



Waxman-Markey: An Exercise in Unreality

By Steven F. Hayward and Kenneth P. Green

After months of hearings and backroom give-and-take, the House of Representatives on June 26 passed HR 2454, the American Clean Energy and Security Act of 2009, known as Waxman-Markey. The final draft of the bill was over 1,200 pages, and the House vote was extremely narrow: 219–212. Senate passage is uncertain. What is needed now as the Senate begins its deliberations is a clear idea of exactly what Waxman-Markey contains, how it is likely to affect the economy, and whether it will address the problem of global warming in a serious way. Our view is that the legislation is an exercise in unreality.

Waxman-Markey is a bundle of contradictions. It seeks to make carbon energy more expensive but does not ask consumers to pay higher energy prices—at least for the first decade of its operation. Hence, Waxman-Markey allocates 85 percent of the emission rights it creates to existing emitters (coal-fired power plants, electric utilities, and manufacturers) for free, rather than auctioning the emissions permits, as President Obama and environmentalists have long advocated. It seeks a first in economic history: rationing without scarcity or price inflation. Thus, Waxman-Markey allows generous “offsets” so that carbon-based energy does not, in fact, become scarce. The bill does, however, contain a multitude of new regulations, product-efficiency mandates, and spending programs that will require extensive managerial attention from both the public and private sectors, though to much less effect than promised.

In addition to having many other pernicious effects, the Waxman-Markey bill will establish a new commodity—carbon credits—that will almost certainly spawn new Wall Street derivatives and, hence, make necessary another large area of financial transactions for the federal government

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Key points in this Outlook:

- The Waxman-Markey legislation will do for climate change what Sarbanes-Oxley did for financial regulation: establish a big new bureaucracy that imposes substantial costs on the economy.
- The legislation enumerates six hundred tasks the EPA must perform and gives other agencies significant administrative roles.
- The last time GHG emissions were at the Waxman-Markey target for 2050 was 1910. However, the liberal use of “offsets” suggests that even if Waxman-Markey works perfectly, fossil fuel emissions will be reduced by no more than 50 percent.
- Countries such as Grenada and Belize have per-capita emissions close to the Waxman-Markey 2050 levels.
- The legislation is a giveaway to the people environmentalists claim are destroying the planet.
- Waxman-Markey is unrealistic and will not fix the problem.

to oversee, at a time when the federal government is struggling to manage regulation of the banking sector. Indeed, a careful review of this copious legislation reveals it to be the energy and climate policy equivalent of Sarbanes-Oxley financial regulation, creating an extensive new bureaucracy and imposing substantial economic costs on the productive economy while achieving few of its stated objectives. Just as Sarbanes-Oxley did little or nothing to expose and prevent the excessive risk and inflated asset values of the housing and financial sector, Waxman-Markey will do little to achieve genuine greenhouse gas (GHG) emission reductions or curb the risks of global warming. The “cap” on emissions is so porous that it may be more accurately thought of as a hairnet, with many ways for GHG emissions to escape the cap.

The idea of cap-and-trade involves setting a total cap on national GHG emissions—chiefly carbon dioxide (CO₂), but also a number of other gases¹—and establishing a market for a finite number of allowances to emit GHGs up to the total amount of the cap, which would be lowered gradually over time. Economists and policy analysts have long favored emissions trading of this kind as a more efficient and less bureaucratic means of reducing pollution than the traditional “command-and-control” regulation of the Clean Air and Clean Water Acts (though in the case of CO₂, most economists and many policy analysts believe a carbon tax would be a better instrument). These acts involve detailed prescriptive regulation that is often costly and litigious. The 1990 Clean Air Act treatment of sulfur dioxide is an example of a successful emissions trading program. But this comparatively small program is not necessarily applicable to GHGs.² In any event, the presumed economic efficiencies of emissions trading contemplated in Waxman-Markey will not make up for the fact that the bill essentially requires the wholesale remaking of the entire energy sector over the course of the next four decades—a feature conspicuously different from previous emissions trading programs, which imposed minimal constraints on fossil fuel use.

Expansion of Governmental Roles

Much of the discussion thus far has been concerned with the typical disputes over estimates of the cost of such a program, but there has been little notice of how an approach that is supposed to be an alternative to command-and-control regulation will involve a massive

interagency bureaucracy to execute it, with undoubtedly substantial compliance costs for the private sector. Waxman-Markey contemplates a primary administrative role for the Environmental Protection Agency (EPA); the bill requires the EPA’s administrator to perform over six hundred tasks in connection with the operation of the law. One wonders whether the EPA administrator will have time for any other environmental issues.

