

**THE OTHER HALF OF WAXMAN-MARKEY:
AN EXAMINATION OF THE NON-CAP-AND-TRADE PROVISIONS IN THE
WAXMAN-MARKEY BILL**

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I. Introduction

A. H.R. 2454

On June 26, 2009, the U.S. House of Representatives passed H.R. 2454, the American Clean Energy and Security Act of 2009. The first page states that the measure's purpose is "to create clean energy jobs, achieve energy independence, reduce global warming pollution and transition to a clean energy economy."¹ At the heart of the bill is a "cap-and-trade" scheme that will set ceilings on greenhouse gases (GHG) and institute a market for emissions permits, also called allowances. Both supporters and opponents have produced studies purporting to show that provision's effects on the economy, and controversy continues. Cap-and-trade, however, is only one part of the bill. The remaining provisions may produce an additional negative impact as great as the one created by cap-and-trade. Among them are a national requirement that utilities obtain some quota of electricity from "renewable" sources or efficiency improvements.² Others, such as a federal takeover of state building codes that will impose stringent efficiency standards, have yet to be subjected to a nonpartisan cost-benefit analysis. Numerous obscure provisions, such as grants for electric utility tree-planting programs and regulations on the design of underwater lighting, entail small expenditures that may be significant in the aggregate. Some sections of H.R. 2454 contain potential time bombs that may eventually cause as much harm as cap-and-trade, others transfer

¹ House Final Version of bill at 1, citation in fn. 4 below. The Pew Center for Global Climate Change has produced a convenient summary of its basic provisions, but it does not include important dollar data. <http://www.pewclimate.org/docUploads/waxman-markey-detailed-summary-july2009.pdf>.

² The Department of Energy's Energy Information Administration has performed several studies of a national "renewable portfolio standard" (RPS). The latest was a report on a 25-percent renewable energy requirement by 2025, prepared for Congressman Edward Markey in connection with H.R. 2454. It estimated an effect of 2.7 percent on average power costs in 2020, using what appear to be highly optimistic assumptions about the future evolution of renewable technologies. See EIA, *Impacts of a 25-Percent Renewable Electricity Standard as Proposed in the American Clean Energy and Security Act, Discussion Draft SR/OIAF/04-2009*, Executive Summary at v.

important regulatory decisions from the states to Washington, and still others needlessly and expensively restrict the choices of both producers and consumers of energy.

B. The Organization of H.R. 2454

The final version of H.R. 2454 (cited as "House Final") combines the bill reported out of Committee on June 5,³ with an addendum that first appeared at 3 a.m. on June 26. The entire bill passed later that same day, after the leadership had restricted floor debate to three hours.⁴ It was received by the Senate on July 6 and placed on the calendar the next day.⁵ The bill contains five broad titles:⁶

Title I—*Clean Energy*. This title imposes renewable-power and efficiency requirements on utilities, proposes a government corporation for carbon capture and sequestration research, provides funds to manufacturers and buyers of electric vehicles and developers of the infrastructure that will serve them, provides funding for research on a "smart" transmission grid, changes some transmission siting rules, sets up a "Clean Energy Deployment Administration," and makes minor changes in existing loan guarantee provisions for nuclear power.

Title II—*Energy Efficiency*. This title imposes federal requirements on state and local building codes to greatly reduce energy consumed in newer buildings, and provides incentives for efficiency-related retrofits in older ones. There are new design requirements for lighting and appliances, emission rules for vehicle and aircraft engines, requirements and support for greater efficiency in industry, and plans for community-based efficiency programs.

³ Original GPO Print as passed by committee 6/5 at [http://thomas.loc.gov/cgi-bin/cpquery/R?cp111:FLD010:@1\(hr137\)](http://thomas.loc.gov/cgi-bin/cpquery/R?cp111:FLD010:@1(hr137)).

⁴ GPO print of Report to Accompany House Resolution 547, June 25, 2009 at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_reports&docid=f:hr185.111.pdf.

⁵ http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=111_cong_bills&docid=f:h2454pcs.txt.pdf.

⁶ Title V did not appear in the original bill. It was part of the last-minute addendum, intended to bring some farm state Democrats into the winning coalition. The bill's table of contents includes references to Titles VII, VIII and XXII. The first two of these are new titles that the legislation will incorporate into the Clean Air Act, and the last will go into the Social Security Act.

Title III—*Reducing Global Warming Pollution*. This title specifies GHG reduction goals, sets up a registry and allowance market, provides for offsets, sets an initial allocation of allowances and rules for trading them in markets, and sets union-level wage rules for projects funded by the bill.

Title IV—*Transitioning to a Clean Energy Economy*. This title includes programs to reduce emissions "leakages" from production relocations to other countries, including the option of imposing carbon-based tariffs on these leakages. It provides for job training and adjustment assistance to displaced workers, energy refunds to low-income consumers, and foreign aid programs to mitigate emissions in less developed countries. It also programs to monitor and guide adaptation to climate change.

Title V—*Agricultural and Forestry Related Offsets*. This title, negotiated to gain the support of farm interests, first appeared in the 3 a.m. addendum to the bill. It allows farmers and forest owners to create and exchange emissions offset credits under Department of Agriculture oversight.

C. The Organization of This Report

H.R. 2454's overarching purpose is to determine and enforce a sequence of GHG reductions. ⁷ Using 2005 levels as a base, the bill requires a 3 percent reduction in GHG emissions by 2012, a 17 percent reduction by 2020, and an 83 percent reduction by 2050. The cap-and-trade program will be central to that effort, but it will be supplemented by policies intended to affect such important sectors as electricity generation, which accounts for 40 percent of GHG emissions as defined under the law.⁸ The program's provisions are to affect both the supply of and demand for emissions. Section II below covers the bill's major supply-side measures, intended to limit the production of emissions in power generation and elsewhere: [1] a national renewable electricity requirement, [2]

⁷ These portions of the bill were first proposed in 2006 as the "Safe Climate Act" by Congressman Waxman. Indicative of the haste with which H.R. 2454 was drafted and passed, this portion retains its old name.

⁸ House Final at 682. GHGs as legally defined include carbon dioxide (CO₂) from energy use (81.2 percent of total GHGs by weight), methane (9.6 percent), nitrous oxide (5.3 percent), miscellaneous gases (3.8 percent), and a small number of others known to have similar effects. See U.S. Energy Information Administration, *Emissions of Greenhouse Gases in the United States, 2007* (Dec. 2008). CO₂ accounts for 0.03 percent of total atmospheric gas. The law is not concerned with the quantitatively most important greenhouse "gas," water vapor.

carbon sequestration for conventional powerplants, [3] support of "advanced" technologies, including nuclear, and [4] support for the "Smart Grid." Section III is devoted to demand side measures, intended to reduce and restrict household and business activities that induce greater emissions of GHGs: [1] support for electric vehicles and alternative fuels, which could produce fewer GHGs per mile than conventional ones, [2] changes in the design of electricity-using equipment, [3] more restrictive building codes, and [4] localized conservation and efficiency efforts. Section IV covers two "stealth" issues that may upset federal-state regulatory relationships and increase the scope of environmental interventions: [1] changes in the organization of the Federal Energy Regulatory Commission (FERC), and [2] policies intended to facilitate "adaptation" to climate change. Section V covers some other politically motivated wealth transfers not discussed in earlier sections, such as: [1] transfers to workers, including retraining, transitional assistance and union-scale wage requirements; [2] new powers to impose tariffs on imports from emitting countries; and [3] funding for research to be performed by important interest groups.⁹ Section VI summarizes the discussion. **Even *without cap-and-trade*, H.R. 2454 might be the most impressive package of new taxes, wealth transfers, and obstacles to economic activity that a Congress has ever assembled.**

