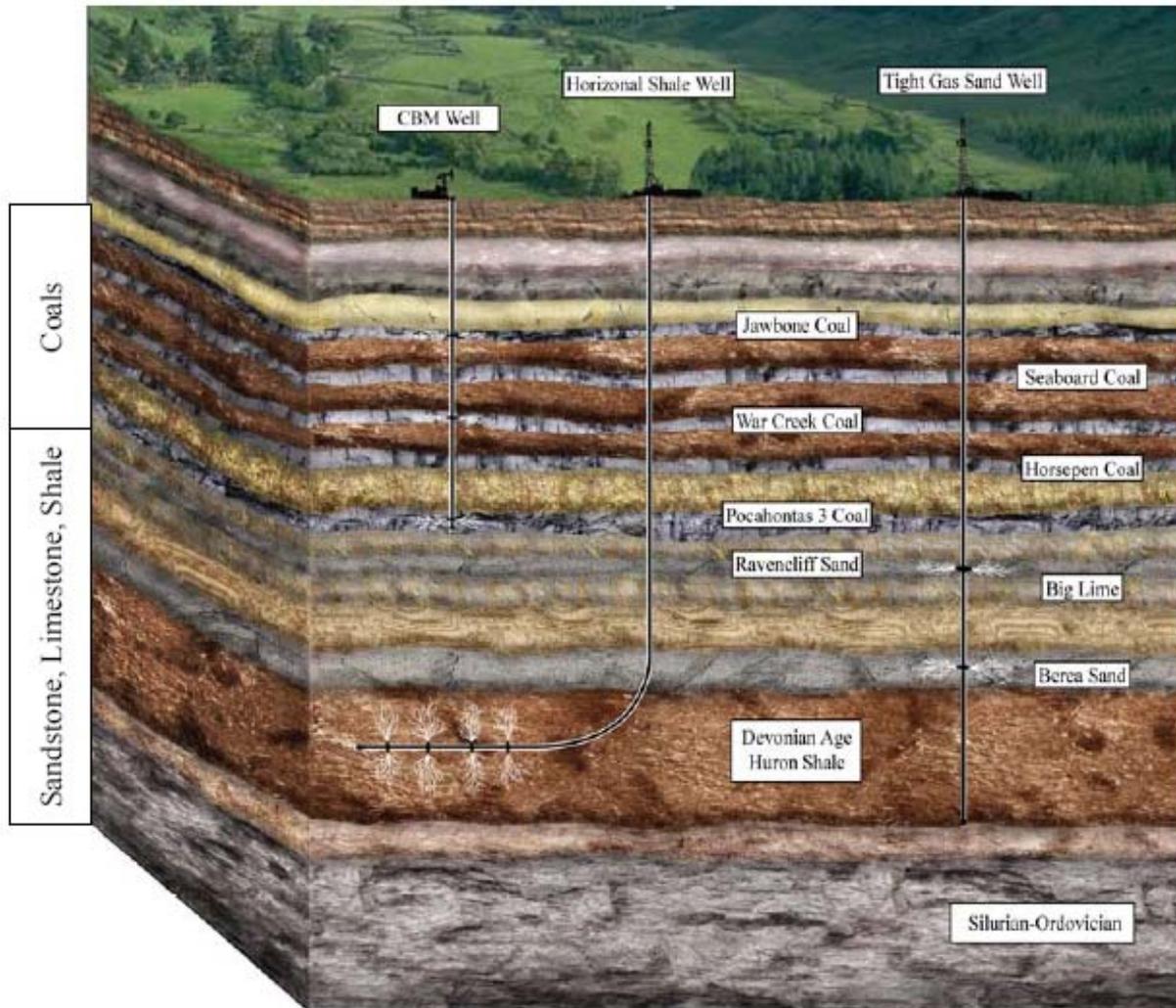


=



> Cost  
> Production

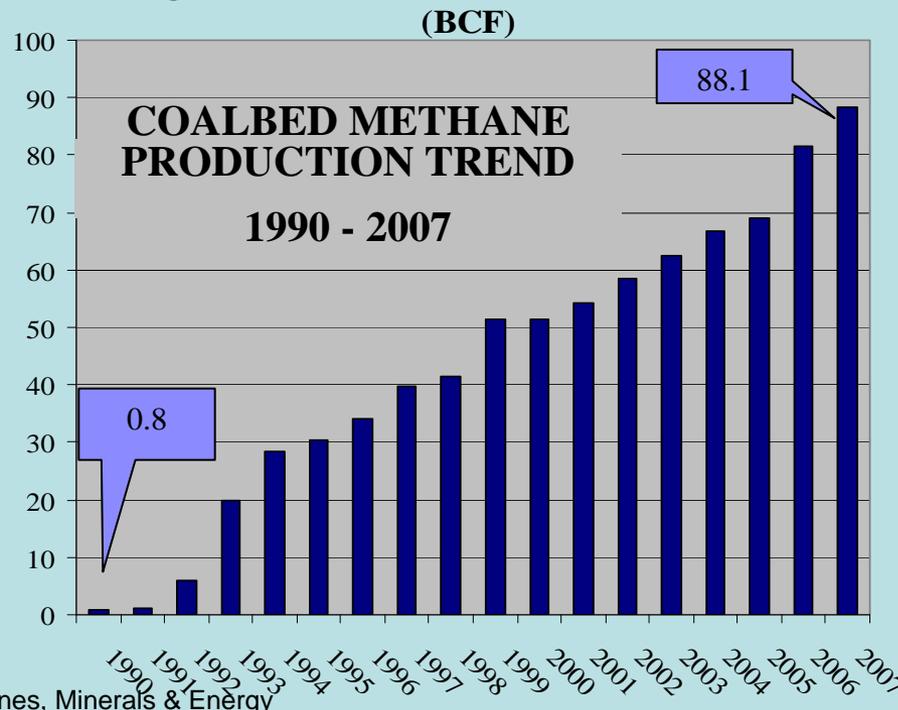