The bill also creates primary administrative roles for the Department of Energy (DOE), the Department of Transportation, the Department of Agriculture, the State Department, the U.S. Agency for International Development (USAID), and the Federal Energy Regulatory Commission, along with substantial involvement of the Commodity Futures Trading Commission, the Federal Reserve, the Securities and Exchange Commission, the Federal Aviation Administration, and the Department of Housing and Urban Development. There are also multiple planning and reporting mandates for state governments. It is impossible to tally up the total number of new tasks Waxman-Markey is asking the government to perform (several general clauses will no doubt generate additional functions beyond those specifically enumerated), but the coordination and consultation requirements for the responsibilities of all these agencies promise a bonanza for lawyers and consultants and endless interagency meetings that will keep the chairs warm in countless conference rooms.

Unrealistic Emissions Reduction Targets

No amount of nimble administration can make up for the sheer unreality of the Waxman-Markey GHG emissions reduction targets. The text of Waxman-Markey endorses the target of holding global CO₂ levels to no more than 450 parts per million (ppm)—up from about 385 ppm today and rising at present trends to more than 700 ppm by 2100 if nothing is done. To grasp how extraordinary this target is, consider this analysis the International Energy Agency offered in its *World Energy Outlook Summary* for 2008, released last fall in Paris:

The scale of the challenge in the 450 Policy Scenario is immense: the 2030 emissions level for the world as a whole in this scenario is less than the level of projected emissions for non-OECD countries alone in the Reference Scenario. *In other words, the OECD countries alone cannot put the world onto the path to 450-ppm trajectory, even if they were to*

reduce their emissions to zero. Even leaving aside any debate about the political feasibility of the 450 Policy Scenario, it is uncertain whether the scale of the transformation envisaged is even technically achievable, as the scenario assumes broad deployment of technologies that have not yet been proven. The technology shift, if achievable, would certainly be unprecedented in scale and speed of deployment.³

It is worth pondering the italicized sentence. It means that even if the United States and its fellow industrialized nations ceased to exist, emissions from developing nations, not included in the Kyoto Protocol and unlikely to be included in the successor treaty, would carry the CO₂ level well beyond 450 ppm by midcentury. According to an EPA estimate made last year, the Waxman-Markey emissions target, even if fully achieved, would lower global CO₂ levels in the year 2095 by 25 ppm at most and would, therefore, have a negligible effect on holding back global warming.

Two Questions about the Target

Waxman-Markey sets the ambitious target of reducing total U.S. GHG emissions by 83 percent below 2005 levels by the year 2050 (with intermediate benchmarks at 2020 and 2030). Thus, the cap and the allowances sold pursuant to it will be lowered from a peak of 5.4 billion tons in 2016 to just a little over 1 billion tons in 2050. Before considering how the allowances are being allocated, it is worth concentrating for a moment on the overall emissions target for 2050. In 2005, the baseline year, the United States emitted a little more than 6 billion tons of CO₂ and another billion tons of other GHGs such as methane and nitrous oxide. But CO₂, as the byproduct of fossil fuel consumption and the most abundant GHG, is the principal focus of policy. An 83 percent reduction in CO₂ emissions in 2050 would be slightly over 1 billion tons.

The first threshold question is: when were U.S. CO₂ emissions from fossil fuel use last at 1 billion tons, the year 2050 target? From DOE historical statistics on energy consumption, it is possible to estimate that the United States last emitted 1 billion tons in the year 1910, when the nation's population was only 92 million people, per-capita income (in 2008 dollars) was only \$6,196, and total GDP (also in 2008 dollars) was about \$572 billion—about one-twenty-fifth the size of the U.S. economy today (see table 1).

TABLE 1
U.S. CO₂ EMISSIONS: 1910 AND 2005 LEVELS

	1910	2005
U.S. CO ₂ emissions from fossil fuels (million metric tons)	1,002.3	6,032.3
U.S. GDP (billion 2008 \$)	\$572	\$14,264
Per-capita income (2008 \$)	\$6,196	\$46,913
Population	92,228,000	303,000,000
Fossil fuel energy (quadrillion British thermal units)	14.261	87.760
Per-capita CO ₂ emissions (tons)	10.9	20.3

SOURCE: Energy Information Administration and authors' calculations.

By the year 2050, however, the United States is expected to have a population of 420 million, according to Census Bureau projections—more than four times the population of 1910. In order to reach the 83 percent reduction target, per-capita CO₂ emissions will have to be no more than 2.4 tons per person—only one-quarter the level of per-capita emissions in 1910.