II. Supply-Side Interventions

A. Renewables: The National Renewable/Efficiency Portfolio Standard

Setting aside automotive sources, the production of electricity emits approximately 40 percent of U.S. greenhouse gases as the law defines them. Even without any of H.R. 2454's new provisions, electricity is already comprehensively regulated. State public utility commissions approve utilities' generation and transmission investments and set rates to final ("retail") customers, and FERC has jurisdiction over "wholesale" exchanges of power between utilities and non-utility power producers, as well as most hydroelectric activity. The Environmental Protection Agency (EPA) and state agencies regulate emissions from fossil-fueled generators, and the Nuclear Regulatory Commission oversees licensing and operation of nuclear powerplants. In addition, the siting of virtually all generating facilities and transmission lines is under state, and sometimes local,

⁹ Since this study is not about cap-and-trade I do not discuss many other transfers to interest groups in the bill, such as "free" allocations of allowances to favored groups and the opportunity for farmers to profit from the offset provisions of Title V.

regulation, in addition to the "alphabet soup" of federal laws and regulations pertaining to their construction and use permits. These include the National Environmental Policy Act (NEPA), the Clean Water Act, the Clean Air Act, Clean Air Act (CAA) and the Endangered Species Act (ESA), to name but a few.

Adding to the mass of existing regulation, H.R. 2454 will impose a national "Renewable Portfolio Standard" (RPS) on all but the smallest investor-owned utilities. It will require each utility to obtain at least 6 percent of its power from sources defined as renewable (though some may come from efficiency-related savings instead) by 2012, 9.5 percent by 2014, and 20 percent by 2020.¹⁰ There will also be a corresponding and equal federal renewable-energy purchase requirement schedule.¹¹ But because of their status as governmental and quasi-governmental agencies, municipal and cooperative electric systems that distribute 25.7 percent of the nation's power are exempt from the requirement.¹² Currently, 29 states and the District of Columbia have RPS laws, most of which require timetables for gradually increasing the percentage of energy their utilities obtain from renewables.¹³ Like most of those state policies, H.R. 2454 defines renewables as: wind turbines, geothermal steam plants, small hydroelectric facilities, burners of biomass (plant and wood waste not from federal lands¹⁴), and thermal and photovoltaic solar installations.¹⁵

The Federal Energy Regulatory Commission (FERC) will determine the details of RPS regulation and monitor utilities' compliance. Those that cannot produce or purchase renewable power will have the option to buy "Renewable Energy Credits" (RECs) from generation owners who do not need the credits for their own compliance. Utilities will also be able to claim energy savings from efficiency-related programs (e.g., load and peak reductions) for up to 25 percent of their RPS obligations. Any utility short of the requisite total of renewable power, RECs, and efficiency

¹⁰ House Final at 24–25 and 31 (Sec. 101).

¹¹ House Final at 54 (Sec. 103). This was introduced in the addendum.

¹² 15.4 percent is distributed by municipal utilities and 10.3 by rural cooperatives. See American Public Power Association, "Sales to Ultimate Customers", <http://www.appanet.org/files/PDFs/SalestoUltimateConsumersElectricRevenues.pdf>.

¹³ Database of State Incentives for Renewables and Efficiency (DSIRE), North Carolina State University, <http://www.dsireusa.org/incentives/index.cfm?SearchType=RPS&EE=0&RE=1>.

¹⁴ H.R. 2454 defines wood and plant waste from non-federal lands as renewable, but wood and plant waste from federal lands as non-renewable.

¹⁵ There are numerous differences among state requirements and goals, a summary of which appears in DSIRE [above].

improvements faces an "alternative compliance payment" to its state government of \$25 for each MegaWatt-hour (MWh) that it is in deficit. This is above and beyond the costs of the power it actually distributes. H.R. 2454 will require that states spend these payments on either the deployment of renewable generation or "cost-effective energy efficiency programs," to be defined by FERC.¹⁶ The new efficiency standards and techniques for measuring savings will replace a variety of existing state rules.¹⁷ The complexity and delays that have been seen at the state level will be mirrored and magnified in complex and lengthy FERC proceedings. These new uncertainties are almost sure to further distort and delay efficient investments that utilities might have made in the absence of the jurisdictional change.¹⁸

The economic case for a federal RPS regulation is at best weak, and the existing state-level record can only increase our doubts about its likely efficacy. The supposed logic of a national RPS is counter to almost all economic reasoning about competitive markets and their economic efficiency. An RPS is possibly the most inappropriate policy imaginable for controlling atmospheric emissions, whether dealing with EPA "criteria pollutants" (including oxides of sulfur and nitrogen) or greenhouse gases. Instead of setting a policy goal, examining its costs, and letting the market function to reach it as economically as possible (very roughly, EPA's strategy toward criteria pollutants), RPS percentages are arbitrary, set without considering the benefits of lower pollution or the costs of alternative policies that might reduce pollution more cheaply. Instead, an RPS simply orders utilities to invest in certain politically favored generation technologies that are needlessly costly ways to both produce power and reduce pollution.¹⁹

¹⁶ House Final at 45–46 (Sec. 101). The willful failure of a utility to report will require that it pay \$50 per MWh in deficit. Most state regulators allow the pass-through of such expenses, meaning that the deficiency is in reality paid for by retail customers.

¹⁷ House Final at 38 (Sec. 101). The measurement criteria and methods are by turns vague and incomprehensible. What is one to make of the acceptability of "measurable and verifiable electricity savings achieved as a result of market transformation efforts" (at 39)

¹⁸ States will be able to petition Washington to institute their own efficiency measurement programs, but that means their programs will require Washington's approval and oversight, and H.R. 2454's criteria for rejecting or accepting a state's request are vague.

¹⁹ The bill also creates inefficiencies by putting purely political restrictions on power sources – "Qualified hydropower" under the standard must be from a facility approved by FERC, which eliminates relatively plentiful Canadian imports from qualifying under the RPS. House Final at 18 (Sec. 101).

As a "jobs" program, most generators of renewable power have higher labor requirements for construction and operation than conventional ones. In effect, those people who endorse the rationale of creating jobs support throwing away part of the labor force on inefficient production.²⁰ Nor is a national RPS likely to bring forth renewable technologies that can compete without subsidies against conventional power plants. Almost two-thirds of U.S. electricity is already consumed in RPS states, and there is no evidence that expanding RPS will make breakthroughs more likely. Renewables are already a worldwide industry, and there is also no evidence that a federal RPS will boost America's position in these global markets. Alarmism about resource exhaustion is rapidly fading as we have recently witnessed the discovery of literally hundreds of years of onshore natural gas supplies in "unconventional" formations (shale, tight sands, and coal seams) and the development of cost-competitive technologies to explore for and produce them. Better yet for those with climate concerns, natural gas emits less carbon per unit of power produced than any other fossil fuel.

Despite years of popular attention and decades of subsidies, non-hydro renewables delivered only three percent of the nation's electricity in 2008. That production is increasingly concentrated in wind turbines, the only renewables to have experienced substantial growth since 1999. Generation from biomass (burning plant and wood waste) fell by 6.2 percent over the period, and geothermal energy increased by only 0.6 percent. Solar's seemingly impressive 70.3 percent increase still left it producing less than 1 percent of all *renewable* power.²¹ RPS or no, renewables will continue as a minor presence for the next several decades.²² Their capital costs are considerably higher than those of conventional generators, and using reasonable assumptions about allowance prices under cap-and-trade they will remain at a disadvantage. The U.S. Department of Energy's Energy Information Administration (EIA) simulated several RPS proposals using its National Energy Modeling System (NEMS). The model has numerous flaws and often predicts poorly, but both advocates and critics generally agree with its finding that under a national RPS, such as that of H.R. 2454, the bulk of generation capacity needed to meet growing demand

²⁰ For more on why renewables are poor tools for macroeconomic policy and for bringing the American renewables industry to dominate a worldwide market, see Robert J. Michaels, "A National Renewable Portfolio Standard: Politically Correct, Economically Suspect," *Electricity Journal* 21 (April 2008), 9–28.