# VIRGINIA'S NATURAL GAS DEVELOPMENT



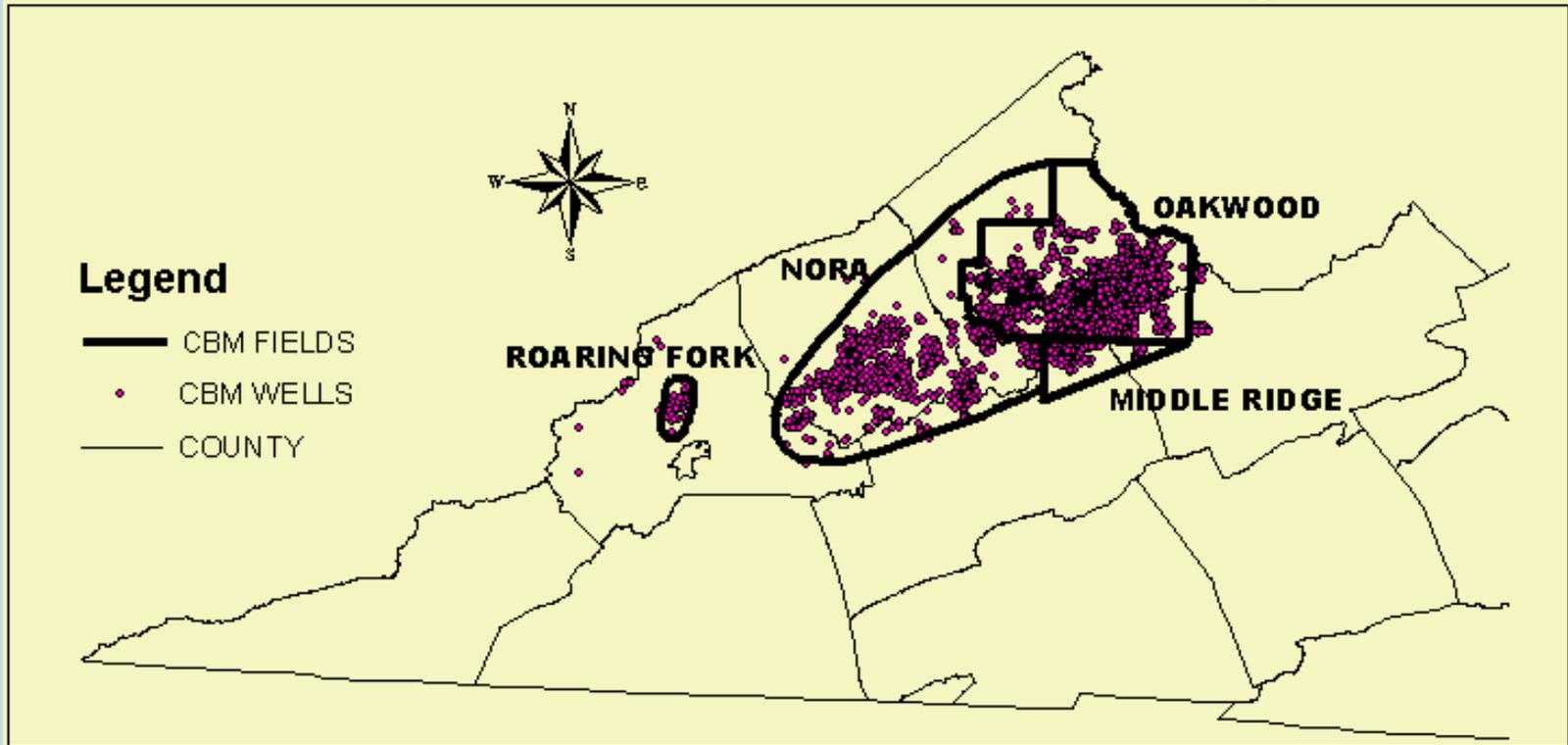
- 1950 – Lower Huron
- 1970 – Berea
- 1990 – CBM
- 2007 – Horizontal

