

Governor Tomblin's Energy Summit  
Stonewall Resort  
October 6, 2016

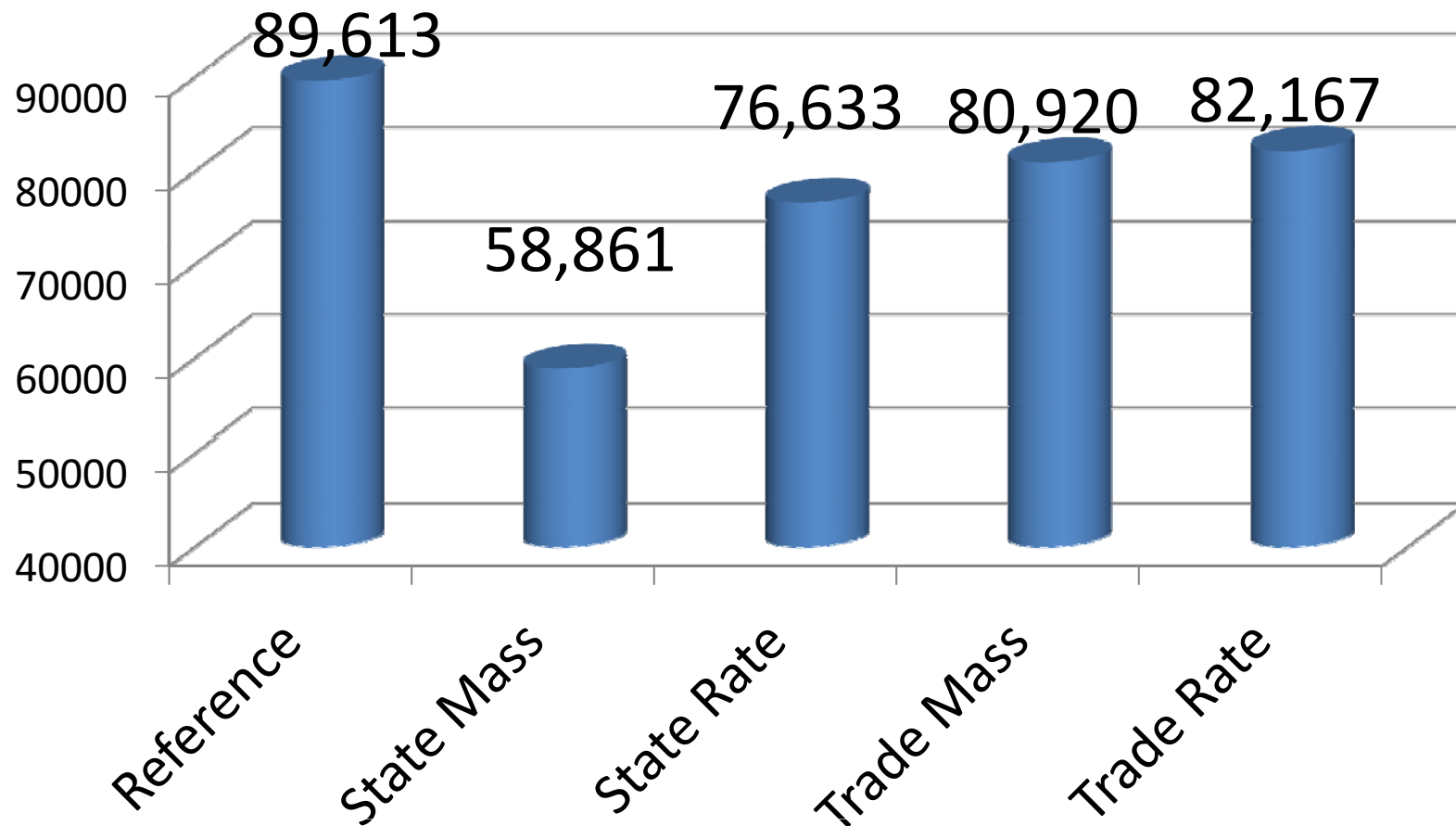
“EPA's Impact on WV's Economic Assets”

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# Focus Issues

- Impacts of Clean Power Plan on WV coal production, state output, jobs, and household earnings.
- Potential impacts of “Extended Clean Power Plan” requiring further CO2 reductions by 2040.
- Indicated policy responses.

