West Virginia’s Economy

A Profile (it’s not good)

- **Low income, high poverty**: 49th in per capita income ($40,578 in 2018), 50th in median household income ($43,469 in 2017), and 4th highest poverty rate (19.1% in 2017).

- **Declining and aging population, low population density**: -60k+ population (11’-19’), school enrollment -20k+ (09’-20’), labor force -30k+ (09’-18’), in-state public college enrollment -12k (08’-18’), and no cities above 50k.

- **Low Economic Diversity**: 46th in economic diversity (Hachman Index 2017), 5th in mining share of GDP and employment (11% in 2019-Q1; 3.9% in 2018), 1st in health care private employment share (21% - 2018) and 2nd in private health care GDP share (12.6% in 2019-Q1).

- **Low wages, education, workforce participation**: 47th in median hourly wage ($16.94 in 2018), 50th lowest public sector wages (2018), 50th in share of adult’s w/ college degree (20.2% in 2018), and 50th in labor force participation (53.8% in 2018).

- **Poor health**: 49th in life expectancy (74.8 in 2017), 45th in overall health (America’s Health Rankings Index 2019), 1st in opioid related deaths (49.7 per 100k in 2017), and 1st in share of state residents on Social Security disability (8.8% in 2018).

- **Low-Wage Future**: 65% of future job openings by 2026 pay less than a living wage.
Appalachia/West Virginia – Context

• Dependence on extractive industries, source of good jobs

• Resource curse – providing raw materials for other regions’ prosperity

• ...and leaves the region poorer than most of the country

“Without local or regional markets, the economic structure of the mountains was solely dependent upon exterior demand....This condition of growth without development placed the mountains in a highly vulnerable relationship to the larger market system....Despite the vast natural wealth within its borders, the southern mountains remained comparatively poor—not because it was backward, but because its wealth enriched the modernizing centers in other parts of the country”

Ronald D. Eller, Miners, Millhands and Mountaineers: Industrialization of the Appalachian South, 1880–1930, 229)
Why is West Virginia So Poor?

West Virginia in the 1990s: Opportunities for Economic Progress (Dilger & Witt, 1994, WVU Press)

- An inadequate physical infrastructure
- Low education achievement
- Outdated job skills
- A rugged topography
- Low population density
- A lack of airport and port facilities
- A generally insular view of the state’s economy

"Our results would support the theory of a resource curse where a reliance on extraction of natural resources ultimately lowers overall economic well-being of a state."
West Virginia’s Low Wage Future:
65% of West Virginia's 2026 Projected Job Openings Will Be In Low-Wage Occupations

Of the approximately 82,000 projected job openings from 2016 to 2026, 65 percent are in occupations that pay less than the Self Sufficiency (Kanawha county: $36,513 in 2016 dollars) Standard for a family of three.

<table>
<thead>
<tr>
<th>Top 8 Growing Occupations</th>
<th>Projected Job Openings</th>
<th>Median Annual Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combined Food Preparation and Serving Workers</td>
<td>3,984</td>
<td>$19,782</td>
</tr>
<tr>
<td>Cashiers</td>
<td>3,758</td>
<td>$19,305</td>
</tr>
<tr>
<td>Retail Salespersons</td>
<td>3,700</td>
<td>$20,248</td>
</tr>
<tr>
<td>Office Clerks, General</td>
<td>2,806</td>
<td>$24,871</td>
</tr>
<tr>
<td>Personal Care Aides</td>
<td>2,545</td>
<td>$19,791</td>
</tr>
<tr>
<td>Waiters and Waitresses</td>
<td>2,347</td>
<td>$20,307</td>
</tr>
<tr>
<td>Laborers and Freight, Stock, and Material Movers, Hand</td>
<td>1,696</td>
<td>$24,324</td>
</tr>
<tr>
<td>Customer Service Representatives</td>
<td>1,672</td>
<td>$26,756</td>
</tr>
</tbody>
</table>

Source: WVCBP analysis of Workforce WV data (Long Term Occupational Projections, 2016-2026 + The Self-Sufficiency Standard for West Virginia, 2013)
U.S. States with Permanent Natural Resource Funds