²¹ U.S. Energy Information Administration, "Net Generation by Energy Source: Total," http://www.eia.doe.gov/cneaf/electricity/epm/table1_1.html and "Net Generation by Other Renewables: Total," http://www.eia.doe.gov/cneaf/electricity/epm/table1_1_a.html.

²² Nuclear generators produce virtually no greenhouse gases or EPA "criteria pollutants," but politics stands in the way of treating them on a par with sources officially classified as renewable.

over the next four to six decades will continue to be fossil-fueled, even under optimistic assumptions about improvements in energy efficiency.

Renewables (particularly hydroelectric and geothermal facilities) are often site-specific and will require new transmission facilities to integrate them into the existing grid.²³ Localized resistance to new transmission facilities has become highly effective and remains strong against lines intended to carry renewable power.²⁴ Site specificity is a matter of degree – the few U.S. areas with persistently strong winds (the Dakotas, West Texas) are far from consumers. By contrast, fossil fuels can be transported to plants that are located where they best contribute to efficiency and reliability. Wind and solar power are intrinsically intermittent, and in most regions the wind blows least during the warm-weather peaks when additional generation would be most valuable. This lack of "dispatchability" increases utilities' costs because they must run additional reserves to pick up their loads if the wind dies unexpectedly. In most regulatory regimes, ratepayers in general pay the costs of transmission dedicated to renewables and the operation of additional reserves, rather than investors in the renewables.²⁵

As a practical matter, the great bulk of any increase in renewables to meet a growing RPS requirement will come from wind.²⁶ Wind and solar are the only renewables with potential sites widely dispersed around the country. Wind also lacks the polluting properties of biomass and is close to passing a market test in some locations. Despite this success relative to other renewables, almost all wind generation depends for survival on a federal production tax credit that roughly amounts to a 20 percent subsidy per kWh, and the more optimistic projections for its future

²³ H.R. 2454 does not specify the treatment of states and utilities whose planned renewables go unbuilt because of localized resistance to siting them or the necessary transmission facilities. This resistance has been an important cause of noncompliance with California's seemingly stringent requirement. The state's three large investor-owned utilities obtained a smaller percentage of their power from renewables in 2008 (13.0%) than they did in 2003 (14.0%). California Public Utilities Commission, Renewables Portfolio Standard Quarterly Report July 2009 at 6. http://www.cpuc.ca.gov/NR/rdonlyres/EBEEB616-817C-4FF6-8C07-2604CF7DDC43/0/Third_Quarter_2009_RPS_Legislative_Report_2.pdf.

²⁴ See, e.g., Peter Slevin and Steven Mufson, *Alternative Energy Still Facing Headwinds*, Washington Post, Feb. 27, 2009, <http://www.washingtonpost.com/wp-dyn/content/article/2009/02/16/AR2009021601199.html>.

²⁵ Transmission to intermittent renewables will typically be fully utilized a smaller percentage of the time than transmission that reaches dispatchable units.

²⁶ Biomass is potentially abundant, but its low heat content means that generation will be expensive, and in any case burning it produces GHGs.

generally assume that the subsidy will remain in place indefinitely.²⁷ Barring breakthroughs in other technologies (batteries, flywheels and compressed air storage of intermittent power), the likely dominance of wind implies that the RPS is largely special-interest legislation intended to benefit a single industry. Regions such as the relatively windless Southeast will be disadvantaged because they will have to purchase RECs from generators or renewable power that may not be deliverable, in which case they must also produce power from local resources. While utilities will probably be able to sell the undeliverable power near its source, there is no guarantee that such sales will cover the costs of the purchased RECs.

B. Coal: Carbon Sequestration

Perhaps Congress already realizes the impracticality of providing for all of the nation's growing electricity demand with renewables and improved efficiency. To address emissions from new coal-fired plants that must almost surely be built in the future, H.R. 2454 contains "technology forcing" provisions for development of carbon capture and sequestration (CCS) technologies that will store these emissions below ground.²⁸ To coordinate CCS policies, the bill institutes a nonprofit "Carbon Storage Research Corporation" to be administered by the Electric Power Research Institute, an organization funded by utilities and government.²⁹ The corporation's required expenses (between \$1 and 1.1 billion per year for ten years) will be funded by kilowatt-hour taxes that are twice as high for coal-generated power as for natural gas. This tax will cost the typical residential user 25 cents per month. However, homes use only 37 percent of U.S. power, and taxes

²⁷ Robert Michaels, "A Federal Renewable Electricity Requirement: What's Not to Like?" Cato Institute Policy Analysis 627 (Nov. 2008), <http://www.cato.org/pubs/pas/pa-627.pdf>.

²⁸ House Final at 56. The bill specifies an interdisciplinary Geologic Sequestration Task Force that will report within a year on the possibilities for sequestration and propose rules for certifying underground facilities and preventing leakage (House Final at 57–62).

²⁹ Even if CCS is viable the proper role for governmentally funded research is not clear because the private sector is already working on the problem. American Electric Power and Southern Company are separately designing and testing capture and sequestration technologies. See <http://www.aep.com/environmental/climatechange/carboncapture/> and <http://www.southerncompany.com/commonsense/capturingCo2.aspx>. Mississippi Power Company, an operating unit of Southern Company, has applied to the Mississippi Public Service Commission for a permit to build a 500 megawatt lignite-fired plant incorporating Southern's sequestration technology. See Mississippi Public Service Commission, Docket No. 2009-UA-0014.

nominally paid by business users will affect households through higher product prices, increasing the costs American families must pay.³⁰ The tax burden will be somewhat consistent with Congressional politics—Vermonters with hydroelectric and nuclear power will pay substantially less than Alabamans with electricity from coal and natural gas.³¹ In addition to this cost, there is no guarantee that the corporation's research will succeed. Concerns have also been raised about the safety and efficacy of CCS.³² To incentivize other innovative efforts, H.R. 2454 includes a complex set of rules that will allocate free allowances to generator owners who experiment with CCS between now and 2019.³³ (All "free" allowances will have some cash value on markets, and the bill will spur wasteful rent-seeking competitions to obtain them.) After 2020 all newly permitted coal-fired plants must use CCS when they begin operating and must reduce their emissions by 65 percent.³⁴ Because of this mandate, new CCS-equipped plants will have higher costs than older plants without CCS. Utilities will therefore have an obvious incentive to keep older plants in operation, rather than replacing them with costly new facilities. If, as seems likely, further advances in the reduction of criteria pollutants occur the new policy could leave the nation operating more older generators (producing more pollutants known to be harmful) over a longer future than in the absence of subsidies to CCS. Therefore, this rule will almost surely produce the unintended consequence of higher emissions of criteria pollutants than would otherwise occur. The current

³⁰ Since power from various sources is commingled, determination of the actual mix of delivered energy is difficult or impossible. Not surprisingly, H.R. 2454 gives the Secretary of Energy a year to formulate a rule for estimating percentages of a customer's power generated by the different technologies. See House Final at 80-82. The residential percentage is from Energy Information Administration, *Retail Sales to Ultimate Customers*, http://www.eia.doe.gov/cneaf/electricity/epm/table5_1.html.