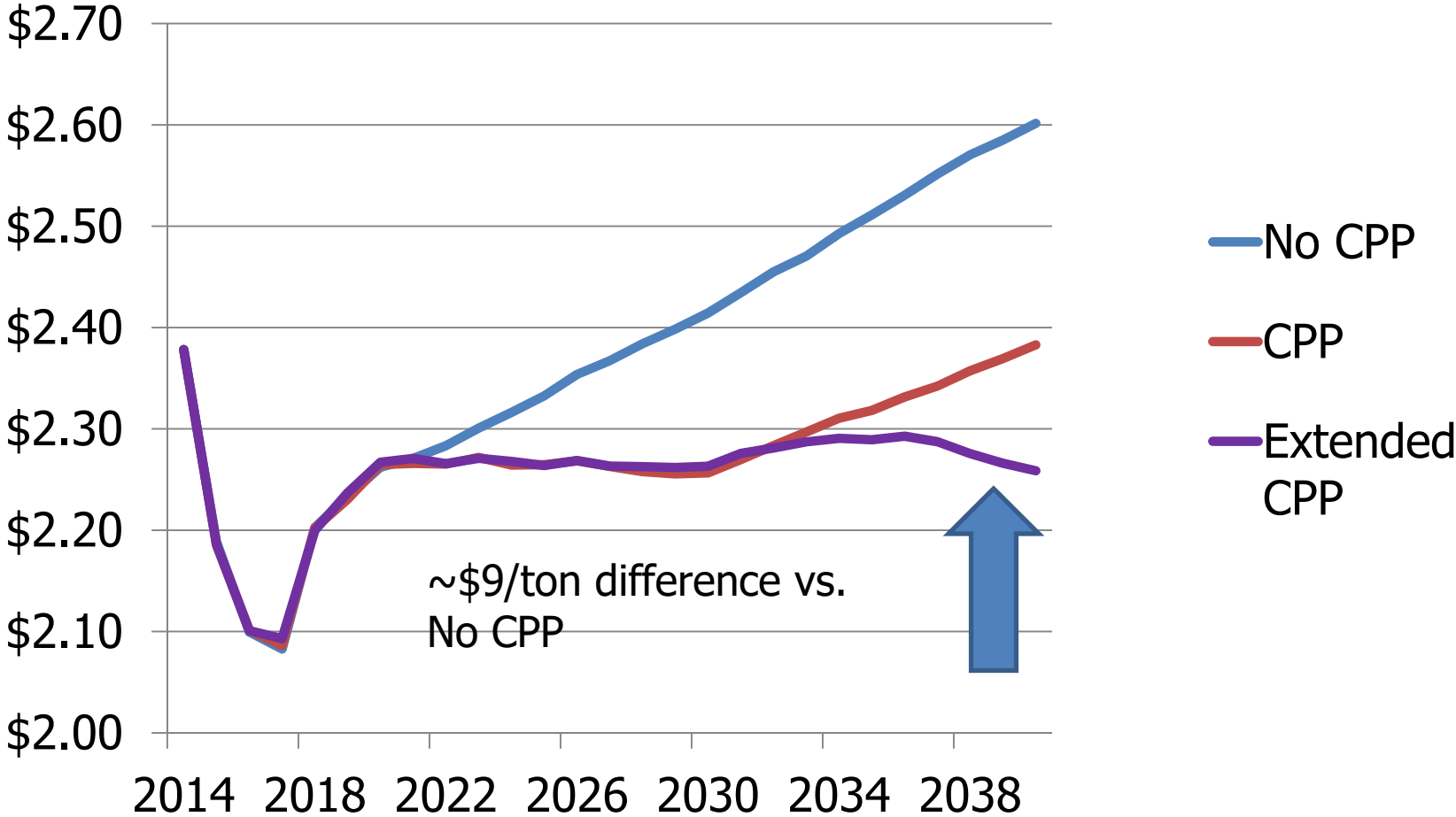
# CPP Compliance Paths Matter: PJM Estimates of WV Coal Generation 2025 (GWh)



Source: PJM Analysis of Clean Power Plan, September 2016.