# 2007 COALBED METHANE PRODUCTION

- COALBED METHANE PRODUCTION - 88.3 BCF
  - representing an 8.4% increase over 2006
  - 79% of total production
- 4,235 PRODUCING COALBED WELLS IN 2007
  - representing a 10.7% increase over the 2006 year.



# Coalbed Methane Fields in Virginia



- **Virginia ranks #5 in CBM production in U.S.**
- **EIA ranks Oakwood 23<sup>rd</sup> and Nora 53<sup>rd</sup> Largest Gas Fields in U.S.**
- **Combine all CBM wells in Virginia –  
Top 10 Largest Gas Field in the U.S.!**

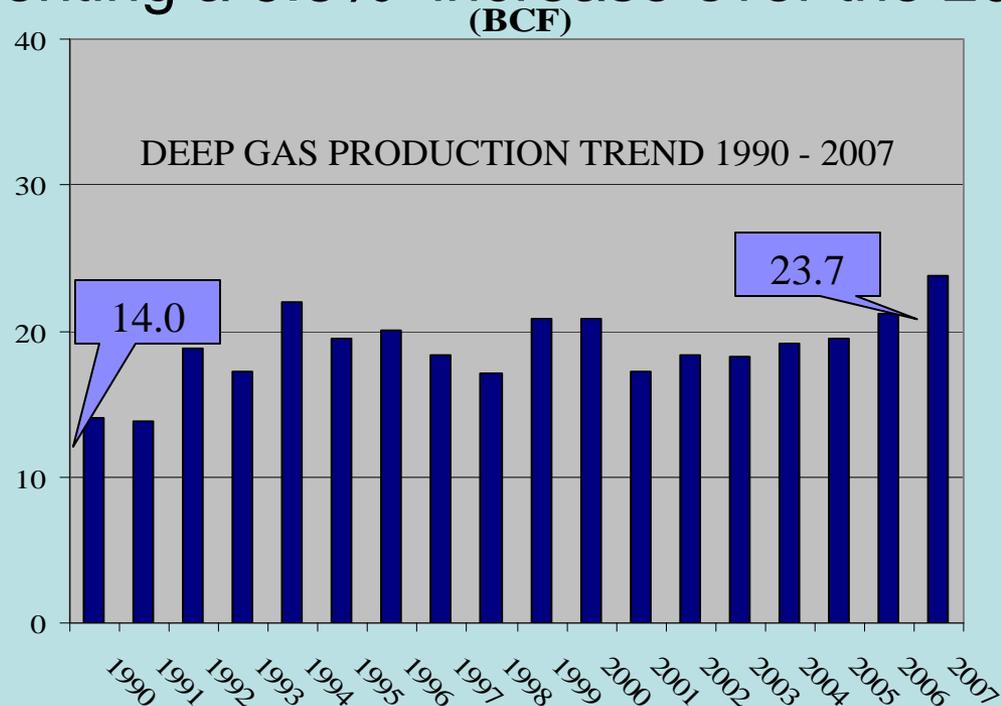
# 2007 DEEP GAS PRODUCTION

## ➤ DEEP GAS PRODUCTION - 23.7 BCF

- representing a 12.2% increase over 2006
- 21% of total production

## ➤ 1,588 PRODUCING DEEP WELLS IN 2007

- representing a 6.8% increase over the 2006 year.

