

MINING'S CRITICAL ROLE IN INFRASTRUCTURE, ENERGY AND THE ENVIRONMENT

A Colorado Perspective – The Road Ahead

STUART A. SANDERSON, PRESIDENT

WWW.COLORADOMINING.ORG



The Colorado Mining Association

- Founded 1876, incorporated 1897
- 900 members include producers of coal, metals, agricultural and industrial minerals
- More than 180 companies, including vendors, service providers and manufacturers



Mining in Colorado

- Accounts for 73,450 Jobs
- \$8.8 Billion to CO Gross Domestic Product (GDP)
- Top US Gold Producer Acquires State's Top Gold Mine
- CO now ranks 32nd among states in Fraser Institute Survey

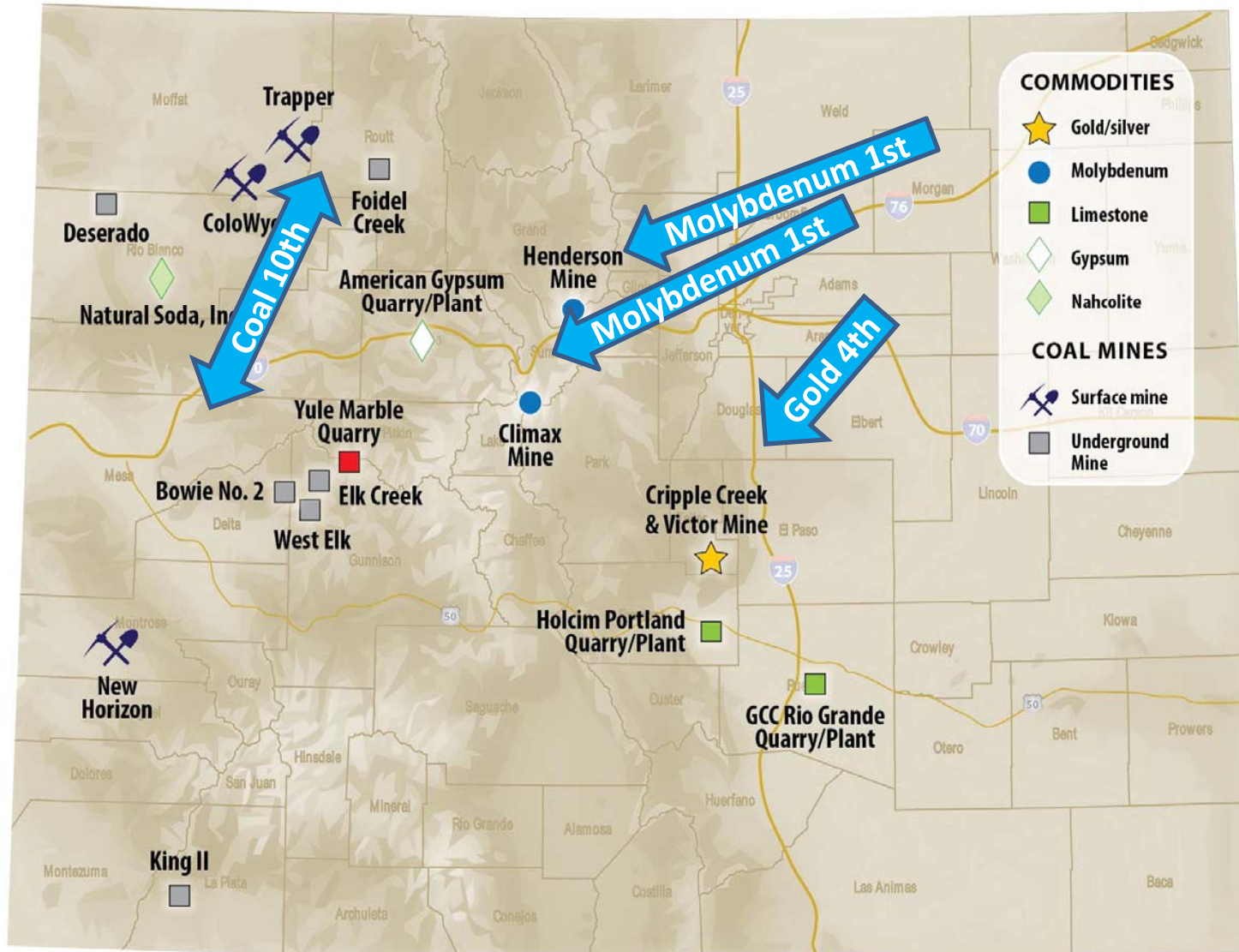


COLORADO – INTERNATIONAL MINING CENTER

- Colorado School of Mines – founded 1874
- Denver – infrastructure of expertise
- Headquarters to hundreds of companies



Mining Colorado's Heritage and its Future – Colorado Ranks





Molybdenum

- Added to stainless and alloy steels for anticorrosive and strength qualities
- It is used in many of the products used in households and industry:
 - Refines and removes sulfur from petroleum products
 - Used in Automobiles, motorcycles, bicycles, industrial, lab, and hospital equipment and parts
 - Heat sinks, computers
 - Toothpaste, WD-40, light bulbs, cooking utensils, paint, and so much more.

