

## West Virginia Economic Impact on the State from the Waxman-Markey Bill, H.R. 2454 Proposed Legislation to Reduce Greenhouse Gas Emissions

This study analyzes the Waxman-Markey bill under low and high cost cases with respect to a baseline that projects the future in the absence of the bill.<sup>1,2</sup> W/M sets targets that would reduce GHG emissions to 17% below 2005 levels by 2020; 42% below 2005 levels by 2030; and 83% below 2005 levels by 2050 (Figure 1). The price of carbon permits (what companies must pay to emit CO<sub>2</sub>) could reach between \$48 and \$61 per metric ton of CO<sub>2</sub> (MT) by 2020 and could increase to between \$123/MT and \$159/MT by 2030.<sup>3</sup>

### Impact on Jobs

The jobs impact of W/M is delayed by the free allocation of permits and generous carbon offsets. By 2030, as emission reduction targets tighten and other W/M provisions phase out, West Virginia jobs decline by 8,200 under the low cost case and by 11,100 under the high cost case (Figure 2). The primary cause of job losses is lower industrial output due to higher energy prices, the high cost of complying with required emissions cuts, and greater competition from overseas manufacturers with lower energy costs.

### Decrease in Disposable Household Income

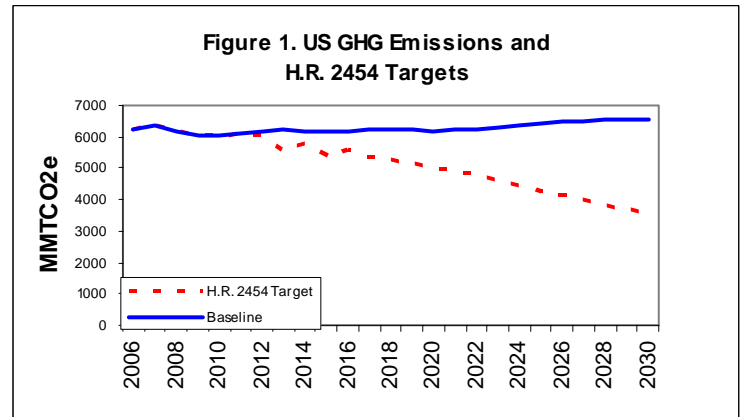
Higher energy prices would have ripple impacts on prices throughout the economy and would impose a financial cost on households. West Virginia would see disposable household income reduced by \$65 to \$149 per year by 2020 and \$385 to \$694 by 2030 (Figure 3).

### W/M's Impact on Energy Prices

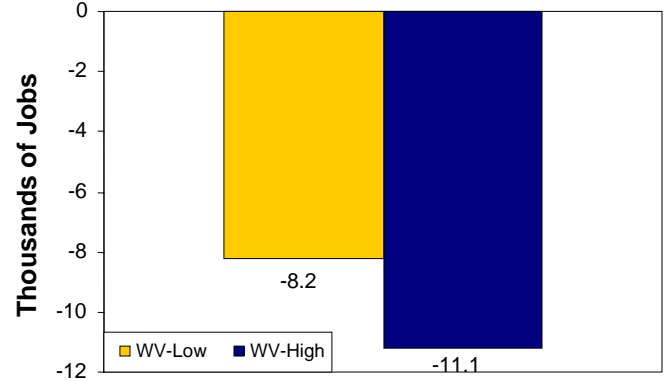
Most energy prices would rise under W/M, particularly coal, oil and natural gas. By 2015, gasoline would increase between 6% and 8%, electricity between 2% and 3% and natural gas between 13% and 20%. By 2030, gasoline prices increase between 20% and 26% while electricity prices increase by up to 53% and natural gas by up to 64%. Table 1 shows the increase in energy prices faced by a typical West Virginia household compared to national household increases over the 2020-2030 period.