# CPP Impacts Coal Prices: EIA Steam Coal Prices, 2014-2040

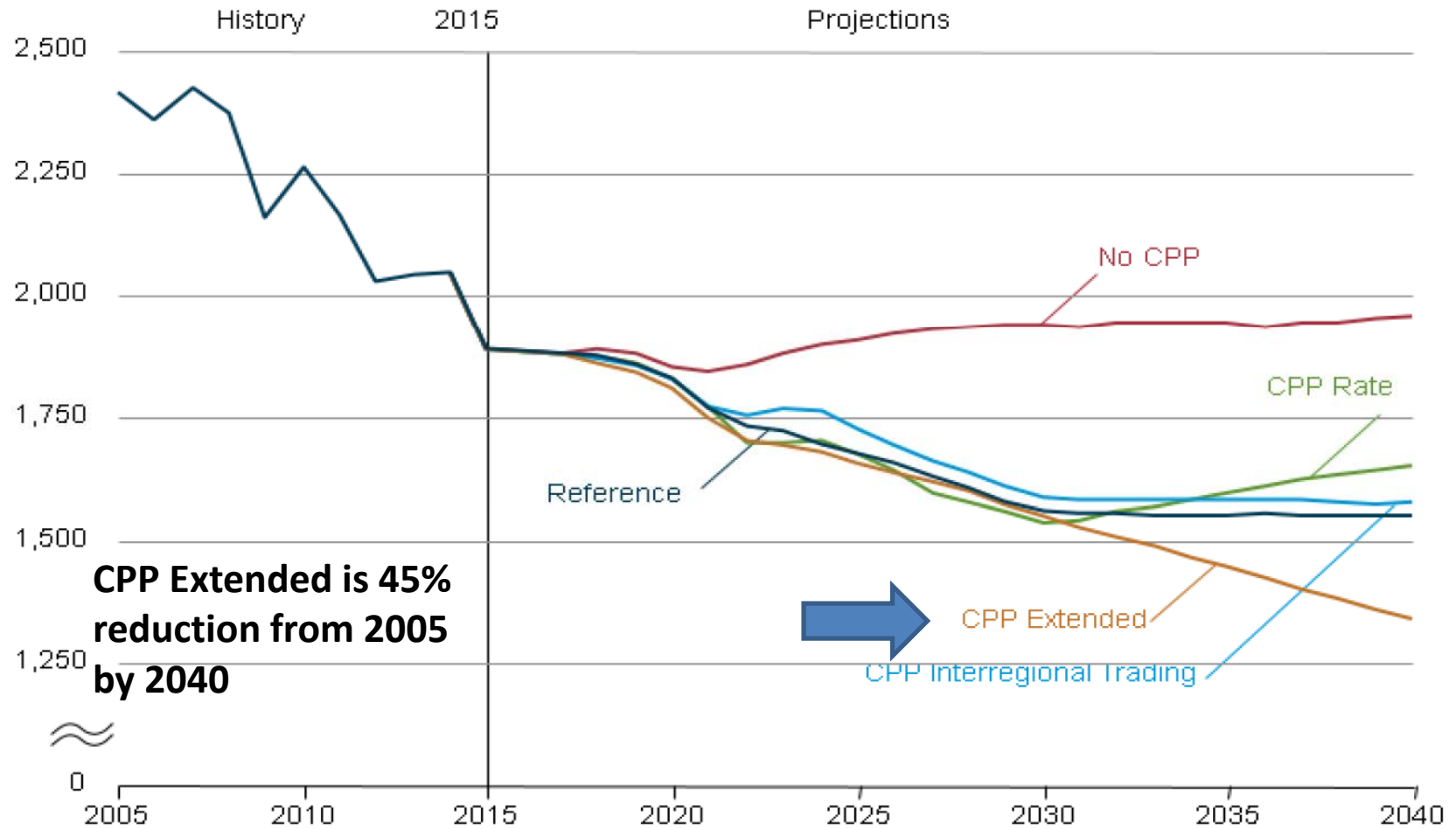
## Constant 2015 \$/MMBTU



Source: DOE/EIA 2016 Annual Energy Outlook.