This suggests a second threshold question: when did the United States last experience per-capita CO₂ emissions of only 2.4 tons? From the limited historical data available, it appears that this was about 1875. In 1875, the nation's GDP (in 2008 dollars) was \$147 billion, per-capita income (in 2008 dollars) was \$3,300, and the population was only 45 million. (It is possible that per-capita CO₂ emissions were never this low even before the advent of widespread fossil fuel use, as wood burning by Americans in the nineteenth century may have produced more than 2.4 tons of CO₂ per capita. Much depends on the emissions coefficient for wood burning and how, since wood is biomass rather than a fossil fuel, regrowth of forestland is credited in carbon accounting. In 1875, twice as much energy was generated from burning wood than fossil fuels.)

To understand how extreme an 83 percent reduction in CO₂ emissions for the United States in the year 2050 is, consider the following: Are there any modern industrialized nations whose CO₂ emissions come close to the putative target for 2050? The advanced industrialized nations with the lowest current per-capita CO₂ emissions are France and Switzerland. France famously generates about 80 percent of its electricity with nuclear power, which is carbon-free, while Switzerland generates most of its electricity with nuclear and hydropower,

which is also carbon-free. Both nations are also compact compared to the United States, with low energy needs for transportation. Yet France’s per-capita CO₂ emissions are 6.59 tons, and Switzerland’s are 6.13 tons—both more than twice the per-capita level the United States must achieve to reach the 80 percent reduction target. Table 2 shows nations that currently have per-capita emissions close to the 2050 target level (again, the U.S. level in 1875).

This is not the profile of a “carbon-constrained” world, as a popular euphemism has it; this is the profile of a *carbon-starved* world. This kind of reduction is not going to be achieved, and it is not going to be seriously attempted.

Waxman-Markey tacitly admits this through its inclusion of “offsets”—that is, reductions in GHG emissions through means *other* than reduction in fossil fuel energy use—along with the hope that carbon sequestration can be implemented cost-effectively on a large scale, thus allowing coal-fired electricity to be *expanded* in the coming decades.

Loopholes

“Offsets” refer principally to increased carbon storage in biomass—essentially, this means planting more trees—both here in the United States and in developing nations. International offsets will involve U.S. companies paying developing nations to reduce deforestation or to increase reforestation efforts. Waxman-Markey will allow up to 2 billion tons per year of such offsets. Despite the bill’s attempts to ensure that overseas offset projects will be authentic (the State Department and USAID will monitor and certify overseas offset projects, and the EPA will establish an Offsets Integrity Advisory Board to avoid the kind of fraud and manipulation that was the undoing of a similar United Nations program under the Kyoto Protocol), it is likely that American consumers will end up paying for efforts developing nations are going to undertake anyway. China, for example, has an extensive reforestation program underway that it may well choose to “sell” to the United States for offset credits. This would follow China’s previous gaming of Europe’s cap-and-trade program, when China bilked the European Union of billions of dollars by building two chemical plants that

TABLE 2
2005 PER-CAPITA EMISSIONS

	Per-capita CO ₂ emissions (tons)	Per-capita income (2005 \$)	CO ₂ emissions intensity
Argentina	3.84	8,840	0.49
Belize	3.44	4,320	0.90
Botswana	2.45	5,540	0.50
Brazil	1.99	4,260	0.53
France	6.58	25,840	0.29
Grenada	2.77	5,990	0.52
Jordan	3.35	2,240	1.69
Mauritius	3.21	4,900	0.74
Syria	2.71	1,660	1.84
United States, 1875	2.40	3,180	n/a
United States, 2005	20.27	42,000	0.55

SOURCE: Energy Information Administration.

would produce a highly powerful GHG and then building two cleanup plants to “offset” emissions.

Waxman-Markey’s mandate for a renewable energy standard (RES) for electric utilities has similar loopholes. The original draft of Waxman-Markey included an RES mandate that electric utilities generate 20 percent of their power from renewable sources (tightly defined to exclude hydropower and nuclear power) by the year 2020, up from about 4 percent today. But as the allowable renewable technologies (chiefly solar, wind, and biomass) are much more expensive than conventional fossil fuel sources, the revised Waxman-Markey bill allows the 20 percent standard to be achieved through “conservation and efficiency” measures rather than noncarbon energy. The National Renewable Energy Laboratory and several environmental groups, including the Union of Concerned Scientists and the Breakthrough Institute, have produced analyses of the RES that conclude the standard will generate very little new renewable power than will otherwise occur under the DOE’s current “business-as-usual” forecast. The EPA’s latest analysis of the revised bill, released on June 23, found that Waxman-Markey would result in less new renewable power than under a business-as-usual scenario.⁴ (The EPA analysis has to be read carefully to recognize this finding; on the surface, it appears that the amount of renewables will go up sharply under Waxman-Markey, but it reaches this conclusion by assuming significantly lower electricity demand over the coming decades, such that the present modest growth rate of renewables will account for a

larger share of a smaller pie.) All in all, it appears that the actual GHG reductions would be very modest—less than 5 percent of the total reduction sought under Waxman-Markey.⁵