³¹ The tax will be at .00043 per kWh for coal-generated power and .00022 for gas-generated. Average U.S. household power consumption is 936 kWh per month, which (excluding TVA-served Tennessee) varies from 502 in Vermont to 1,305 in Alabama. 80 percent of Vermont's power is hydro or nuclear and 80 percent of Alabama's is from coal or gas. See U.S. Energy Information Administration, 2007 State Data Tables at http://www.eia.doe.gov/cneaf/electricity/epm/table1_1.html and <http://www.eia.doe.gov/cneaf/electricity/esr/table5.html>.

³² Advocates of sequestration argue that these concerns should be minimal. See National Energy Technology Laboratory, Carbon Sequestration FAQ, at http://www.netl.doe.gov/technologies/carbon_seq/FAQs/concerns.html, and Summary of DOE's Monitoring, Mitigation, and Verification Program and Modeling Program, at http://www.netl.doe.gov/technologies/carbon_seq/refshelf/overviews/MMV%20and%20Modeling%20Presentation.pdf. NETL is the federal research laboratory devoted to fossil-fuel technology.

³³ House Final at 86–103 (Sec. 114).

³⁴ House Final at 104. Complex compliance formulas will also be in effect for units beginning operation before 2020. The Administrator of EPA will have powers to remove or alter them.

readiness of CCS technology is doubtful. The most advanced U.S. project in progress will begin its sequestration trials on 25 MW of the output of a 2,545 MW facility in Alabama, beginning in 2011.³⁵

The research and administrative costs in H.R. 2454, however, pale relative to the likely costs of sequestration. Current state-of-the-art technologies allow approximately 60 percent of total carbon to be sequestered.³⁶ The costs of sequestration are both capital and fuel-related. According to a study for the environmentally oriented Pew Center on Climate Change, adding CCS will increase capital costs of new plants by 20 to 25 percent, (from their current levels of \$500 million to \$1 billion for a 550 MW plant), and its energy demands will reduce a plant's usable power output by 15 to 30 percent. The two effects will increase the cost of a delivered megawatt-hour by 40 to 70 percent.³⁷ The industry's investment requirement will increase because a generator with a nominal 550 MW capacity will produce a net output of only 390 MW.

C. Nuclear Power and "Advanced" Technologies

H.R. 2454 exemplifies the prevailing political schizophrenia over nuclear power that stems from its low emissions, waste disposal issues, and psychological impact on some citizens. Little publicity has been given to the fact that EIA's previously described simulations show that investments in new nuclear power plants and extensions of the lives of existing ones will be necessary to achieve H.R. 2454's GHG reductions. In 2008 nuclear power produced 19.6 percent of all electricity generated in the United States.³⁸ Depending on the exact scenario, the nation will require nuclear generation to increase between 8 and 26 percent by 2020 and between 10 and 109 percent by 2030. Because nuclear plants generally operate whenever they possibly can (as "baseload" units) even the low figures will entail additional construction rather than more intensive

³⁵ Southern Company and MHI To Demonstrate CCS Technology, *Carbon Capture Journal*, May 26, 2009. <http://www.carboncapturejournal.com/displaynews.php?NewsID=392>.

³⁶ As in the previous note, the federal National Energy Technology Lab is working on technologies "expected to be able to capture" 90 percent of the CO₂.

³⁷ Vello A. Kuuskraa, "A Program to Accelerate the Deployment of CO₂ Capture and Storage (CCS): Rationale, Objectives, and Costs, report by Advanced Resources International, Inc. for the Pew Center on Global Climate Change, October 2007 at 14 and 18-25. <http://www.pewclimate.org/docUploads/CCS-Deployment.pdf>.

³⁸ EIA, "Net Generation by Energy Source: Total," http://www.eia.doe.gov/cneaf/electricity/epm/table1_1.html.

operation of available units.³⁹ The prospects for new units are problematic in today's regulatory climate. The Nuclear Regulatory Commission is currently processing applications for 26 new reactors, but the Obama administration has effectively closed the Yucca Mountain waste facility prior to its ever opening.⁴⁰ H.R. 2454 leaves the central problem of waste disposal unresolved. Its most important nuclear provisions are instead minor modifications to a loan-guarantee program established by the 2005 energy law.⁴¹

Instead of facilitating carbon-free nuclear power, the bill puts in place a "Clean Energy Deployment Administration" (CEDA) that will provide "access to affordable financing" for clean energy technologies, energy infrastructure technologies (e.g., smart transmission grids), energy efficiency technologies, and any manufacturing technology associated with the previous three.⁴² It will lend from a revolving fund with a \$7.5 billion capitalization of Treasury "green bonds."⁴³ The amount is actually quite small when compared with an estimated \$50 billion allocated to these technologies under the American Reinvestment and Recovery Act of 2009.⁴⁴ The CEDA will be administered by a presidential appointee with a five-year term and substantial discretion. That person's powers include the ability to determine what constitutes a "clean energy technology." H.R. 2454 says that it is one for which "as determined by the Administrator, insufficient commercial lending is available at affordable rates to allow for widespread deployment."⁴⁵ The bill appears to say that *by definition* a "clean energy" technology is one that fails a market test but nevertheless strikes CEDA's unelected management as promising. CEDA's Advisory Council will contain a mix of

³⁹ EIA, *Energy Market and Economic Impacts of H.R. 2454*, SR/OIAF/2009-5 (Aug. 2009) at xi.

⁴⁰ NRC, Location of Projected New Nuclear Power Reactors, <http://www.nrc.gov/reactors/new-reactors/col/new-reactor-map.html>.

⁴¹ House Final at 265–69 (Sec. 181).

⁴² House Final at 269 (Sec. 182).

⁴³ Green Bonds are federally guaranteed savings bonds intended to be purchased by small investors, acknowledged to earn lower returns than most competitive investments but more than savings accounts. <http://www.greenbonds.com/faq/>.

⁴⁴ The exact amount one calculates is a matter of classification. This figure is calculated from material in National Council for Science and the Environment, *Summary of Federal Energy, Environmental and Education Funding in the American Recovery and Reinvestment Act and 2009 Omnibus Bills*, <http://ncseonline.org/conference/CEDD%20-%20ARRA%20&%20Omnibus%20Funding.pdf>.

⁴⁵ House Final at 271 (Sec. 183).

academics, industry, and political personnel.⁴⁶ It will determine whether a technology qualifies as a "breakthrough," defined by H.R. 2454 as one that has "generally not been considered commercially ready ... as a result of high perceived technology risk or other similar factors."⁴⁷ Quite simply, the Council will determine that some technologies are valuable enough to risk taxpayers' money on, despite the fact that private investors with their own money to lose will not fund them. The Council's standards will be based on the politics and preferences of its own members. Beyond CEDA are a multitude of political programs. H.R. 2454 covers entrepreneurs (formerly thought of as market-oriented independents) with a "Clean Energy Technology Business Competition Grant Program" through which the Secretary of Energy gives grants to organizations that provide "incentives, training and mentorship" to entrepreneurs in renewable energy.⁴⁸ Numerous specific energy sources get their own organizational support. There will, for example, be a "National Bioenergy Partnership" of regional public-private organizations to coordinate development and deployment of "sustainable biomass fuels and bioenergy technologies."⁴⁹

⁴⁶ The Advisory Council will be appointed by CEDA's Board of Directors, who are in turn Presidential appointees who must be confirmed by the Senate. House Final at 282 (Sec. 186).

⁴⁷ House Final at 270 (Sec. 183). CEDA may also engage in transactions that provide credit support for outside market transactions in renewables, e.g., letters of credit (at 295). The law also allows other forms of support such as profit participation by the agency (at 297).