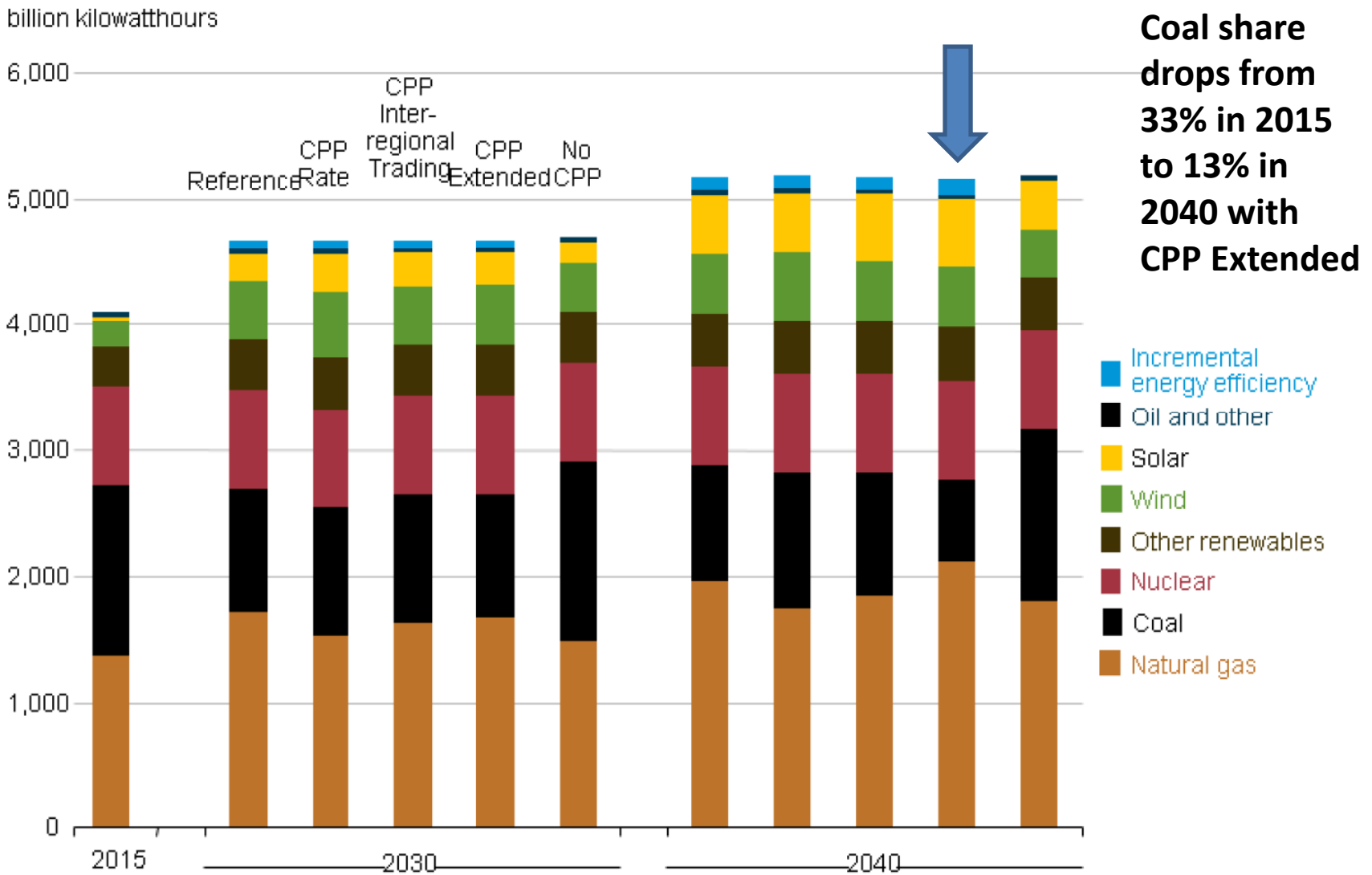
Figure IF1-1. CO2 emissions from the electric power sector in five cases, 2005–40

million metric tons



Source: DOE/EIA 2016 Annual Energy Outlook, Impacts of Clean Power Plan.

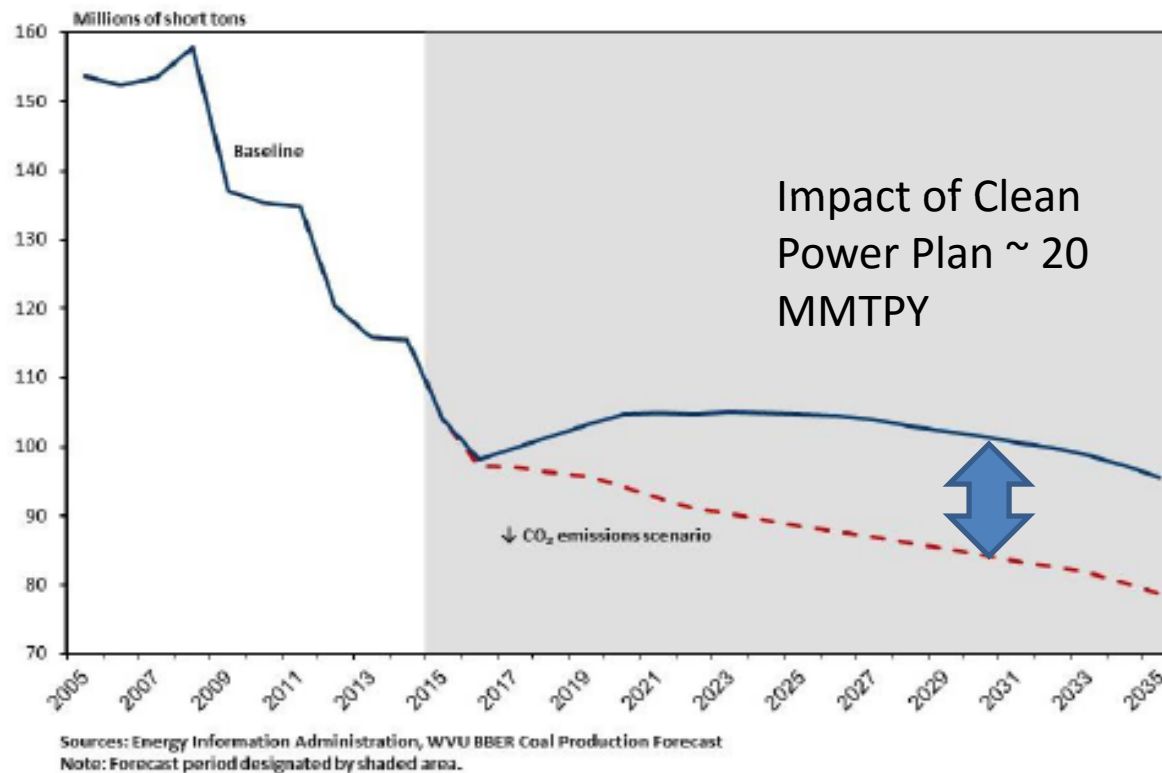
Figure IF1-3. Electricity generation by fuel in five cases, 2015, 2030, and 2040