Even if Waxman-Markey works according to design, it appears the net reduction in GHG emissions by 2050 would only be about 50 percent—still an ambitious target, but considerably less than the 83 percent reduction advertised in the bill’s summary. In other words, instead of reducing fossil fuel CO₂ emissions from 6 billion tons to 1 billion tons—the stated target—the use of offsets and other gimmicks means that CO₂ emissions will only be reduced to about 3 billion tons. The “83 percent reduction by 2050” represents false advertising.

Between the offsets, allowance giveaways, generous assumptions about the cost and development of carbon sequestration for coal-fired electricity, and optimistic hopes for falling costs for other prospective energy sources, estimates of the cost of Waxman-Markey over the long run differ by more than an order of magnitude. Advocates of Waxman-Markey point to estimates from the EPA and the Congressional Budget Office (CBO) showing average cost to households of less than \$100 per year (in 2008 dollars) by 2020, down from a previous estimate of about \$175 per year—roughly equal to buying one extra postage stamp a day. On the other end of the scale, the Heritage Foundation estimates the cost will be more than \$1,800 per household (again in constant 2008 dollars) by 2020 and will rise sharply in the years after 2020 when the cap begins to be lowered and the allowances begin to be auctioned rather than given away.

Taxpayer Burden of Reduction

It is not necessary to enter into intense and technical debate over economic methodology to get to the heart of what is problematic about Waxman-Markey. The EPA’s latest analysis of the bill offers a range of estimates similar to the CBO’s. The EPA offers multiple scenarios of how Waxman-Markey might play out because the agency acknowledges that “uncertainties could significantly affect results”; depending on which scenario one selects, the cost in 2020 will be between \$84 and \$105 per household per year, but rising to as much as \$1,000 per household by 2050. Here is a puzzle: when the EPA scored the Lieberman-Warner cap-and-trade bill—which also sought an 80 percent reduction in GHG emissions by 2050—last year, the agency

reported much higher estimates for what on the surface looks identical to Waxman-Markey.⁶

For Lieberman-Warner, the estimated household cost in 2020 was as much as \$386 per household per year, rising to as much as \$2,268 in 2050 (again in constant 2008 dollars). The difference is simple: in the analysis of Lieberman-Warner, the EPA “assumed the full cost of allowances are passed on to consumers,” while its analysis of Waxman-Markey concludes that the cap-and-trade “policy has a relatively modest impact on U.S. consumers *assuming the bulk of revenues from the program are returned to households*. . . . A policy that failed to return revenues from the program to consumers would lead to substantially larger losses in consumption.”⁷

It makes a large difference if you ask Americans to pay for a policy. Instead, Waxman-Markey will set up a marketplace for trading a new commodity—carbon credits—on Wall Street while attempting to ensure that the proceeds and profits are fully redistributed, like an income tax with a 100 percent refund. The EPA’s newest analysis also omits the impacts that higher energy rates engendered by Waxman-Markey will have on the economy in terms of reduced economic growth and likely job losses. Of course, the proceeds of freely allocated allowances will not be redistributed evenly, and many will not even flow to consumers, as the EPA analysis makes clear in findings that the advocates of Waxman-Markey have chosen not to advertise:

- A cap-and-trade policy increases the price of energy-intensive goods and services, such as transportation, food, and medical care. The majority of this price increase is ultimately passed on to consumers.
- Before accounting for the way in which allowances are allocated or revenues are redistributed, lower-income households are disproportionately affected by a GHG cap-and-trade policy because they spend a higher fraction of their incomes on energy-intensive goods.
- Freely distributed allowances to firms tend to be very regressive. Higher-income households may actually gain at the expense of lower-income households under this policy. This is because the asset value of the allowances flows to households in the form of increased stock values or capital gains, which are concentrated in higher-income households.⁸