⁴⁸ House Final at 310–311 (Sec. 196). Funding is \$20 million. The full text might almost be mistaken for a parody:

incentives, training, and mentorship to entrepreneurs, including minority-owned and woman-owned, and early stage start-up companies throughout the United States to meet high priority economic, environmental, and energy security goals in areas to include energy efficiency, renewable energy, air quality, water quality and conservation, transportation, smart grid, green building, and waste management.

⁴⁹ House Final at 312 (Sec. 197). Funding is \$7.5 million annually through 2014. Again, the law's painstaking language of favoritism is remarkable. The Partnership will:

provide coordination among programs of State governments, the Federal Government, and the private sector that support the institutional and physical infrastructure necessary to promote the deployment of sustainable biomass fuels and bioenergy technologies for the United States....[It] shall consist of five regions, to be administered by the CONEG [Coalition of Northeastern Governors] Policy Research Center, the Council of Great Lakes Governors, the Southern States Energy Board, the Western Governors Association, and the Pacific Regional Biomass Energy Partnership led by the Washington State University Energy Program.

D. Transmission Policy

Electricity can only be reliably delivered over adequate transmission facilities. During the 1990s, power sales continued to grow in the face of a substantial and prolonged fall in transmission investment that has given rise to legitimate concerns about reliability.⁵⁰ A recent upsurge in transmission spending is welcome, but its likely duration is unknown. The decline had several plausible causes. First, increased competition enabled by federal policies gave large transmission-owning utilities good reason to avoid expanding the capacities of lines that competitors had obtained legal rights to use. Second, beginning in the 1980s the abilities of localized groups to block construction of new lines led to regulatory permit delays that sometimes exceeded ten years or resulted in project abandonment. Third, federal law continues to give state regulators the ability to approve new transmission, and the physical properties of power flows sometimes reward delay—a line built in one state can actually decrease (or sometimes increase) the cost of delivered power in another, and there is no easy way to negotiate compensation payments. States still have authority over siting, but the Energy Policy Act of 2005 gave FERC "backstop" powers to order eminent domain if states prohibit or needlessly delay lines that satisfy certain "national interest" criteria. Since then, the courts have imposed limits on this authority, but in any case the underlying legal process is so complex and time-consuming that FERC has yet to exercise it.

H.R. 2454 contains two attempts to resolve these quite real problems, neither entirely satisfactory and both more governed by politics than economics. The first will give FERC increased backstop authority to invoke eminent domain in the West while leaving its powers unchanged elsewhere.⁵¹ FERC will now be able to override Western states' decisions to refuse siting or to impose "unreasonable conditions," provided the line was conceived in a regional planning procedure (as most are today) and is intended to transmit energy from renewable sources.⁵² As a practical matter this is one of the bill's few provisions that may bring consumer benefits, but they will be an unintended consequence. Lines to reach yet-unbuilt renewable generators often pass

⁵⁰ Edison Electric Institute, *Meeting U.S. Transmission Needs* (July, 2005) at vii, at http://www.eei.org/ourissues/ElectricityTransmission/Documents/meeting_trans_needs.pdf.

⁵¹ The bill specifically applies to the "Western Interconnection," which consists of most transmission located to the west of a north-south line from the Dakotas to Oklahoma. On the other side is the Eastern Interconnection. Texas operates its own electrically isolated grid, located entirely within the state.

⁵² This provision was inserted in the last-minute addendum, restricted to the West by political reality. Massachusetts Congressman Edward Markey, Chairman of the House Energy and Environment Subcommittee is on record as opposed to it.

through areas where coal- and gas-fired generation already exist or can be built quickly. In the early years (which may become decades) their unused capacity can transmit less expensive fossil-fuel power to distant users.

The second attempt to resolve transmission problems is embodied in the bill's provisions to support the modernization of transmission technology, a set of initiatives generically referred to as the Smart Grid. H.R. 2454 requires the EPA Administrator and Secretary of Energy to assess the value of incorporating Smart Grid-compatible hardware and software into appliances.⁵³ The hardware will include controllers that allow users to choose their responses to power prices that will change over the day (e.g., dishwashing only after midnight) and possibly to allow electricity suppliers to remotely control customer-owned appliances, particularly air conditioning. The California Energy Commission proposed such requirements in 2008, although they were promptly withdrawn after widespread protests.⁵⁴ H.R. 2454 stacks the deck in favor of the government by determining benefits on the basis of a "best case" analysis under "optimal circumstances." It unrealistically assumes that all consumers have the ability to communicate with their utilities electronically and schedule appliance use to maximize their savings.⁵⁵ A related mandate requires utilities to prepare peak-load reduction plans. They will submit the plans to FERC, which will publish annual data on their content and on utilities' compliance. The standards, unsurprisingly, are those of perfectionists. The minimum reduction a utility can propose "shall be the maximum reductions that are realistically achievable with an aggressive effort to deploy Smart Grid and peak demand reduction technologies and methods."⁵⁶

III. Demand-Side Interventions

Like its supply-side policies, H.R. 2454's demand-side policies are a massive collection of unjustified, inefficient and inequitable federal interventions into markets, few if any of which would pass a cost-benefit test. Higher market prices induce energy users to take cost-effective steps to

⁵³ House Final at 156. (Sec. 142). The bill does not give the government power to order these design changes.

⁵⁴ "California Commission Delays Plan to Install Programmable 'Communicating' Thermostats," *Electric Utility Week*, Jan. 21, 2008.

⁵⁵ House Final at 157–159 (Sec. 142).

⁵⁶ House Final at 163 (Sec. 144).

reduce their consumption; they induce suppliers of energy commodities to find and produce more; and they bring forth innovations and inventions that better allow users to adjust to changing market realities.⁵⁷ There are theoretical cases where interventions can be justified, but H.R. 2454 goes far beyond them. Its demand-side provisions are intended to reduce emissions by reducing demand for fossil energy in four broad areas: [1] Motor vehicles, including development and manufacture of electric cars and subsidies to alternative fuels; [2] Lighting, appliances, and industrial equipment, for which the bill mandates design changes; [3] Structures, which will be under a federalized building code with national standards for retrofits and timetables for efficiency improvements; and [4] "Community" activities to be subsidized in the name of energy efficiency.

A. Electric Vehicles and Alternative Fuels

1. Vehicles

H.R. 2454's transportation policy begins with an unfunded requirement that utilities develop plans for a network of charging stations and other facilities to support the growth of plug-in hybrid and electric vehicles (PHEVs).⁵⁸ These activities will support a "Large Scale Vehicle Electrification Program" that will provide transfers to three different sets of market participants: [1] governments, utilities, auto manufacturers, car-sharing companies or organizations, and "other persons or entities," that is, anyone with enough political importance; [2] vehicle buyers, who will get the difference between the PHEV price and that of a supposedly comparable model; and [3] providers of charging and related facilities.⁵⁹ Several of these programs may be coordinated with automaker bailouts. Assistance to manufacturers ("such sums as are necessary") will in part be

⁵⁷ The first of these is just a statement that demands for energy are price-elastic, which numerous studies have shown. See, for example, James Beierlein et al, "The Demand for Electricity and Natural Gas in the Northeastern United States," *Review of Economics and Statistics* 63 (Aug. 1981), 403–408. For the third see Richard Newell et al, "The Induced Innovation Hypothesis and Energy-Saving Technical Change," *Quarterly Journal of Economics* 114 (Aug. 1999), 143–175.

⁵⁸ House Final at 109–111 (Sec. 121). The bill is nothing if not detailed – the other facilities include "highway rest stops." Vehicle designs must also contain ownership identifiers so that the owner's accounts with its utility correctly track both power consumed and power sold to the utility when the car is serving as a storage device.