Source: DOE/EIA 2016 Annual Energy Outlook, Impacts of Clean Power Plan.

# WVU BBER Projections of WV Coal Production to 2035 (Spring 2015)

Figure 11: Coal Production Forecast- Baseline vs Reduced Coal Generation Scenario



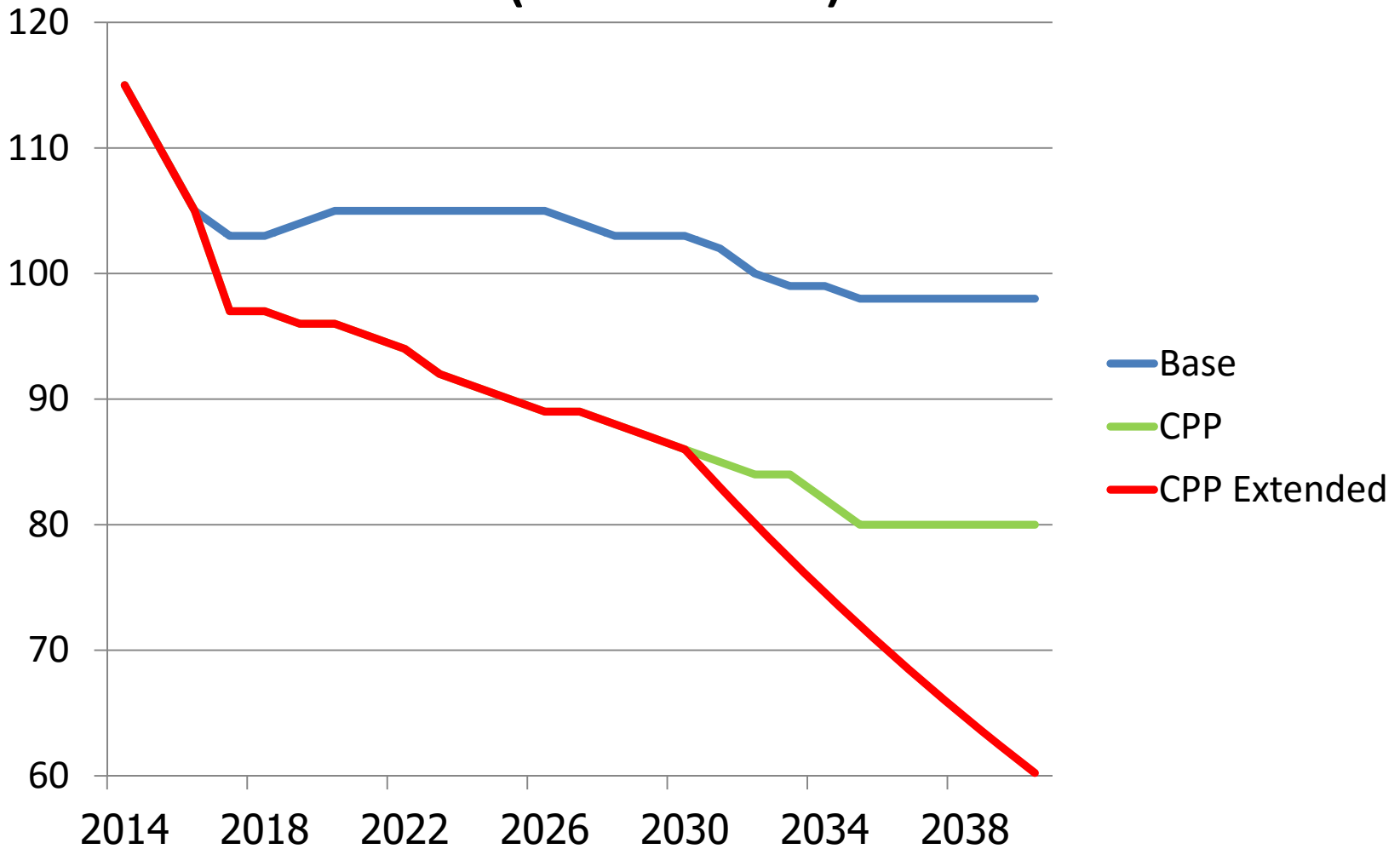
Source: WVU Bureau of Business & Economic Research (2015). Coal impacts based on proposed CPP.