Natural resource funds by size (in billions)

- West Virginia Future Fund: $0.0
- Montana Coal Tax Trust: $1.1
- Louisiana Education Quality Trust Fund: $1.4
- Alabama Trust Fund: $3.1
- North Dakota Legacy Fund: $5.7
- New Mexico Severance Tax Permanent Fund: $5.1
- Permanent Wyoming Mineral Trust Fund: $7.9
- Texas Permanent University Fund: $21.9
- Alaska Permanent Fund: $63.9

Source: WVCBP
What if West Virginia had enacted a Future Fund in 2012?

Estimated Balance of Proposed WV Economic Diversification Fund (in millions)

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>$102</td>
<td>$225</td>
<td>$346</td>
<td>$437</td>
<td>$551</td>
<td>$679</td>
<td>$818</td>
</tr>
</tbody>
</table>

Source: WVCBP analysis of WV Tax Department data
Coal employment declined by 76,000 from 1948 to late 1960

Manufacturing employment declined by over 40,000 from 1979 to mid 1980s

Major Economic Transitions in West Virginia:
Coal Mine Mechanization and Deindustrialization

Source: WVCBP, 2013 State of Working West Virginia
Decarbonization = MORE Good Jobs for West Virginia

- Upgrade the Grid/Renewable Power Plants
- Broadband
- Electric Vehicle Infrastructure
- Passenger Rail
- Eco-industrial Parks on Brownfields
- Carbon Absorption & Sustainable Agriculture
- Mine Reclamation ($4.5 billion)
- Water/Sewer Infrastructure ($17 billion)
- Public Jobs Program
- Energy Efficiency

West Virginia Carbon Dioxide Rankings (EIA, 2016)
- 2nd highest carbon intensive economy
- 3rd highest per capita carbon emissions
- 1st highest carbon-intensive energy supply
Carbon price needs to prevent temperatures from rising to 2.5 degrees Celsius ($230 per ton)

![Circular Flow Diagram](image1)

**Figure 1.**
CIRCULAR FLOW DIAGRAM

- Gas: 27%
- Electricity: 48%
- Airfare: 32%
- Groceries: 8%
- Education: 6%
- Dividend: $2.23

**Note:**
A carbon tax of $230 per ton of CO2 would raise the price of gasoline by 79%. It would raise the price of electricity by 8%, and it could fund a universal dividend of $2.23 per person, which would offset these price increases for the vast majority of poor and middle-class people.

![Carbon Price Paths](image2)

**Figure 2: Carbon price paths**

- DICE optimum
- 2.5 °C maximum

**Note:**
Global CO2 price in 2010 US dollars.
Source: Data from Nordhaus (2017a), Table 1.
Natural gas is becoming non-competitive with renewables

- Higher carbon tax (e.g. $230) will make natural gas power uneconomical or costly.
Fossil Fuel Jobs and a Just Transition

- **Pension guarantees** for retired workers who are covered by employer-financed pensions, starting at age 65;
- **Retraining** to assist displaced workers to obtain the skills needed for a new job and **100 percent wage replacement** while training;
- **Re-employment** for displaced workers through an employment guarantee, with **100 percent wage insurance**. With wage insurance, workers are guaranteed that their total compensation in their new job will be supplemented to reduce any losses relative to the compensation they received working in the fossil fuel-based industry;
- **Relocation support** for 50 percent of displaced workers, assuming only 50 percent will need to relocate; and
- **Full Just Transition support** for **workers 65** and over who choose to retire.
## Fossil Fuel Jobs and a Just Transition