⁵⁹ House Final at 112–116 (Sec. 122). Car-sharing companies are organizations that intend to park small cars at various locations, and allow qualified persons to use them for short trips, after which they will return the car for others to use. They are basically very short-term rental agencies, often planned as nonprofits. See <http://www.carsharing.net/index.html>.

determined by their location "in local markets that have the greatest need" rather than a high probability of success.⁶⁰ The bill also allocates to vehicle manufacturers some free carbon allowances, which can be used to meet some of their manufacturing costs, and those that save more fuel will receive larger allocations.⁶¹ Lastly, H.R. 2454 raises the ceiling on loans to manufacturers from \$25 billion (set by the 2007 Energy Law) to \$50 billion.⁶² The bill's language makes it impossible to guess the total amounts that will be allocated to the various activities.

The most fundamental issue about electric vehicles has hardly been studied: Assuming GHGs are really a problem, what are the costs and benefits of policies toward them? Since electricity output will largely be generated by fossil fuels for at least the next several decades, will reduced vehicle emissions lower the economy's net carbon output? There will also be costs (both economic and carbon-related) of new vehicles and infrastructure, as well as increased accident costs from lighter weight vehicles. Many electric vehicle technologies are still under development and their costs are largely matters for conjecture. H.R. 2454's gamble on electric vehicles reflects today's politics. Natural gas is accessible and domestic, and vehicles of all types have been successfully converted to run on it. We have recently learned that it is superabundant in hitherto untapped "unconventional" shales, and the development of hydraulic fracturing has made centuries of this gas accessible at today's prices. In contrast with its largesse to electric vehicles, H.R. 2454's only attention to gas appears in a last-minute addendum ordering a modest study of gas-fueled vehicles.⁶³

2. Ethanol

After years of research we are still not certain about the algebraic sign of ethanol's environmental benefits, that is, whether its GHG emissions are above or below those of the fuels it replaces. The currently definitive study from the National Academy of Sciences compared the climate change and health costs of one billion gallons of ethanol with its gasoline equivalent, finding

⁶⁰ House Final at 116–118 (Sec. 123).

⁶¹ House Final at 120–123 (Sec. 124).

⁶² House Final at 122 (Sec. 125).

⁶³ House Final at 135–136 (Sec. 130A).

costs of \$469 million for gasoline and a range from \$472 to \$952 million for corn ethanol.⁶⁴ Add the cost of growing and processing the corn to the comparison with the oil and the outcome becomes even less favorable. If we are interested in the well-being of consumers we would further need to include the effects on grocery prices of converting 30 percent of the corn crop to ethanol. Ethanol, however, is well-represented in Washington and its representatives are aware of the risks of such comparisons. Prior to H.R. 2454, the EPA was charged with determining ethanol's lifecycle emissions.⁶⁵ H.R. 2454 puts EPA on hold while the National Academy of Sciences spends three years assessing existing ethanol research. Following that, EPA has another year to propose a rule and one more year to make it final, after which it will become effective six years after the bill becomes law. Whatever the scientific outcome, H.R. 2454 gives ethanol six years' exemption from regulations that affect other fuels. If the findings on ethanol are negative, the bill gives the farmers' friends at the U.S. Department of Agriculture the option of running their own study, with results due six years from enactment.⁶⁶

H.R. 2454 also institutionalizes an "open fuel standard" which will allow the Department of Transportation to require automakers to manufacture vehicles that are capable of running on E85 (85 percent ethanol, 15 percent gasoline) or M85 (the same for methanol) with the concurrence of EPA and DOE, through and possibly after 2016.⁶⁷ The proportions of gasoline and ethanol or methanol are for DOT to choose. Barring some unlikely political events, H.R. 2454 cements in place ethanol requirements whose likely effects are increased GHG emissions and higher food prices worldwide. By themselves the bill's ethanol provisions would probably not pass, but burying them in a bill like H.R. 2454 might do the trick.⁶⁸

⁶⁴ Jason Hill et al, "Climate Change and Health Costs of Air Emissions from Biofuels and Gasoline," *Proceedings of the National Academy of Sciences* 106 (Feb. 10, 2009), 2077–2082.

⁶⁵ The EPA study was apparently likely to reach adverse conclusions on ethanol because of a decision to account for "indirect land use changes" outside the U.S. as foreigners reacted to higher prices for agricultural imports by cultivating more land and thereby decreasing the capacities of their carbon sinks.

⁶⁶ House Final at 1418–1425 (Sec. 551).

⁶⁷ House Final at 125–132 (Sec. 127).

⁶⁸ Since the ethanol industry's financial situation depends critically on oil prices, there are fears that such risk discourages "necessary" investments. Accordingly, H.R. 2454 also provides loan guarantees for ethanol pipelines. See House Final 133–134 (Sec. 129).

B. Building Codes and Retrofits

H.R. 2454's provisions on energy use in buildings is a departure from federalism, based on a claim that people don't really know what's best for them but Washington does. A large number of state and local building codes and regulations already exist to ensure that new and remodeled buildings meet standards of engineering integrity and adequately address local conditions—whether climatic, economic, or social. The state and local codes set broad limits on design and construction but leave builders and owners free to explore tradeoffs within those limits according to their personal standards (which may include their expectations about what subsequent owners will value). H.R. 2454 will replace today's deference to local conditions and preferences with a national building code far more stringent than any state codes.

The rationales for this change are several, and all are weak. One alleged reason for a federal takeover is that nine states have no statewide energy codes for commercial buildings and eleven lack them for residences.⁶⁹ Perhaps unfamiliar with competitive markets, Congress apparently concluded that architects and contractors actively choose to design and construct buildings that needlessly waste energy. Congress thus disregarded the fact that these professionals are constantly in competition to offer packages of quality and price that appeal to buyers, with energy use being but one of a buyer's many cost considerations. There is no evidence that homeowners in codeless Illinois are worse off than those who live in states with codes. In reality, households and businesses economize on energy where doing so is effective by their own standards. Even the Pew Center on Global Climate Change notes approvingly that between 1979 and 2001 average energy consumption per household decreased by 27 percent, from 126 million BTUs per year to 92 million.⁷⁰ This reduction occurred while the average square footage of new single-family homes rose by 32 percent.⁷¹

H.R. 2454 starts from "baseline" codes that are the most stringent currently available. (The baseline code for residences is the "Conservation Code" created by the International Code Council.) The drafters of Waxman-Markey apparently believe that the baseline codes waste too much energy,

⁶⁹ "Why we need the Climate Bill's Building Code," Reuters, July 26, 2009. In all of these states, local codes are possible and do exist.

⁷⁰ Marilyn Brown et al., *Toward a Climate-Friendly Built Environment*, (Pew Center for Global Climate Change, 2005) at 2, at http://www.pewclimate.org/docUploads/Buildings_FINAL.pdf.

⁷¹ U.S. Census Bureau, "Median and Average Square Footage of Floor Area in New One-Family Houses Completed, by Location," at <http://www.census.gov/const/C25Ann/sfttotalmedavgsgft.pdf>.

and so the bill specifies by how much. After Waxman-Markey is enacted, new buildings must consume 30 percent less energy than specified by a baseline that was set by building industry consensus. Five years ahead, in 2014 (2015 for commercial buildings), all new construction must consume 50 percent less than the baseline. Beginning in 2017, there is to be a further five percent reduction every three years, with an ultimate drop of 75 percent relative to the already-tight 2009 baseline codes.⁷² Local consensus on building codes will largely end. Instead, the U.S. Department of Energy will write national regulations and determine whether they are "life-cycle cost justified." If the Department finds a code that is thus justified and gives larger energy use reductions, it may specify that code as its new standard.⁷³ The government can deny funding under some of the bill's other provisions to states that are out of compliance. In states below 90 percent compliance, the Department of Energy may "conduct training and education of builders and other professionals in the jurisdiction."⁷⁴ H.R. 2454 also provides funds from the sale of emission allowances to states that will support stronger code enforcement.⁷⁵

If H.R. 2454's changes really are efficient, the nation has missed out on an incredible free lunch, one that could have simultaneously enriched builders and lowered the costs of occupants. The free lunch claim comes from a group of architects calling themselves Architecture 2030, whose president presented his case in testimony before the House Energy and Environment Subcommittee.⁷⁶ The organization reached its favorable conclusions about building codes on the basis of its own data, which are not publicly available and have yet to appear in peer-reviewed publications.⁷⁷ The National Renewable Energy Laboratory (NREL) also appears to favor code changes, again without the benefit of any known peer-reviewed studies. Architecture 2030 cites NREL studies claiming that code changes that force a 30 percent cut in residential energy use will save households in all regions between \$403 and \$612 per year. The average cost-neutral point for

⁷² House Final at 320–322 (Sec. 201).

