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EMISSION REDUCTIONS UNDER THE AMERICAN CLEAN ENERGY AND SECURITY ACT OF 2009

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This analysis provides an assessment of reductions in greenhouse gas (GHG) emissions that could be achieved by Title III of the amendment in the nature of a substitute to H.R. 2454, the American Clean Energy and Security Act (ACESA) sponsored by Chairmen Waxman and Markey released on May 19, 2009. This assessment is an update to a previous analysis released on April 21, 2009 and reflects a significantly revised reference case recently released by the Environmental Protection Agency. To account for the effects of different components of H.R. 2454, 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 for international offsets and supplemental reductions beyond 2025.

Key findings:

- The pollution caps proposed in the ACESA would reduce total GHG emissions 15 percent below 2005 levels by 2020 and 73 percent below 2005 levels by 2050.
- When all complementary requirements of the ACESA are considered in addition to the caps, GHG emissions would be reduced 28 percent below 2005 levels by 2020 and 75 percent below 2005 levels by 2050.
- When additional potential emission reductions are considered, the ACESA could achieve maximum reductions of up to 33 percent below 2005 levels by 2020 and up to 81 percent below 2005 levels by 2050. The actual amount of reductions will depend on the quantity of international offsets used for compliance.
- The ACESA's proposed pollution caps result in reductions of total GHG emissions of 15 percent below 2005 levels by 2020. This is less than the 17 percent reduction from 2005 levels that the Waxman Markey Discussion Draft as released would have achieved.

“Emission reductions under the H.R. 2454 the American Clean Energy and Security Act, 2005-2050” (see page 2) graphically presents total GHG reductions achieved by the ACESA relative to U.S. historic and projected emissions under the three reduction scenarios. “Estimates of Total GHG Emissions and Emission Reductions Achieved by H.R. 2454 the American Clean Energy and Security Act” (see page 3) presents a table of total GHG reductions by the ACESA and the Waxman Markey Discussion Draft for selected years. A full description of the methods and assumptions behind this analysis can be found on page 4.

Emission Reductions Under H.R. 2454, the American Clean Energy and Security Act, 2005-2050

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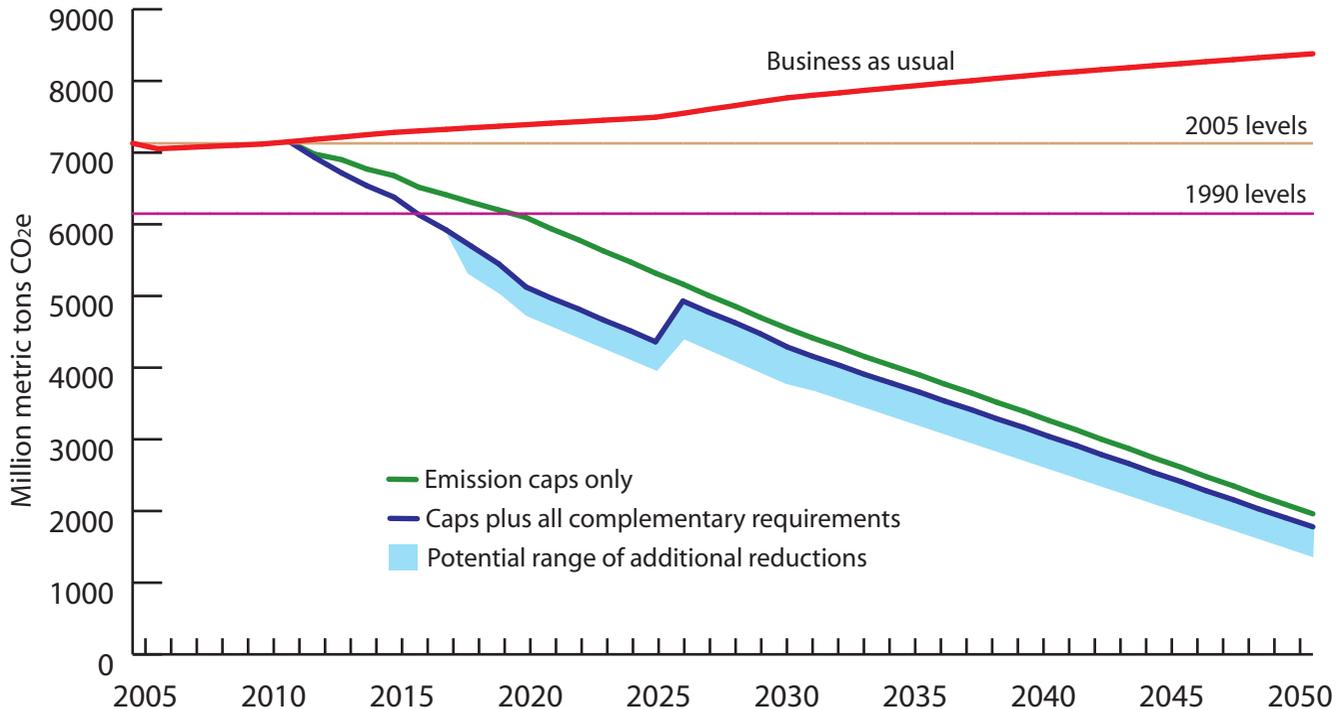


Table 1. Comparison of Estimates of Total GHG Emissions and Emission Reductions Achieved by H.R. 2454 and the Waxman-Markey Discussion Draft (Million metric tons of CO₂e)

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Note: Bills analyzed include the amendment in the nature of a substitute to H.R.2454 released on May 18, 2009 and the Waxman Markey Discussion Draft released on March 31, 2009. Business as usual emission projections are from EPA's reference case for its analysis of the Waxman Markey Discussion Draft.