### Number of Workers in West Virginia Employed in Fossil Fuel Production and Ancillary Industries, 2018

<table>
<thead>
<tr>
<th>Industry</th>
<th>Number of Employed Workers</th>
<th>Average total compensation</th>
<th>Total compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil and Gas Extraction (2111)</td>
<td>2,174</td>
<td>$115,278</td>
<td>$250,614,698</td>
</tr>
<tr>
<td>Coal Mining (2121)</td>
<td>13,392</td>
<td>$111,043</td>
<td>$1,487,084,508</td>
</tr>
<tr>
<td>Support Activities for Oil and Gas Operations (213112)</td>
<td>3,338</td>
<td>$86,462</td>
<td>$288,609,155</td>
</tr>
<tr>
<td>Support Activities for Coal Mining (213113)</td>
<td>725</td>
<td>$86,125</td>
<td>$62,440,625</td>
</tr>
<tr>
<td>Oil and Gas Pipeline and Related Structures (237120)</td>
<td>9,941</td>
<td>$146,380</td>
<td>$1,455,163,580</td>
</tr>
<tr>
<td>Natural Gas Distribution (221210)</td>
<td>737</td>
<td>$96,655</td>
<td>$71,234,735</td>
</tr>
<tr>
<td>Fossil Fuel Electric Power Generation (221112)</td>
<td>2,735</td>
<td>$129,415</td>
<td>$353,950,025</td>
</tr>
<tr>
<td>Petroleum Refineries (324110)</td>
<td>340</td>
<td>$105,040</td>
<td>$35,713,600</td>
</tr>
<tr>
<td>Industrial Gas Manufacturing (325120)</td>
<td>62</td>
<td>$117,260</td>
<td>$7,270,120</td>
</tr>
<tr>
<td>Petroleum Bulk Stations and Terminals (424710)</td>
<td>335</td>
<td>$80,405</td>
<td>$26,935,675</td>
</tr>
<tr>
<td>Mining Machinery and Equipment Manufacturing (333131)</td>
<td>776</td>
<td>$87,360</td>
<td>$67,791,360</td>
</tr>
<tr>
<td>Oil and Gas Field Machinery and Equipment Manufacturing (333132)</td>
<td>122</td>
<td>$84,370</td>
<td>$10,293,140</td>
</tr>
<tr>
<td>Coal and Other Mineral and Ore Merchant Wholesalers (423520)</td>
<td>47</td>
<td>$163,605</td>
<td>$7,689,435</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>34,724</strong></td>
<td><strong>$118,788</strong></td>
<td><strong>$4,124,790,656</strong></td>
</tr>
</tbody>
</table>

TOTAL AS SHARE OF WEST VIRGINIA STATE EMPLOYMENT: 5.0%

INDIRECT AND INDUCED JOBS (2.25 Multiplier): 43,405

Source: Workforce WV (QCEW)

Note: Compensation includes wages plus 25% in assumed benefits
Considerations for Estimating Cost of Just Transition Program for displaced workers

- Depends on policies enacted (e.g. carbon tax, cap and trade, decarbonization target, public expenditures, etc.)
- Levels of education of displaced workers
- Non-managerial workers or all workers?
- Number of workers reaching retirement and voluntary retirement
- Length of transition period and industry contraction (e.g. 70% for coal and 40% for gas)
- Labor supply and demand for new (clean energy) jobs
- PERI (2019) study estimates just 1.8% (585/32,304) of Colorado fossil fuel workers will require annual assistance per year ($198,872 per worker).

<table>
<thead>
<tr>
<th>Programs Supporting Displaced Workers (Colorado, 2018, PERI)</th>
<th>Program cost per worker</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Compensation Insurance (100% for 3 years of coverage)</td>
<td>$57,000</td>
</tr>
<tr>
<td>Retraining Support (community college)</td>
<td>$8,000</td>
</tr>
<tr>
<td>Relocation Support</td>
<td>$50,000</td>
</tr>
<tr>
<td>Wage Replacement for workers in training (100%)</td>
<td>$50,000</td>
</tr>
<tr>
<td>Average Annual Costs (after adjustments) per year</td>
<td>$114 million</td>
</tr>
</tbody>
</table>
“Change has been a constant throughout the history of our coal industry. West Virginians can choose to anticipate change and adapt to it, or resist and be overrun by it. One thing is clear. The time has arrived for the people of the Mountain State to think long and hard about which course they want to choose.”

U.S. Senator Robert C. Byrd

A Green New Deal for West Virginia:

It’s about our future
THANK YOU