COLORADO RANKS 1ST!



Mining Matters... when you drive a vehicle.

Thin Film Applications



Photovoltaics (Solar Cells)



Flat Panel Displays

Henderson and Climax Mine Complexes



Slide 8

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Bob Burnham, 12/2/2015

Climax Mine

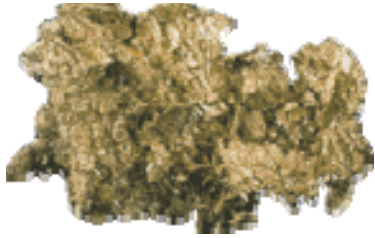
*Located 13 miles north of
Leadville, Colorado at 11,318
foot Fremont Pass*



Reduced Molybdenum (MO)

Production at Henderson Mine in 2016

- Company Announced Decision to reduce production by more than 40% in 2016
- Demand for metals and prices have declined
- Slowing economic growth in China and reduced imports have also affected the price of metals generally
- Low MO price leads to declining production



Gold

- Used in a variety of products and industries including:
 - Currency and Jewelry, Currency & Jewelry
 - Medicine and dentistry
 - Cell phones, MP3 players, and automobile airbag control panels

Colorado ranks 4th

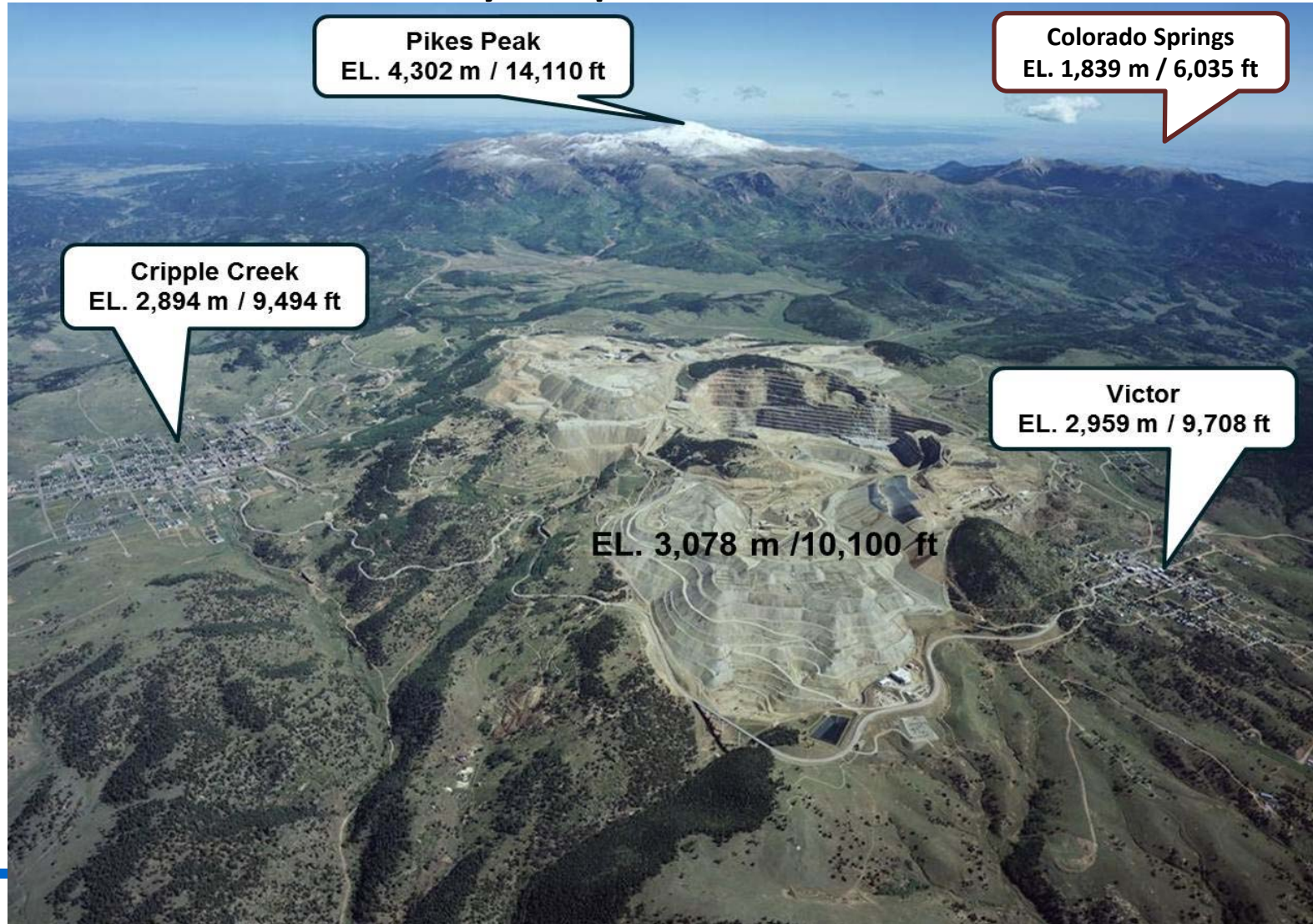


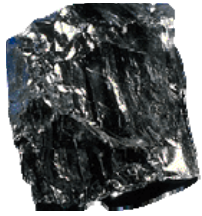
Mining Matters... when you work on a computer.

Cripple Creek & Victor Gold Mine

State's Most Productive Gold Mine

Now Owned by Top U. S. Gold Producer





Energy Minerals

Coal

- **Colorado ranks 10th in coal production**
- **Clean coal** is used to produce 60% of Colorado's electricity
- High Energy Content – low sulfur fuel of choice throughout the world
- **Mine workers – average wages and benefits \$122,000**
- **Mining operations anchor rural economies**
- **Mines pay hundreds of millions in taxes**
- **Colorado coal mines paid \$40 million in federal/state royalties 2014**
- **Colorado ranks 4th among the states in royalty payments**

COLORADO RANKS 11TH AMONG U. S. STATES

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Mining Matters... when you plug in for power.

Slide 13

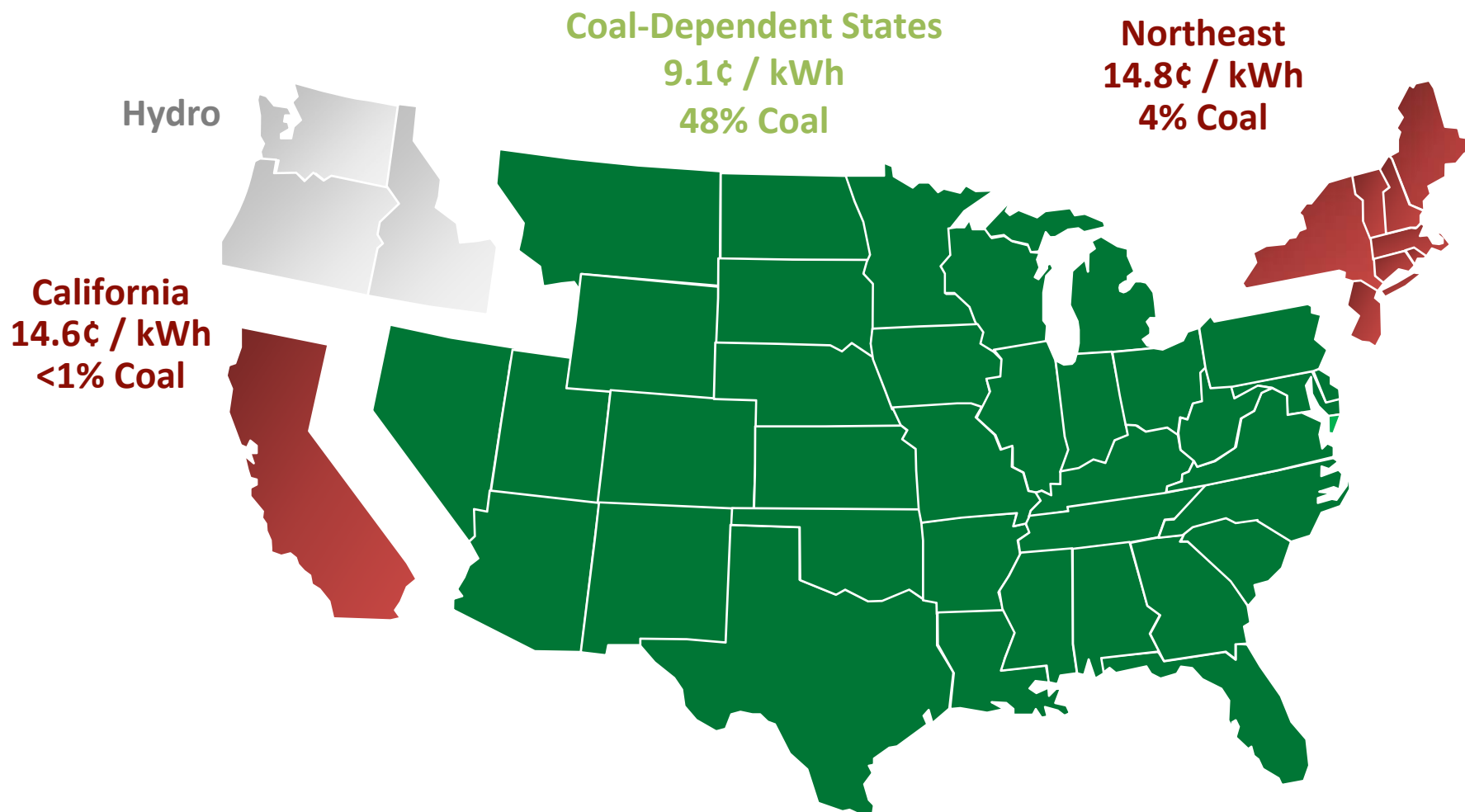
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In royalties paid?