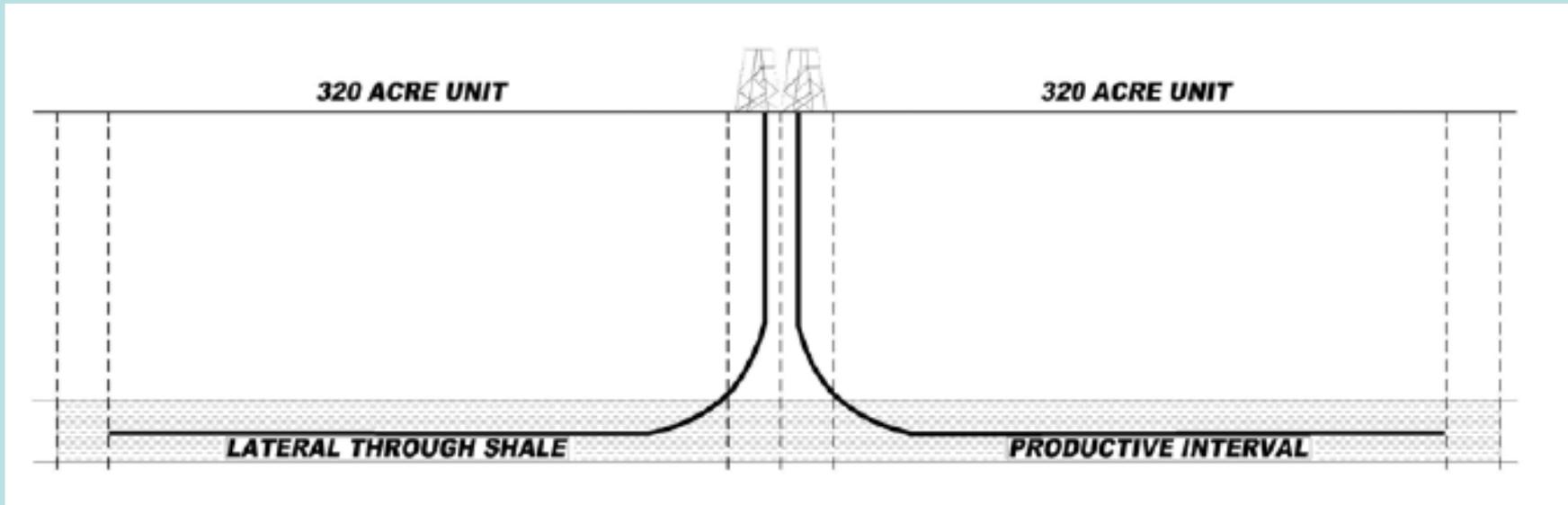


# New Technology Opens Up New Horizons

- ***Horizontal Wells***

- Equitable Production drilled 1<sup>st</sup> horizontal CBM in VA in 2003
- Range Resources drilled 1<sup>st</sup> Huron shale horizontal in 2007
- Range Resources currently drilling 1<sup>st</sup> Berea horizontal
- VA Horizontals to date:
  - (8 CBM / 12 Conventional)