⁷³ House Final at 322 (Sec. 201). What happens if a code that meets current standards is not justified is unclear.

⁷⁴ A potentially serious intervention into local design prohibits (save in special cases) local restrictions on the addition of solar facilities to single-family homes. See House Final at 419–421 (Sec. 209).

⁷⁵ House Final at 337–347. (Sec. 201).

⁷⁶ <http://www.architecture2030.org/about.php>.

⁷⁷ Architecture 2030, "Oh Those Sexy Building Codes," at http://www.architecture2030.org/news/news_072209.html.

home efficiency upgrades is a 45 percent reduction.⁷⁸ Architecture 2030 and NREL apparently missed the implications: If code changes cut energy use by less than 45 percent, their analyses show that households will be better off, but if the cut exceeds 45 percent they will be worse off. H.R. 2454, however, will require 50 percent reductions in five years (and ultimately 75 percent reductions), leaving households worse off, according to numbers taken from the bill's supporters.

H.R. 2454 also encourages energy-related building retrofits. It requires EPA to institute a program to partially fund state-authorized retrofits of existing buildings with more efficient equipment and materials, using funds from allowances allocated to the state for up to 50 percent of the cost of the retrofit. The allowable percentage of funding from allowances will increase with expected energy savings, and other bonuses are possible for such project attributes as water saving.⁷⁹ H.R. 2454 also puts the government into the business of providing publicly available "energy performance labeling" of buildings, probably including their GHG emissions. The labeling was originally to apply to all buildings, but the final version of the bill applies only to new construction.⁸⁰

The bill also contains seemingly trivial provisions. For example, there are thirteen pages that authorize up to 50 percent federal funding for electric utility tree-planting programs that "utilize targeted, strategic tree-siting guidelines" determined by the "best available science." In most circumstances, utilities can seek grants only if they have signed contracts with "nonprofit tree-planting organizations."⁸¹ Each utility participating in the program is to consult with a "local technical advisory committee" that will design an "approved plant list." The bill takes three pages to specify that the committee must have a board with members representing eight different interested parties, including landscapers, local governments, environmental organizations, and people who represent "affordable housing."⁸² Though superficially amusing, the tree-planting material is

⁷⁸ I am unable to find any NREL documents containing these figures or suggesting their derivation. They are taken from "Oh Those Sexy Building Codes." H.R. 2454 has specified reductions in energy use of up to 75 percent, but NREL's research generally finds 50 percent reductions to be the present-day limits. See <http://www.nrel.gov/buildings/projects.html>.

⁷⁹ House Final at 348–371 (Sec. 202).

⁸⁰ Congressman Ed Perlmutter (D-Colorado) introduced the amendment to exclude existing buildings, in hopes that "the legislation would prevent negatively categorizing existing properties which would lead to further decreasing property values" (States News Service, June 26, 2009).

⁸¹ House Final at 397–401 (Sec. 205).

⁸² House Final at 402–406 (Sec. 205).

sobering: there is no imaginable case for federal grants to electric utilities that wish to plant trees, and no conceivable way in which the composition of a local board so affects the national interest that it should be specified in federal law.

C. Equipment Redesigns, Information and Assistance

H.R. 2454 brings new design regulations for lighting, appliances, engines, and an array of industrial equipment. There are 22 pages of technical specifications on light bulbs and lamps, some strengthening existing standards and others extending past standards to previously exempt goods.⁸³ Art lovers will find that after 2012, "art work light fixtures" attached to picture frames cannot exceed 25 watts if they have one socket and 15 watts each if they have two or three.⁸⁴ Swimmers will learn that the design of underwater lights for pools may now be under federal jurisdiction.⁸⁵ H.R. 2454 also specifically regulates water dispensers and hot food-holding cabinets, and there will be new limits on "normalized standby power" for pumps in hot tubs.⁸⁶ Less exotic housewares are not left out. "[S]howerheads, faucets, water closets, and urinals" will each get either "a minimum level of water efficiency or a maximum quantity of water use," determined in accordance with test procedures prescribed under the bill's Section 323.⁸⁷ The Secretary of Energy is also ordered to produce a new rule for measuring the energy consumption of televisions.⁸⁸

The bill also offers financial incentives to aggressive marketers of energy-efficient appliances. It initiates a "best in class" program of bonuses to retailers who sell models at the top of the "Energy Star" list.⁸⁹ The program will have an annual appropriation of \$600 million.⁹⁰ If retailers

⁸³ House Final at 421–422 (Sec. 211).

⁸⁴ House Final at 438–439 (Sec. 211).

⁸⁵ House Final at 422 (Sec. 211). Christmas light strings appear to still be exempt.

⁸⁶ House Final at 442–445 (Sec. 212).

⁸⁷ House Final at 447–448 (Sec. 213).

⁸⁸ House Final at 453 (Sec. 213). The California Air Resources Board is considering a ban on most flat-panel TVs as inefficient under the state's climate change program.

⁸⁹ House Final at 468–470 (Sec. 214). These models are also expected to be capable of communicating via the electric utilities' future Smart Grids.

⁹⁰ House Final at 486 (Sec. 214).

are competitive, the program's cash will at least in part be passed through as discounts to (mostly well-off) people who buy "best in class," a wealth transfer from the rest of the public. Retailers will also get "bounties" for trade-ins of inefficient appliances for new efficient ones.⁹¹ Developers of super-efficient appliances that go into production will also get substantial bonuses—for example, \$250 for each washer or drier produced and \$200 for each refrigerator.⁹² Analogous to Energy Star, EPA will also receive funds to begin a "WaterSense" program that rates products based on their water use.⁹³

Beyond energy and water use, H.R. 2454 includes provisions on disclosure and labeling of the carbon content of products sold at retail and wholesale. EPA will first study the feasibility of initiating procedures for measuring, reporting, and labeling greenhouse gas content.⁹⁴ Next, EPA will have 36 months to establish the program. This order does not appear to be conditional on the results of the feasibility study. Participation will be voluntary, but H.R. 2454 specifies that EPA will "utilize incentives and other [unstated] means to spur the adoption of product carbon disclosure and product carbon labeling."⁹⁵ Also on the information front, the bill's last-minute addenda include an "Industrial Energy Efficiency Education and Training Initiative," intended to "educate and motivate commercial building owners and industrial facility managers to utilize" a particular politically-favored product [mechanical insulation].⁹⁶

In places, H.R. 2454's language appears to imply that businesses (including regulated utilities) have failed to see obvious sources of profit and must be told to pursue them. For example, it directs the Secretary of Energy to reward companies that devise methods for "innovative

⁹¹ House Final at 472–475 (Sec. 214). H.R. 2454 refers to the payments by that name. It also calls on EPA to make rules for trade-ins that still contain refrigerants that may be sources of GHG emissions.