### Factors Contributing to Higher Electricity Prices

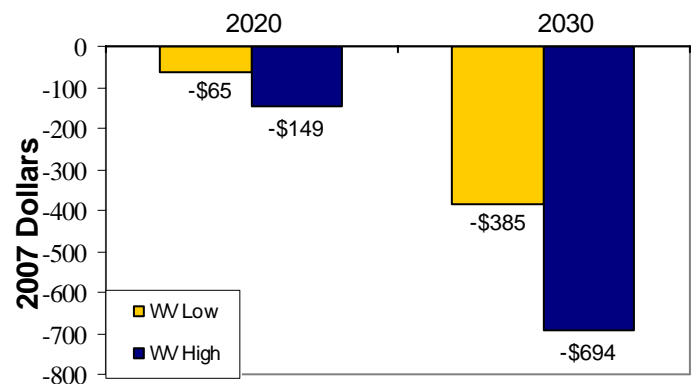
W/M would reduce GHG emissions from all sectors of the economy (transportation, residential, commercial, and industry); however, as the largest emitter of GHGs, the primary impact would fall on the electric sector. W/M would result in the electric industry shutting down most carbon-based generation and/or using expensive, as yet unproven technology, to capture and store CO<sub>2</sub>. To meet the stringent goals of W/M, the electric industry would also have to substitute high cost technologies, such as biomass and wind, for conventional generation.



**Figure 2. Loss in Employment by 2030**



**Figure 3. Loss of Disposable Income per Household**



<sup>1</sup>The study used NEMS/ACCF-NAM 2, the version of the National Energy Modeling System (NEMS) used in this project, and assumptions provided by ACCF and NAM for this analysis. It was performed independent of EIA which uses the NEMS model for energy forecasting and policy analysis. (See the full report for all assumptions).

## Impact on Economic Growth

High energy prices, fewer jobs, and loss of industrial output are estimated to reduce West Virginia's gross state product (GSP) by between \$150 and \$259 million per year by 2020 and \$1.6 and \$2.2 billion by 2030 (Figure 4).

## Impact on Industry

West Virginia's major economic sectors will be affected by emission caps (Figure 5).<sup>4</sup> The current two largest sectors, chemical manufacturing and wood product manufacturing, show decreases in output of 6.9% to 7.5% and 7.5% to 8.2%, respectively in 2030. All manufacturing sectors will suffer output losses of between 4.5% and 5.2% by 2030, while output from energy intensive sectors falls between 9.6% and 10.5%. West Virginia's coal production would fall between 85.1% and 72.4% and electricity production by 18.6% to 15.1% (Figure 6). These continued losses will have a lasting effect on the economic base of West Virginia.

## Impact on Low Income Families<sup>5</sup>

The impacts of W/M will be felt especially by the poor, who spend a greater share of their income on energy and other goods than other income brackets. By 2030, higher energy prices mean that low income families in West Virginia (with average incomes of \$10,762) will spend between 19.3% and 20.2% of their income on energy under W/M compared to a projected 17.2% without W/M. Others on fixed incomes such as the elderly will also suffer disproportionately.

## Impact on State Budgets<sup>6</sup>

The increases in West Virginia's energy costs under W/M will impact expenditures throughout the state. Specifically, West Virginia's 1,005 schools and universities and 72 hospitals will likely experience a 20.3% to 30.6% increase in energy expenditures by 2030. For government entities, costs for services, including public transportation and vehicle fleets, such as school buses, will also rise under W/M.