Bob Burnham, 12/2/2015

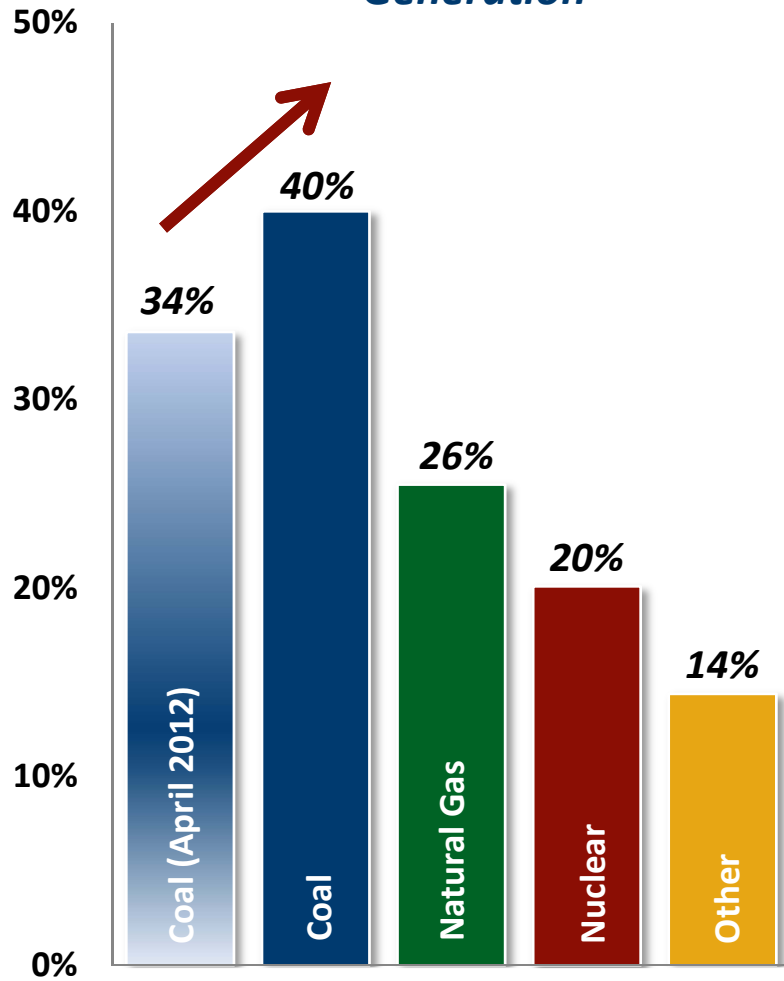
Key Competitive Advantage Low-Cost Electricity from Coal

“Green States” Pay Considerably Lower Rates for Electricity



U.S. Coal Fuels 40% of Electricity Generation in the U.S.