# Estimating Impacts to 2040

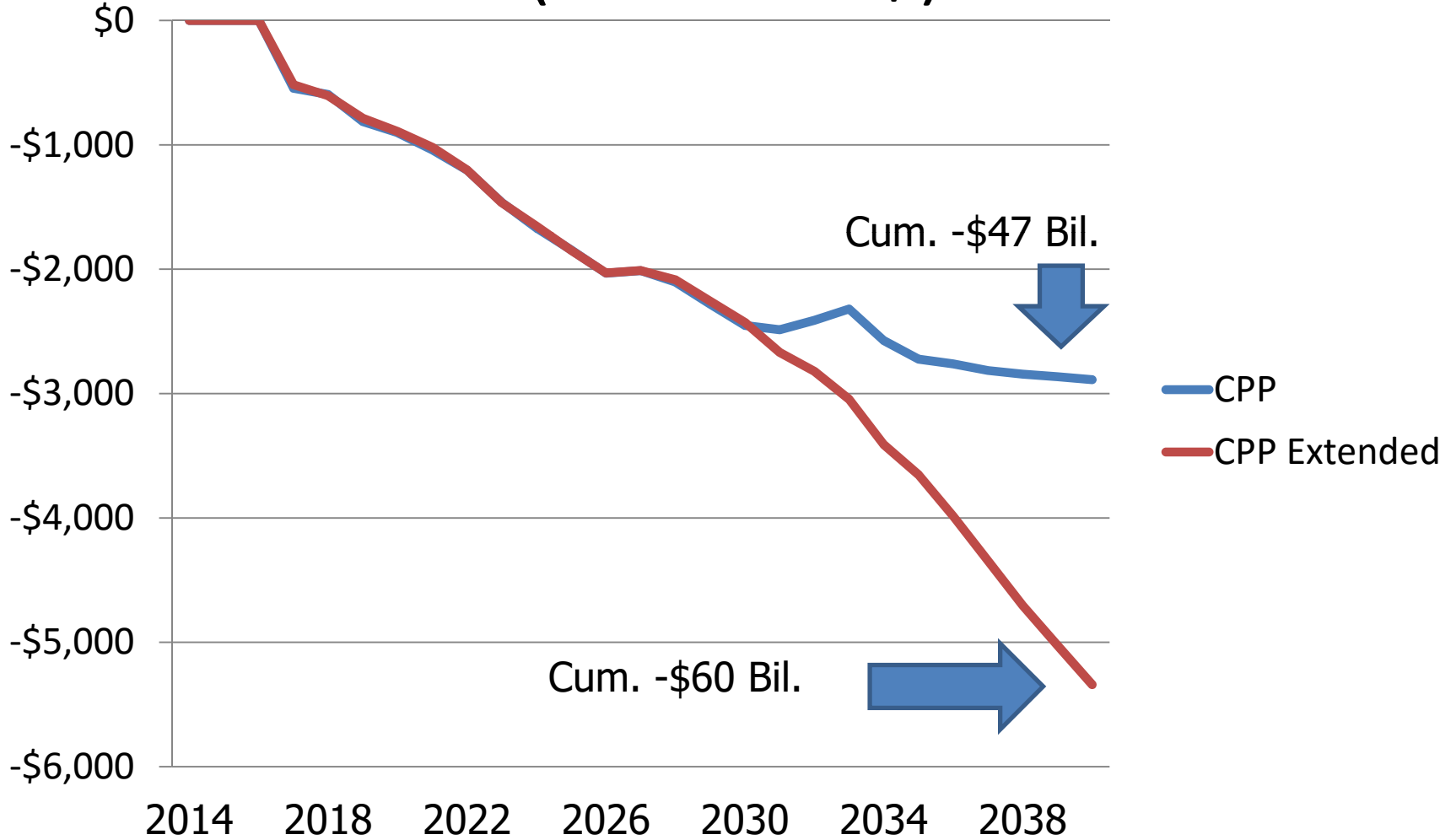
- Use WVU BBER estimates of CPP production losses, extended to 2040 and adjusted for CPP Extended additional CO2 reductions 2025-40.
- Apply DOE/EIA steam coal prices to estimate industry revenue impacts for CPP and CPP Extended cases.
- Use U.S. Dept. of Commerce economic and job multipliers for the WV coal industry to estimate impacts on WV state output and household income.
- These estimates do not include impacts of MATS rule and other factors causing loss of 32 MMTPY of WV coal production from 2009 to 2014.



