

EMISSION REDUCTIONS UNDER THE WAXMAN-MARKEY DISCUSSION DRAFT

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April 22, 2009

This analysis provides an assessment of reductions in greenhouse gas (GHG) emissions that could be achieved by the measures contained in the Waxman-Markey Discussion Draft (WM-DD) released on March 31, 2009. To account for the effects of different components of the proposal, reduction estimates are divided into three scenarios:

- Total emission reductions under just the two proposed emissions caps (the cap on hydrofluorocarbon (HFC) consumption and the economy-wide cap).
- Total emission reductions under the caps and all other complementary requirements, including emission performance standards for uncapped sources and required components of the supplemental reduction program through 2025.
- A range of potential additional reductions that could be achieved through the 1.25 offset requirement and supplemental reductions beyond 2025.

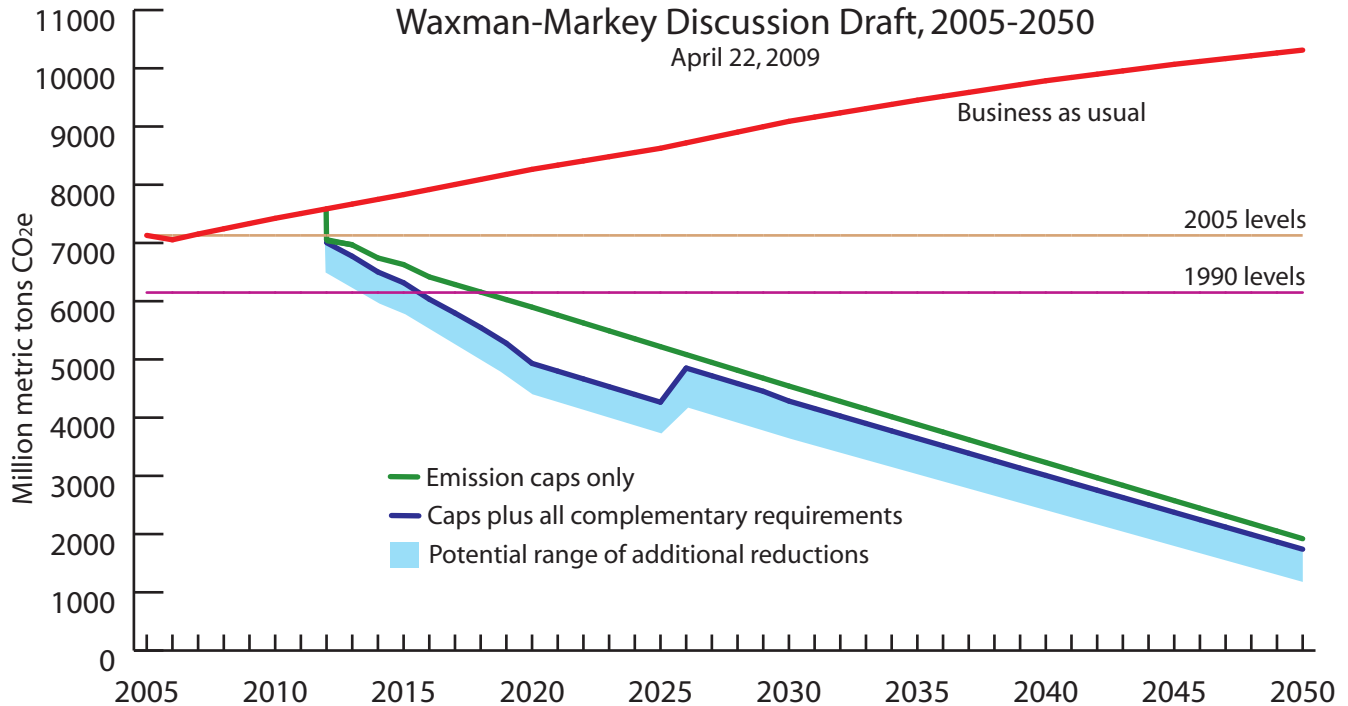
Key Findings

- The pollution caps proposed in the WM-DD would reduce total GHG emissions 17 percent below 2005 levels by 2020 and 73 percent below 2005 levels by 2050.
- When all complementary requirements of the WM-DD are considered in addition to the caps, GHG emissions would be reduced 31 percent below 2005 levels by 2020 and 76 percent below 2005 levels by 2050.
- When additional potential emission reductions are considered, the WM-DD could achieve maximum reductions of up to 38 percent below 2005 levels by 2020 and up to 83 percent below 2005 levels by 2050. The actual amount of reductions will depend on the quantity of offsets used for compliance.