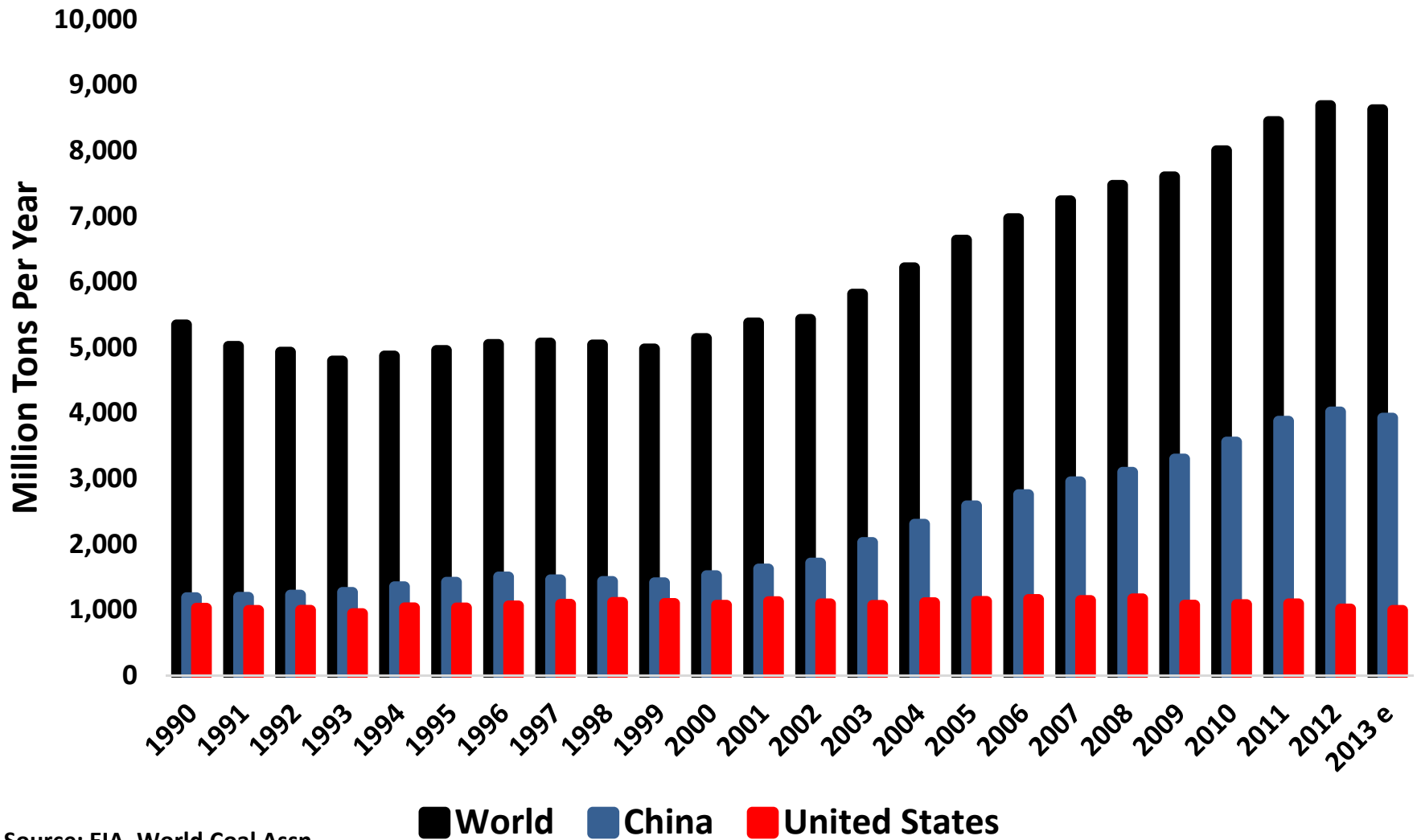
Share of U.S. Electric Power Sector Generation



- Coal remains lowest-cost major fuel for electricity generation.

World Wide Coal Production

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Source: EIA, World Coal Assn.