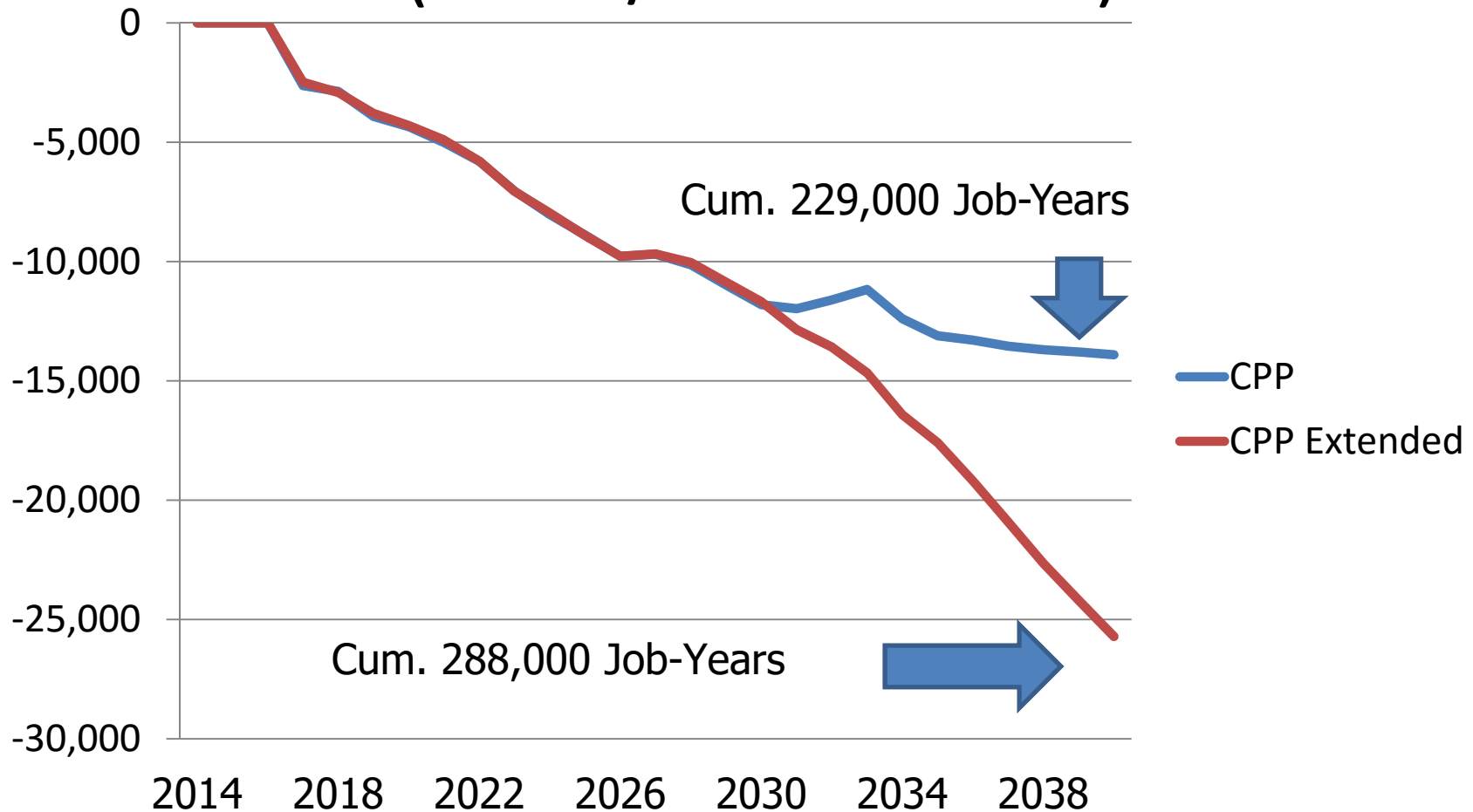
# Estimated WV Coal Production: Base Case, CPP and Extended CPP, 2014-2040 (Mil. Tons)