“Emission reductions under the Waxman-Markey Discussion Draft, 2005-2050” (see page 2) graphically presents total GHG reductions achieved by the WM-DD relative to U.S. historic and projected emissions under the three reduction scenarios. “Estimates of Total GHG Emissions and Emission Reductions Achieved by the Waxman-Markey Discussion Draft” (see page 3) presents a table of total GHG reductions by the WM-DD for selected years. A full description of the methods and assumptions behind this analysis can be found on page 4.

Emission Reductions Under the Waxman-Markey Discussion Draft, 2005-2050

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For a full discussion of underlying methodology, assumptions and references, please see <http://www.wri.org/usclimatetargets>. WRI does not endorse this proposal.

Table 1. Estimates of Total GHG Emissions and Emission Reductions Achieved by the Waxman-Markey Discussion Draft

Absolute Emissions (Million Metric Tons CO₂ eq.)					
	2012	2020	2030	2040	2050
Business as usual emissions	7,586	8,264	9,089	9,786	10,312
Emissions caps only	7,056	5,897	4,542	3,229	1,920
Caps plus all complementary requirements	7,005	4,931	4,284	3,007	1,740
Potential range of additional reductions	6,505	4,431	3,681	2,463	1,220
Percent Change From 2005 Emissions					
	2012	2020	2030	2040	2050
Business as usual emissions	6	16	27	37	45
Emissions caps only	-1	-17	-36	-55	-73
Caps plus all complementary requirements	-2	-31	-40	-58	-76
Potential range of additional reductions	-9	-38	-48	-65	-83
Percent Change From 1990 Emissions					
	2012	2020	2030	2040	2050
Business as usual emissions	23	34	48	59	68
Emissions caps only	15	-4	-26	-47	-69
Caps plus all complementary requirements	14	-20	-30	-51	-72
Potential range of additional reductions	6	-28	-40	-60	-80

ASSUMPTIONS AND METHODOLOGY

Many assumptions have been made to simplify this analysis and should not be taken as statements of fact. In many situations, these assumptions highlight contentious issues which must be resolved to ensure the environmental integrity of a market-based approach to addressing the threat of climate change. WRI will update this analysis to reflect new legislation as well as new analyses on emissions, economic or technical considerations published by EPA, DOE or other relevant organizations.

Cap and coverage: The discussion draft proposes the creation of two caps – one to phase down U.S. HFC consumption and another to reduce all other GHG emissions.

- Coverage of non-HFC GHG emissions is phased in over the first 4 years of the program.
 - The initial 2012 cap, set at 4770 million metric tons of emissions, is estimated to cover approximately 67 percent of total 2005 U.S. emissions.
 - In 2014, the cap is expanded to include most industrial emissions – increasing coverage to an estimated 78 percent of 2005 U.S. emissions.
 - In 2016, the cap is again expanded to include emissions from natural gas sold by local distribution companies – increasing coverage to an estimated 85 percent of 2005 US emissions.
 - As called for in the WM-DD, small adjustments were made to the size of the cap to reflect differences between WRI estimates of coverage and historic emissions and those assumed in the proposal.
- The HFC cap would go into effect in 2012, covering the production of specifically identified HFCs. These HFCs were responsible for approximately 2 percent of 2005 emissions.
- When combined with the HFC cap, the draft bill would cover up to 87 percent of 2005 U.S. emissions.

Business as usual and growth of uncovered emissions: Emissions in the case of no policy action and emissions not covered by the proposal are assumed to increase in line with EPA's ADAGE reference case projections for S.2191.

- Business as usual emission projections do not reflect the economic downturn and recently enacted policies that will reduce GHG emissions below the projections used here. The gap between business as usual and the cap would likely be smaller than what is depicted in this analysis. WRI will revise these projections as soon as comparable updates from the EPA are publicly available.
- Specific emissions growth rates are approximated for each group of emissions not included in the initial cap but phased in over the life of the program. These growth rates, while varying from year to year, average -0.2 percent annually through 2050 for emissions that are never covered, 0.7 percent annually for natural gas emissions that would be covered beginning in 2016, and 1.0 percent annually for industrial emissions that would be covered beginning in 2014. This analysis does not take into account potential leakage of emissions from capped sources to uncapped sources.