Conclusion

Perhaps the most astonishing aspect of the Waxman-Markey bill is that so many environmentalists support it. Had President George W. Bush and the GOP Congress proposed four or five years ago the free allocation of emission permits in the same fashion as Waxman-Markey, environmentalists would have lined up to denounce and oppose the bill. Not only is Waxman-Markey a titanic giveaway to the very people that environmentalists have blamed for destroying the planet, it will prevent the EPA from regulating GHGs under the Clean Air Act and from undoing the environmental nightmare of corn ethanol. To their credit, a few environmental organizations, as well as people such as NASA's James Hansen, have denounced Waxman-Markey,⁹ but the major environmental groups seem willing to go along with the bill no matter how absurd and ineffective it becomes. Some believe that the Senate will "fix it," though it is more likely that if the bill gets through the Senate, it will end up allocating perhaps 150 percent of the emission permits instead of the 85 percent, as it stands now.¹⁰

In their determination to reduce GHG emissions in the near term rather than the long term, climate campaigners could have achieved a vastly better result with less cost and little bureaucracy through a simple, revenue-neutral \$15-per-ton carbon tax. But perhaps the creation of a vast energy bureaucracy is really the main point of the exercise. After all, a \$15 carbon tax will only generate, according to several models, about a 10 percent decrease in CO₂ emissions by 2020, which is more than Waxman-Markey will deliver. But it will still be far short of the goal the climate campaigners seek of an 83 percent reduction by 2050, implying that future carbon taxes would have to be much higher. But this also points to the inevitability of turning our policy attention to measures other than carbon suppression, such as geoengineering or "air capture"—that is, technical methods of removing carbon content from the air.¹¹

Abigail Haddad contributed research for this Outlook.

Notes

1. Other GHGs include methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, nitrogen trifluoride, and perfluorocarbons, as well as any other anthropogenic gas

designated as a greenhouse gas by the Environmental Protection Agency (EPA) administrator. See *American Clean Energy and Security Act of 2009*, HR 2998, 11th Cong., 1st sess., 543.

2. See the detailed discussion of this point in Kenneth P. Green, Steven F. Hayward, and Kevin A. Hassett, "Climate Change: Caps vs. Taxes," *Energy and Environment Outlook* no. 2 (June 2007), available at www.aei.org/outlook/26286.

3. *World Energy Outlook Summary 2008* (Paris: International Energy Agency, 2008), 48. Emphasis added.

4. EPA, "EPA Analysis of the American Clean Energy and Security Act of 2009 H.R. 2454 in the 111th Congress," June 23, 2009, available at www.epa.gov/climatechange/economics/pdfs/HR2454_Analysis.pdf (accessed July 2, 2009).

5. See *ibid.*; Patrick Sullivan, Jeffrey Logan, Lori Bird, and Walter Short, "Comparative Analysis of Three Proposed Federal Renewable Electricity Standards" (National Renewable Energy Laboratory Technical Report NREL/TP-6A2-45877, Golden, CO, May 2009), available at www.nrel.gov/docs/fy09osti/45877.pdf (accessed July 2, 2009); and Jessie Jenkins, "Climate Bill Analysis Part 16: EPA Projects Fewer Renewables under Waxman Markey Than Business as Usual," Breakthrough Blog, June 25, 2009, available at www.thebreakthrough.org/blog/2009/06/climate_bill_analysis_part_16.shtml#more (accessed July 2, 2009).

6. EPA, "EPA Analysis of the Lieberman-Warner Climate Security Act of 2008 S. 2191 in 110th Congress," March 14, 2008, available at www.epa.gov/climatechange/downloads/s2191_EPA_Analysis.pdf (accessed July 7, 2009).

7. EPA, "EPA Analysis of the American Clean Energy and Security Act of 2009 H.R. 2454 in the 111th Congress," 4. Emphasis added.

8. *Ibid.*, 49.

9. Friends of the Earth, "House Green Economy Bill Falls Short: Polluting Special Interests Have Weakened Bill; It Now Falls Far Short of Vision for Clean Energy Future Obama Articulated during Campaign," June 8, 2009, available at www.foe.org/sites/default/files/Waxman-MarkeyBillFallsShort.pdf (accessed July 2, 2009).

10. This could be the outcome, for example, if the Senate embraces any variation of Senator Jeff Bingaman's (D-N.M.) proposal for a price collar on carbon emissions and a "safety valve," under which additional emission permits would be automatically created and allocated if the price of permits exceeds a fixed upper bound price.

11. See Nicola Jones, "Climate Crunch: Sucking It Up," *Nature* 458, no. 1094–1097 (2009), available at www.nature.com/news/2009/090429/full/4581094a.html (accessed July 2, 2009).