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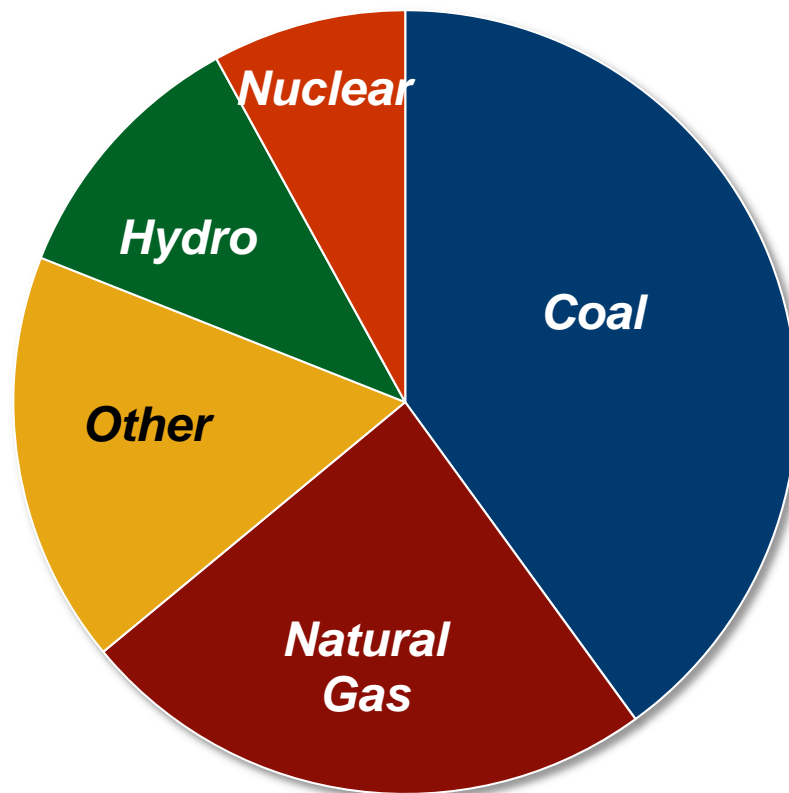
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Coal? Should this be China?

Bob Burnham, 12/2/2015

Coal: The World's Fastest Growing Major Fuel

*Expected Electricity Growth (2011
– 2035)*

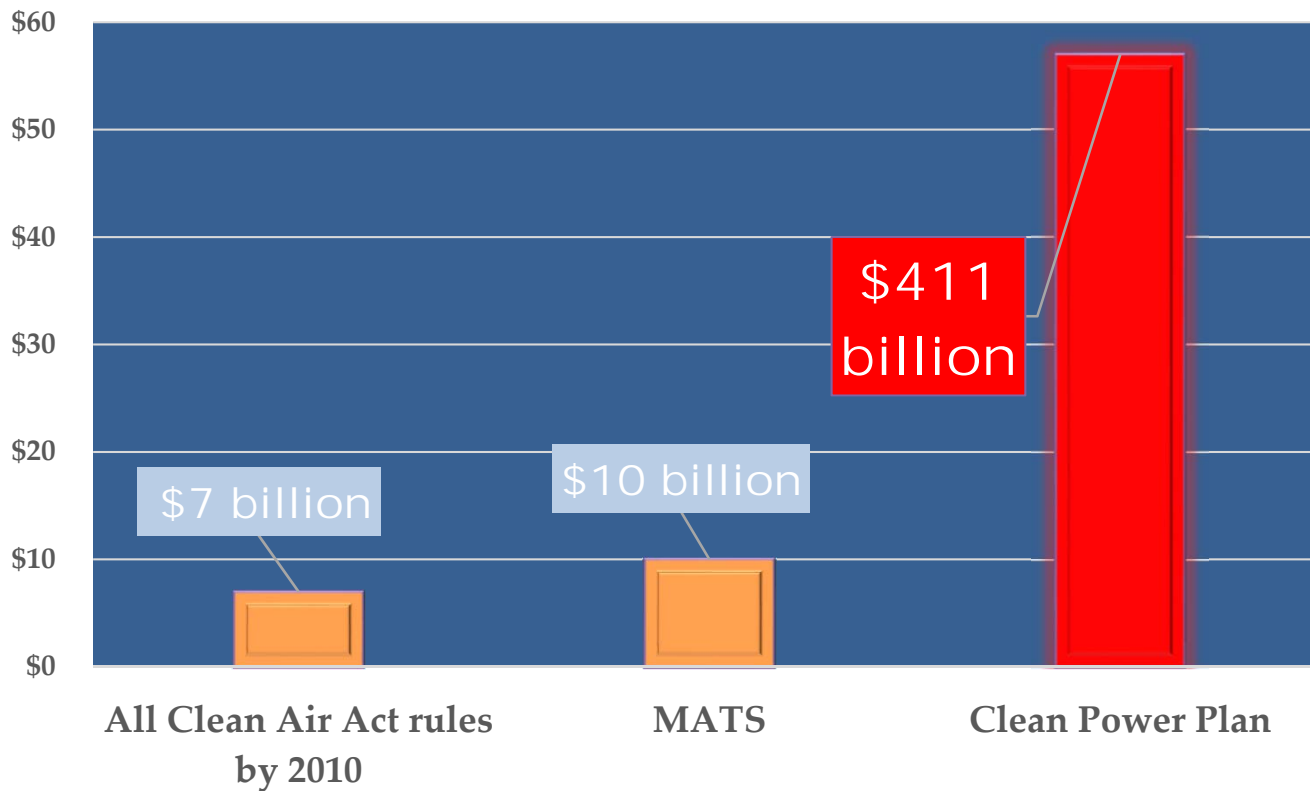


- Coal projected to fuel largest percentage of global electricity generation growth
- Coal grew dramatically faster than all other major fuels in past decade
- IEA and other observers project that coal will overtake oil as world's largest energy source in coming years