Absolute Emissions										
	H.R.2454					Waxman Markey Discussion Draft				
	2012	2020	2030	2040	2050	2012	2020	2030	2040	2050
Business as usual emissions	7,185	7,390	7,765	8,102	8,379	7,185	7,390	7,765	8,102	8,379
Emissions caps only	6,980	6,095	4,547	3,262	1,961	6,990	5,917	4,565	3,262	1,961
Caps plus all complementary requirements	6,934	5,125	4,287	3,040	1,779	6,938	4,951	4,305	3,040	1,779
Potential range of additional reductions	6,934	4,750	3,809	2,621	1,384	6,438	4,451	3,702	2,496	1,259
Percent change from 2005 emissions										
	H.R.2454					Waxman Markey Discussion Draft				
	2012	2020	2030	2040	2050	2012	2020	2030	2040	2050
Business as usual emissions	1	4	9	14	18	1	4	9	14	18
Emissions caps only	-2	-15	-36	-54	-73	-2	-17	-36	-54	-73
Caps plus all complementary requirements	-3	-28	-40	-57	-75	-3	-31	-40	-57	-75
Potential range of additional reductions	-3	-33	-47	-63	-81	-10	-38	-48	-65	-82
Percent change from 1990 emissions										
	H.R.2454					Waxman Markey Discussion Draft				
	2012	2020	2030	2040	2050	2012	2020	2030	2040	2050
Business as usual emissions	17	20	26	32	36	17	20	26	32	36
Emissions caps only	14	-1	-26	-47	-68	14	-4	-26	-47	-68
Caps plus all complementary requirements	13	-17	-30	-51	-71	13	-19	-30	-51	-71
Potential range of additional reductions	13	-23	-38	-57	-77	5	-28	-40	-59	-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 of emissions or economic and technical considerations published by the Environmental Protection Agency, the Department of Energy or other relevant organizations.

This is an analysis of the amendment in the nature of a substitute to H.R. 2454, The American Clean Energy and Security Act of 2009 released on May 18, 2009.

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 4627 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.
 - The ACESA requires a one-time small adjustment to the size of the cap in the event that the bill's assumed estimates of coverage do not match EPA's final coverage estimates during implementation. WRI's estimates of coverage differ slightly compared to the assumptions contained in the bill and so this analysis incorporates the bill's prescribed cap adjustments.
- 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 the Waxman-Markey Discussion Draft based on the 2009 Annual Energy Outlook. This reference case is updated from our previous release on April 22, 2009. While total business as usual emissions are much lower in this reference case, growth in uncovered emissions does not change substantially.¹

- 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 -0.1 percent annually through 2050 for emissions that are never covered, 0.4 percent annually for natural gas emissions that would be covered beginning in 2016, and 0.1 percent annually for industrial emissions that would be covered beginning in 2014.

¹ The difference in projected emissions in 2050 between EPA's 2009 reference case and its previous projections is approximately 2 billion tonnes. For more discussion on the differences between reference cases please see page 8 of EPA's Preliminary Analysis of the Waxman-Markey Discussion Draft in the 111th Congress, The American Clean Energy and Security Act of 2009", (Washington, DC: April 2009)

- 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 international 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.
- The vast majority of mandatory energy efficiency programs would further regulate capped sectors and thus not achieve additional reductions. However, some programs such

as residential home efficiency standards would achieve reductions in natural gas consumption and resulting GHG emissions prior to the inclusion of residential natural gas usage in the cap in 2016. Due to time-constraints and a lack of data, these reductions were not quantified. Based on our analysis of the natural gas savings due to the EERS included in the Waxman-Markey Discussion Draft we are fairly certain that emission reductions achieved by HR 2454 prior to 2016 would be negligible – roughly 10 million tonnes on average annually from 2012 through 2016.

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 for international offsets: The discussion draft requires 1.25 international offsets to be submitted for compliance for every tonne of regulated emissions beginning in 2018. This requirement would yield additional reductions contingent on the number of offsets used. In addition, under certain circumstances the international offset limit may be increased from 1 billion tonnes to up to 1.5 billion tonnes. This extends the maximum potential emission reductions of the 1.25 offset requirement if this limit is expanded. A range of additional emission reductions in uncovered international emissions are included in this analysis to represent this provision. The range starts at zero and increases to 375 million tonnes per year.
- 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 tonne allocated has the potential to generate up to one tonne of forest reductions.

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