# Multiple Wells on Same Pad



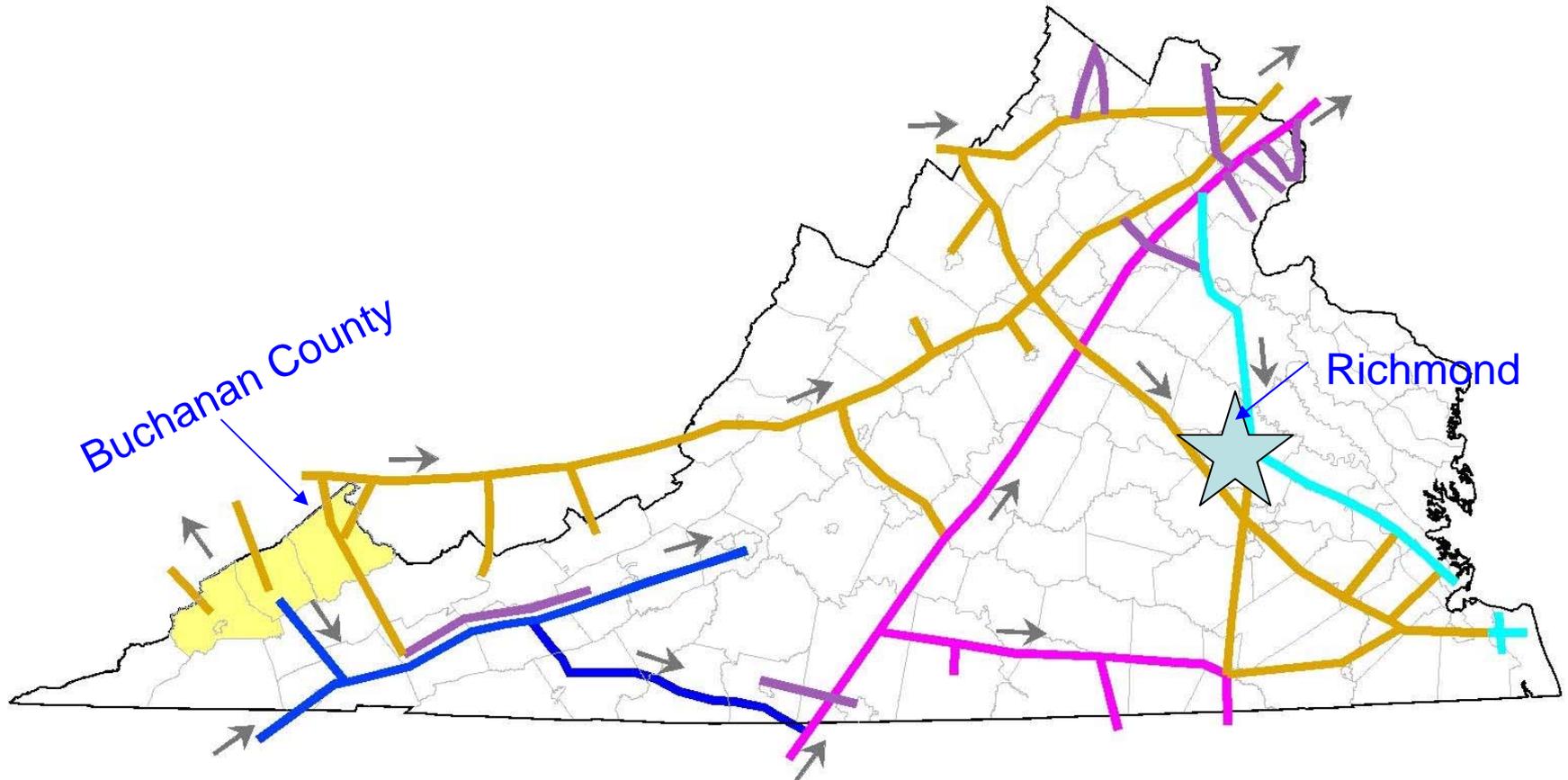
Utilize same pad to reduce footprint

# Benefits of Horizontal Drilling

- Working Interest Owners, Royalty Owners, and the State will likely benefit by maximizing production
- Promote conservation of the gas resource and prevent waste by more effectively extracting the resource
- Laterals can drill underneath areas otherwise inaccessible from the surface
- Less potential impact on coal
- Less potential surface disturbance