Forces Impacting Coal

- House Bill 10-1365 passed five years ago will result in premature retirement or conversion to higher cost energy sources = 1,000 MW
- Will ultimately cause Colorado production losses of about 4 million tons annually
- EPA Mercury and Clean Power Plan regulations will result in additional plant retirements nationwide
- Lawsuits and “closed door” settlements negotiated with anti-coal groups has caused Tennessee Valley Authority plant closures, further limiting export markets on which Colorado coal producers rely
- Lower gas prices only part of the story

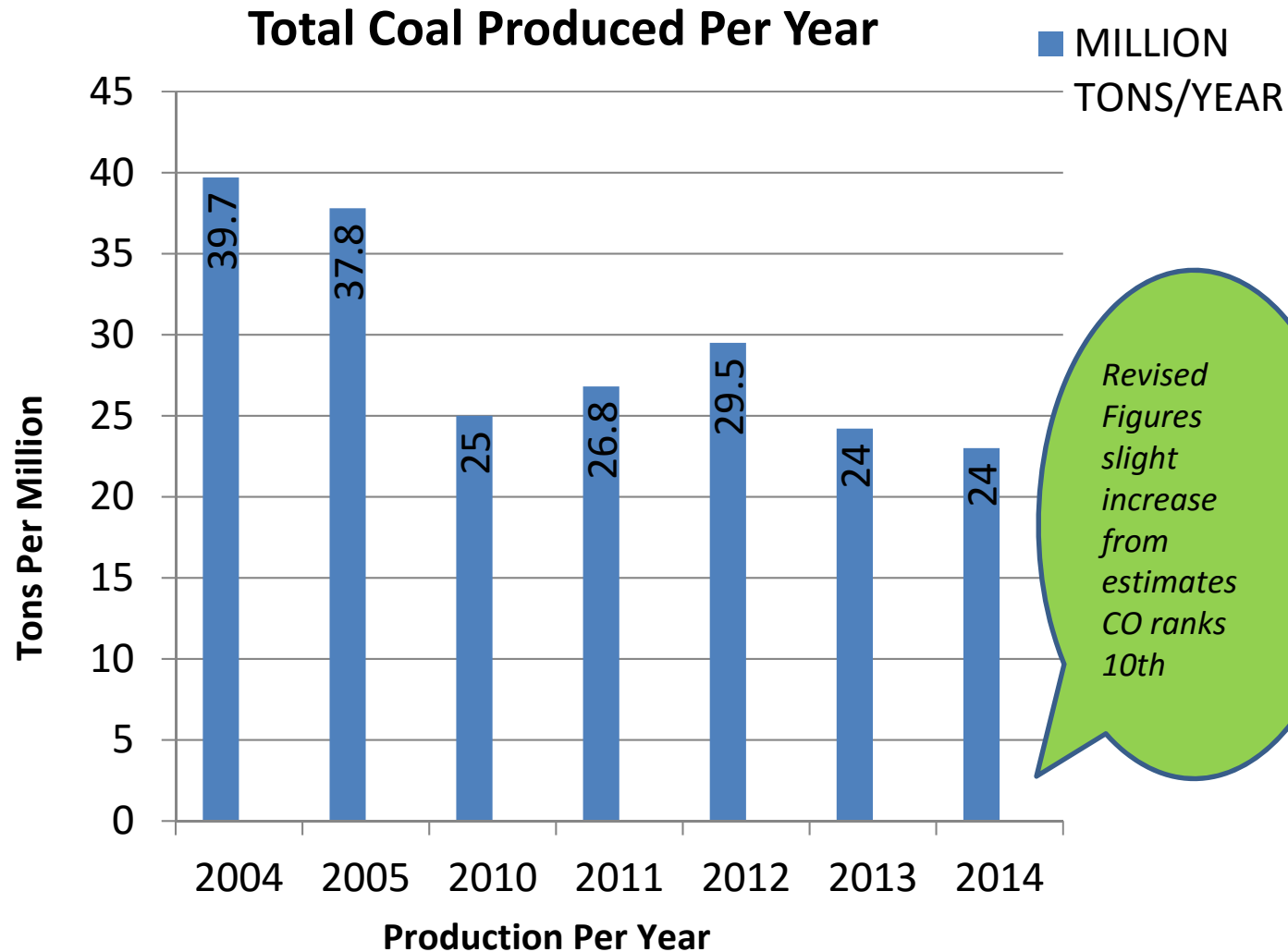
The Cost of the Clean Power Plan Dwarfs Other EPA Rules