| Sector                    | Year | West Virginia |       | US    |       |
|---------------------------|------|---------------|-------|-------|-------|
|                           |      | Low           | High  | Low   | High  |
| Electricity (Residential) | 2020 | 6.8%          | 7.1%  | 5.0%  | 7.9%  |
|                           | 2025 | 7.5%          | 11.1% | 4.9%  | 11.5% |
|                           | 2030 | 35.9%         | 52.7% | 31.4% | 50.0% |
| Gasoline                  | 2020 | 8.4%          | 11.1% | 8.3%  | 11.1% |
|                           | 2025 | 12.1%         | 16.0% | 12.0% | 16.0% |
|                           | 2030 | 20.1%         | 26.3% | 20.0% | 26.1% |
| Natural Gas (Residential) | 2020 | -2.3%         | 0.6%  | -3.3% | 0.1%  |
|                           | 2025 | 4.2%          | 8.2%  | 4.8%  | 10.1% |
|                           | 2030 | 48.7%         | 64.3% | 56.3% | 73.5% |

Figure 4. Loss in Gross State Product For West Virginia

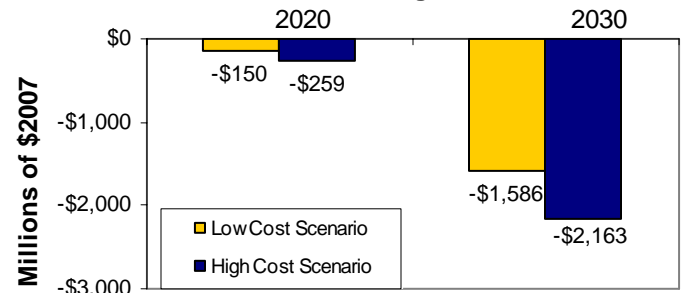


Figure 5. Percent Change in Output by Industry in 2030

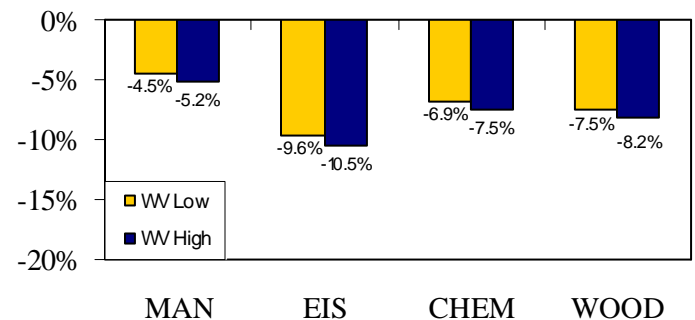
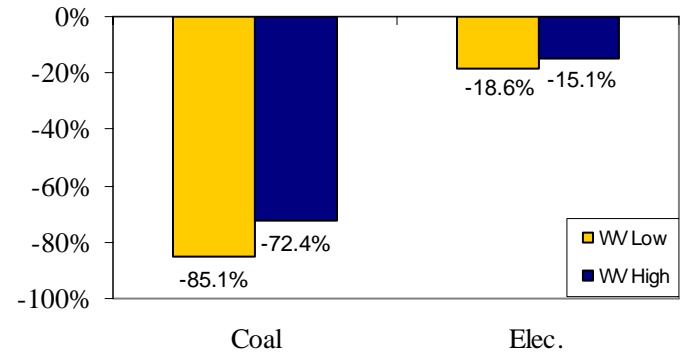


Figure 6. Percent Change in Production by Sector in 2030



<sup>2</sup>“Low” refers to the Low Cost Case, which assumes higher nuclear capacity, fewer constraints on new generating technologies, etc. “High” refers to the High Cost Case, which assumes low nuclear additions and constrained new generation technologies, etc. (See the full report for all assumptions).

<sup>3</sup> All dollar figures in this report are presented in constant 2007 dollars.

<sup>4</sup> MAN = manufacturing industries, EIS = energy intensive industries; CHEM = chemical manufacturing; WOOD = wood product manufacturing.

<sup>5</sup> These projections assume that the energy expenditures by income quintile in the state are the same as the average for the census division, since there is insufficient data to accurately calculate this quantity on the state level.

<sup>6</sup> These projections assume that the expenditures on schools and hospitals are the same as the average for the census region, since there is insufficient data to accurately calculate these quantities on the state level.