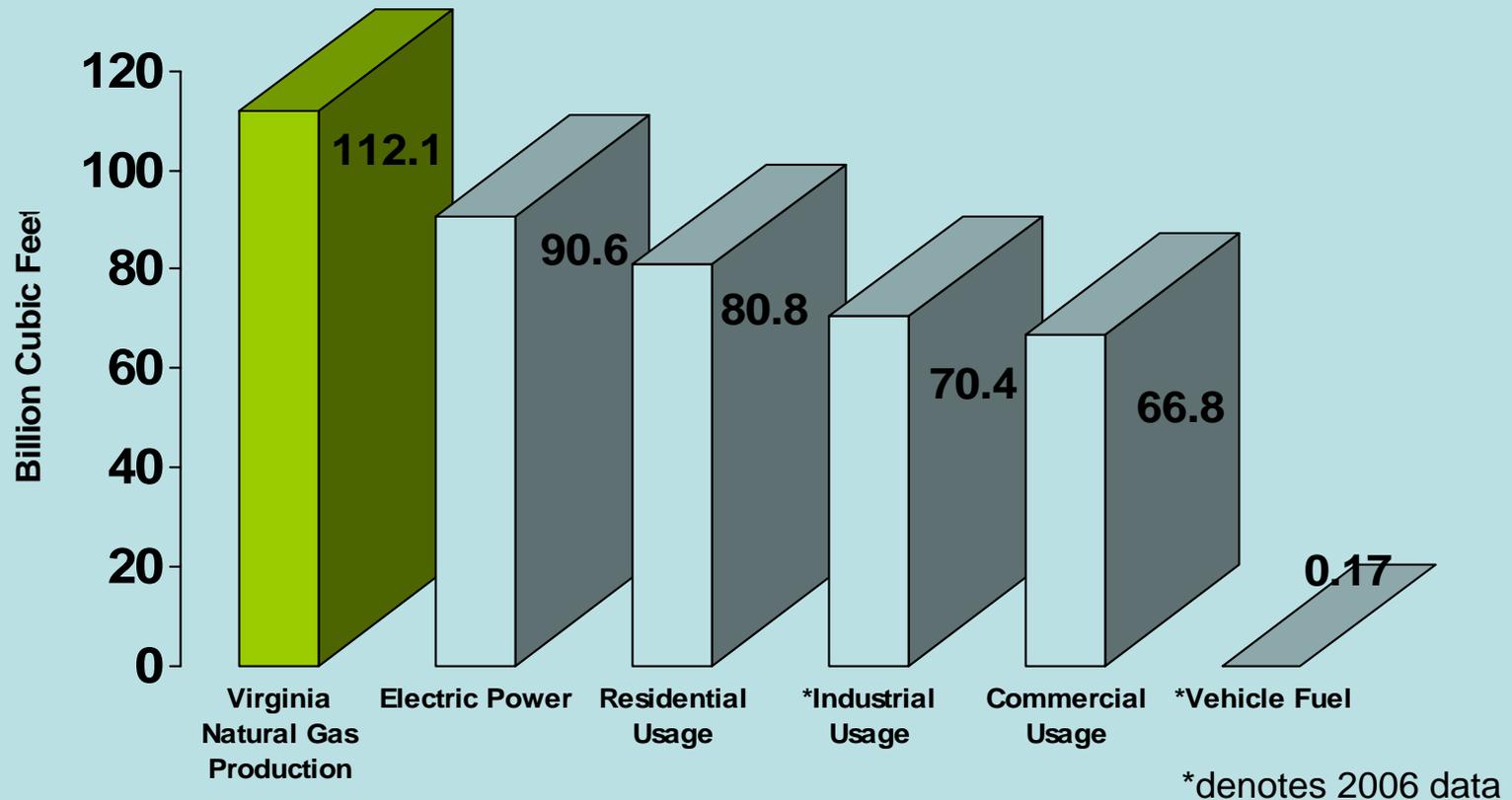
# How do we get the gas to market?

## VIRGINIA PIPELINE SYSTEM



**Virginia's gas is transported underground  
from Southwest VA to Eastern VA**

# 2007 Virginia Production and Consumption



**Total Consumption = 308.8 Bcf**

**Total Production = 112.1 Bcf = 36% of usage**

# Financial Benefits of Natural Gas for Virginia

- \$300+ Million – Capital Budget for Drilling in 2008
- Creation of 3,000 High Paying Jobs
- Severance tax – paid to county
  - \$20.5 million in 2007
  - Increase of 230% over past 4 years
- Real estate tax - \$5.0 million+ annually
- Royalty to mineral owners
- Trickle Down Economy

# *HOMEGROWN* GAS FROM VIRGINIA IS GOOD

- Nationally Ranked Energy Resource
- Reduces Dependence on Foreign Oil
  - 97% of natural gas consumed in U.S. is from North America
- Provides High Paying Jobs to Virginia Residents
- Significant Financial Benefit to Counties and State
- Cleanest Burning Fossil Fuel