Annual cost of all Clean Air Act rules for the electric power sector promulgated by 2010 from U.S. EPA, *The Benefits and Costs of the Clean Air Act from 1990 to 2020* (2011) at Table 3-2 (electric utility direct annual compliance costs were \$6.6 billion (2006\$) in 2010; this converts to \$7.1 billion in 2010\$). MATS annual cost from U.S. EPA, *Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards*, December 2011 (\$9.6 billion compliance cost in 2006\$ converted to 2010\$.) Cost of proposed Clean Power Plan from NERA analysis (2013\$).

IMPACT ON COLORADO COAL PRODUCTION

Direct Link to EPA Regs, State Policies to Reduce Coal Use or Mandate Higher Cost Energy



Nahcolite – Pure Sodium Bicarbonate

- Colorado has only significant pure sodium bicarbonate reserves in U. S.
- Used in animal feed, flue gas desulfurization – lowering power plant emissions
- Other uses, baking soda and toothpaste
- Outlook improving

Mined in Colorado!



Secondary Processing Line will
increase manufacturing capability by
250,000 tons annually

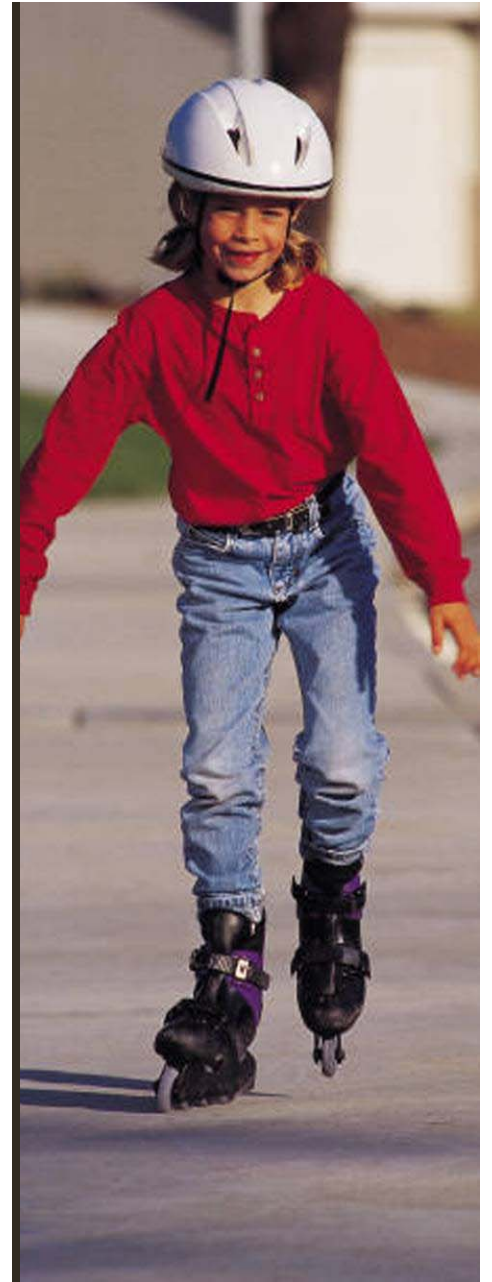




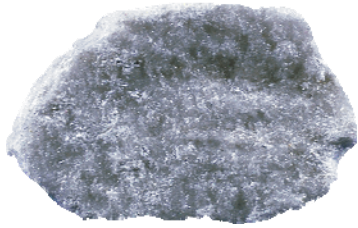
Limestone

- Used as aggregate, and in cement and other building materials
- Used in industrial air filters to remove sulfur from exhaust gases
- Used in paint, paper, glass, plastic, and carpet production
- Used in water treatment and filtration
- Used in the construction of pads for wind towers

Mined in Colorado!



Mining Matters... when you rollerblade on a sidewalk.



Gypsum

- Primarily used in wallboard and plaster products
- Also used to make Portland cement
- Used in small amounts in agricultural applications
- Pure gypsum is used in glass-making
- Demand increasing with recovery in housing market

Mined in Colorado!



Mining Matters... when you build a house.

118th National Western Mining Conference & Exhibition

– March 21-24, 2016

Colorado Convention Center