Cost containment measures: A variety of cost containment measures are included in the discussion draft in order to allow flexibility and reduce the cost of compliance. In order to evaluate the potential impact of the bill, we assume:

- Offsets will be real, permanent and additional. As a result, we depict offsets as a real reduction in total global GHG emissions.
- Borrowing and banking will not allow increases in cumulative GHG emissions. Annual emissions may stray above or below the cap, but cumulative GHG emissions over the life of the program would be the same with or without borrowing or banking. Large amounts

of banking may result in use of offsets in later years beyond those calculated in this analysis. Greater use of offsets would result in additional GHG reductions through the 1.25 requirement.

- The strategic reserve represents a fixed amount of reductions that will take place in addition to reductions made to meet the cap. If the strategic reserve trigger price is not reached, allowances in this reserve (2,692 million) will not be released – in effect tightening the cap. Even if the trigger price is reached, forest tons are used to refill the reserve. We assume that these purchases are designed to maintain a constant level of credits that are fungible with normal allowances (either allowances or forest tons discounted at the rate outlined in the legislation). We distribute these reductions depending on the years in which the allowances are withdrawn from the cap to fill the reserve (we do not credit the reductions until the allowance withdrawals force abatement among covered sectors). Additional reductions could occur through the forest tonne purchasing component of the reserve; these are not taken into account in this analysis.

Mandatory provisions: In addition to the two caps outlined above, the draft includes a variety of policies that require additional reductions from uncapped sources including:

- **Supplemental greenhouse gas reduction program:** The discussion draft requires the program administrator to use allowances from the cap to fund international forestry projects to achieve 720 million tons of additional emission reductions in 2020 and a total of 6,000 million tons of reductions by 2025. To distribute these reductions among individual years, we assume an acceleration of the program between 2012 and 2020 to reach the required 720 million tons in 2020. After 2020, we assume a leveling off of reductions to achieve the required cumulative reduction between 2012 and 2025 of 6,000 million.
- **Industrial performance standards:** The proposal phases in industrial performance standards between 2012 and 2019. EPA is instructed to cover 95 percent of total industrial emissions (including industrial process and F-gas emissions) with a combination of the cap and performance standards. WRI estimates that 84 percent of these emissions are covered under the cap leaving 11 percent subject to standards. Since the structure of these standards is to be designed by the administrator, it is unknown precisely how much mitigation the standards would achieve. This analysis assumes emissions subject to performance standards are reduced by 50 percent and then held constant from the effective year onward.
- **Standards from other stationary sources:** Performance standards for uncapped sources are assumed to achieve additional reductions of approximately 115 million tonnes CO₂e derived from estimates conducted by the EPA. These regulations are assumed to take effect in 2013. This estimate may be conservative as it does not take into account improvements in technology over time.
- **Energy efficiency resource standard:** Since emissions from the combustion of natural gas by industrial facilities and from the sale of natural gas by local distribution companies are not covered until 2014 and 2016 respectively, the EERS is likely to achieve additional reductions beyond the cap. In order to estimate these reductions, we first calculate 2006 emissions from these uses of natural gas based on the EPA Greenhouse Gas Inventory and the EIA Natural Gas Navigator. We then apply CO₂ emissions growth rates for the government, commercial, residential and industrial sectors from EPA's ADAGE model to develop a baseline emissions level through 2016. To determine the emission reductions, we then apply the natural gas savings rates, as outlined in the legislation.

Potential range of additional reductions: The lower bound of the range (potential reductions) incorporates additional emission reductions that may be achieved through the implementation of the proposal, but are not mandated. Such policies include:

- 1.25 offset requirement: The discussion draft requires 1.25 offsets to be submitted for compliance for every ton of regulated emissions. This requirement would yield additional reductions contingent on the number offsets used. A range of additional emission reductions in uncovered emissions in the U.S. and internationally are included in this analysis to represent this provision. The range starts at zero and increases to 250 million tonnes per year each for both domestic and international uncovered emissions.
- Supplemental greenhouse gas reduction program: After 2025, the explicit reduction requirements as well as the authority to increase the amount of allocations dedicated to the program are dropped from the supplemental GHG reduction program. After this date, we assume that each ton allocated has the potential to generate one ton of forest reductions.

Acknowledgements:

This analysis was completed by John Larsen and Robert Heilmayr at the World Resources Institute. The authors would like to thank staff in the offices of Representatives Markey, Waxman and the House Committee on Energy and Commerce staff as well as analysts at the World Resources Institute, the United States Environmental Protection Agency, the United States Energy Information Administration, the Stockholm Environment Institute, the Nature Conservancy and others for their help in reviewing earlier versions of this analysis.

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