# Estimated Loss of WV State Output: CPP and Extended CPP, 2014-2040 (Mil. 2015 \$)

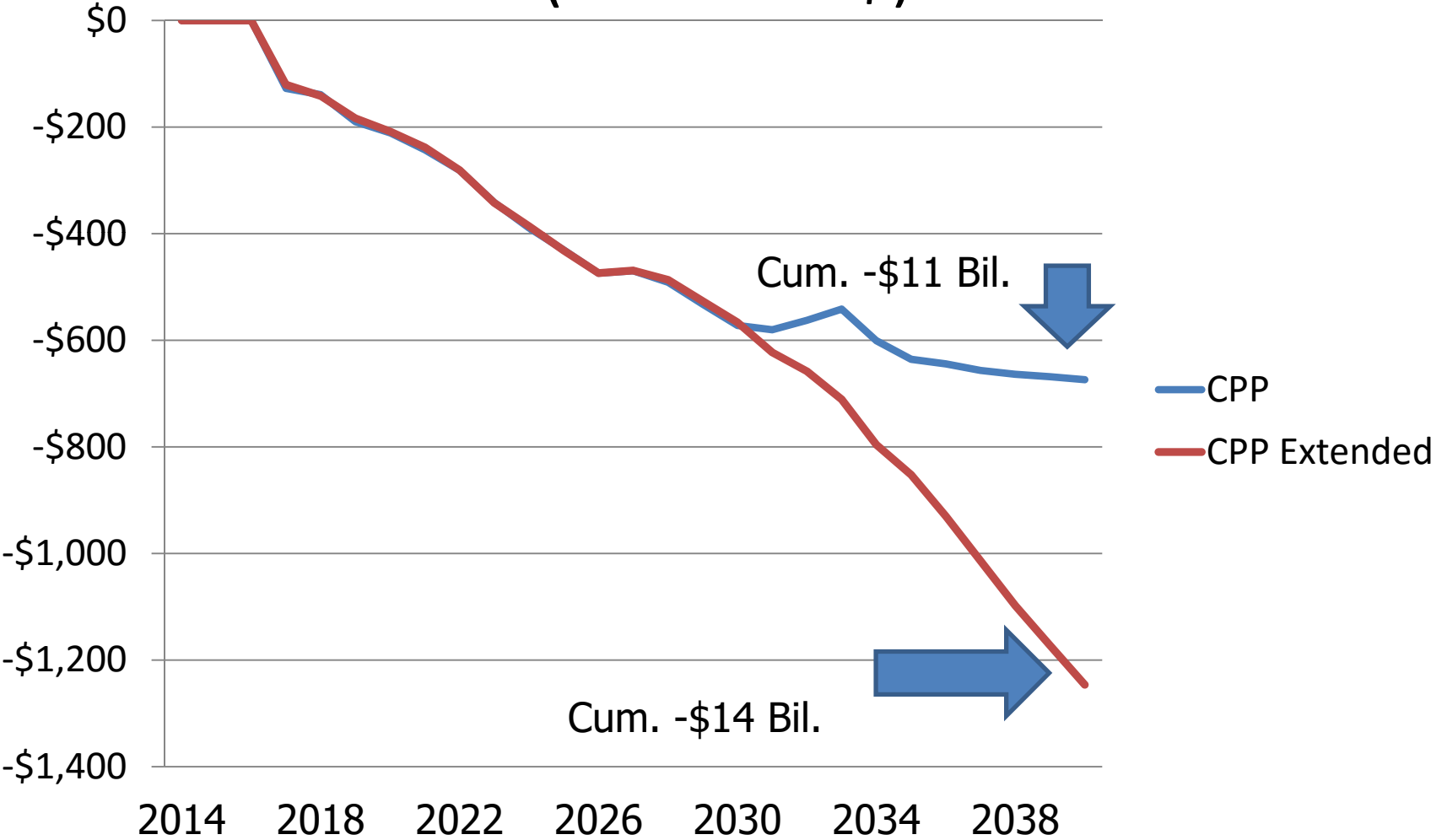


# Estimated Loss of WV Jobs: CPP and Extended CPP, 2014-2040 (In Job/Person-Years)



Note: Does not include impacts of 32 MMTPY production loss 2009-2014.

# Estimated Loss of WV State Household Income: CPP and Extended CPP, 2014-2040 (Mil. 2015 \$)



# What to do?

- Implement President Cecil Roberts' 2015 recommendations for aggressive state policies to encourage new advanced coal generation development in WV.
- Congressional full court press for new DOE CCUS funding to advance 2<sup>nd</sup> and 3<sup>rd</sup> generation capture technologies (Billions \$, not millions).
- Global climate issue will continue to exert downward pressures on utility coal investment decision-making until CO<sub>2</sub> can be affordably managed relative to expected future increases in natural gas prices.