⁹² House Final at 479–480 (Sec. 214).

⁹³ House Final at 490 (Sec. 215).

⁹⁴ House Final at 574 (Sec. 274). The bill (at 575) asks EPA to evaluate the costs of the program but is silent on evaluating the benefits.

⁹⁵ House Final at 576–577 (Sec. 274). Funding will be \$5 million for the initial study and \$25 million each year through 2025.

⁹⁶ House Final at 580–582. Funding will be \$3.5 million per year from 2010 through 2014. Mechanical insulation is the insulation of "mechanical piping, equipment and ductwork in commercial and industrial buildings." See <http://www.misinsulation.org/>.

recovery of thermal energy."⁹⁷ If the recovery (for example to generate saleable electric power) is worth the cost in private markets, we can safely assume that it will happen. Someone who invents a new production technique can usually devise a patent or licensing scheme that allows him to capture some of the benefits that accrue to society from its more widespread use. The same criticism applies to the bill's requirement that DOE conduct an assessment of electric motors and the electric-motor market that will "characterize and estimate the opportunities for improvement in . . . energy efficiency." Upon completing its assessment the Department will formulate a "proactive, national program ... delivered in cooperation with [unspecified] interested parties" that will make people aware of "energy and cost saving opportunities" they would apparently have otherwise missed.⁹⁸

To incentivize electric motor users, H.R. 2454 has its own "cash for clunkers" program, in the form of rebates for the purchase of motors that meet certain efficiency standards. Since the electric motor industry does not have a dealer organization, as the auto industry does, the Secretary of Energy will take applications for rebates. As in the clunkers program, an applicant must show that it has "properly disposed" of the old motor and send in its nameplate along with the application.⁹⁹ Going a step farther than "cash for clunkers," the distributor of the motor also gets its own rebate from the \$350 million that has been appropriated for the program.¹⁰⁰ Note that even if energy efficiency is a valid goal there is no reason to expect that this program is worthwhile. It does not consider the energy expended in making the new motor, and it fails to account for the lower present value of costs if construction of the motor is deferred.

The last-minute addenda to the bill include a section that sets up a "revolving loan fund" consisting of grants to states (up to a maximum of \$500 million per year, per state) that will be used to help small manufacturers adjust to clean-technology markets. An inclusive definition means that the program will probably be available to any manufacturer with a work force under 500. Eligible firms include any whose products "relate to the production, use, transmission, storage, control, or

⁹⁷ House Final at 525–527 (Sec. 242). No funding limits are specified, and there is no way to decide the percentage of saving that makes one eligible for the award.

⁹⁸ House Final at 530 (Sec. 244).

⁹⁹ House Final at 532 (Sec. 245).

¹⁰⁰ House Final at 533–534 (Sec. 245).

conservation of energy."¹⁰¹ H.R. 2454 appropriates \$15 billion per year for this program for the next two fiscal years.¹⁰²

D. Community Programs

This entire 92-page Subtitle of H.R. 2454 was inserted as part of the last-minute addendum. It mandates efficiency standards for buildings affected by the subtitle's various programs.¹⁰³ There are provisions giving preference to lenders that originate mortgages to finance improvements in home energy efficiency in "underserved" areas, and, and there is a pilot program for efficiency-related loans to governmentally "assisted housing."¹⁰⁴ The bill also includes an "education and outreach" campaign in which the Department of Housing and Urban Development (HUD) will be "encouraged" to work with "appropriate entities" to hold "renewable energy expositions."¹⁰⁵ HUD will also be allowed to guarantee the "green" portions of mortgages under its purview, but the guarantee cannot exceed 10 percent of the amount loaned.¹⁰⁶ Federal financial regulatory agencies are also asked to encourage institutions under them to open "green banking centers" that will provide information on efficiency, home improvements, and eligibility for federal loans and subsidies.¹⁰⁷

¹⁰¹ House Final at 534–536 (Sec. 246).

¹⁰² House Final at 550 (Sec. 246). The bill's next section includes similar support for "clean energy and efficiency manufacturing partnerships," with five years total funding of \$1.5 billion. House Final at 552-3 (Sec. 247).

¹⁰³ House Final at 585–606 (Secs. 284–285). Section 286 provides 125 percent credit for associated mortgages that are purchased by Fanny Mae or Freddie Mac.

¹⁰⁴ House Final at 609–611 (Sec. 287) and 625–627 (Sec. 294). There are similar provisions for Native Hawaiians and Indians under laws that apply to programs for them.

¹⁰⁵ House Final at 616–619 (Sec. 289). Funding is \$5 million per year through 2014. "Appropriate entities" are not defined.

¹⁰⁶ House Final at 668–678 (Sec. 299I).

¹⁰⁷ House Final at 659–664 (Sec. 299E). This section also contains special provisions applicable only to credit unions.

There are also energy efficiency block grants of \$2.5 billion in 2010 and "such sums as may be necessary for each fiscal year thereafter."¹⁰⁸ Another part of this title institutes a Department of Energy "Grant Program to Increase Sustainable Low-Income Community Development Capacity," with nonprofit organizations as the only eligible applicants. The grants may be used for training organizations to "improv[e] efficiency," for providing loans or grants to others "to carry out energy efficiency improvements," or for "such other purposes as the Secretary [of Energy] determines are in accordance with the purposes of this subsection."¹⁰⁹ Lastly, this title of the bill has a section called "Making it Green," which asks DOE to set incentives for developers to contract with tree-planting organizations in order to "ensure that plants at sites affected by community programs survive for at least three years."¹¹⁰ There is also a call for "selection and installation of indigenous trees, shrubs, grasses, and other plants based upon applicable design guidelines and standards of the International Society for Arboriculture."¹¹¹

IV. "Stealth" Inclusions

Important parts of H.R. 2454 may affect the economy only in the relatively distant future. These consequences, however, were well understood by all interested parties prior to the bill's passage. H.R. 2454 also includes at least two "stealth" provisions that have gone virtually unnoticed but whose effects will probably be substantial. One is a seemingly minor reorganization of the Federal Energy Regulatory Commission, and the other is a new set of institutions that will oversee "adaptation" to climate change. There are surely other such provisions in the bill just waiting to be found.

A. "Consumer Advocacy" at FERC

Electric utilities operate under both state and federal regulation, with the division of responsibilities set by the Federal Power Act of 1935 and later laws amending it. Broadly, state

¹⁰⁸ House Final at 635 (Sec. 296).

¹⁰⁹ House Final at 638–641 (Sec. 298). Funding is authorized at \$10 million a year through 2014. There is a requirement that each grant be at least matched by nongovernmental funds, but the likely sources of these funds are matters for conjecture.

¹¹⁰ No rationale is given for the choice of three years rather than some other duration.

¹¹¹ House final at 628–630 (Sec. 295). The bill also asks DOE to consult with such groups as the National Arbor Day Foundation.

regulators set the rates utilities may charge final users, known as "retail" customers. They also oversee utilities' investments in generation and transmission necessary to discharge their service obligations. FERC regulates "wholesale" power transactions, which are defined not by their size but by the fact that they do not entail delivery to final customers. It sets allowable rates for utilities' power and transmission transactions with other utilities and independent generators, even if the parties are in the same state. Natural gas enjoys a roughly similar separation of federal and state regulation. FERC is an anomaly among regulatory agencies—during the administrations of both political parties, it has rather consistently attempted to increase competition in wholesale power and gas markets. Almost alone among agencies, it operates under a legal requirement that no more than three of its five Commissioners (including the Chairman) may be members of the same party.

Section 198 of H.R. 2454 establishes an "Office of Consumer Advocacy" (OCA) at FERC, to be an "advocate of the public interest," while somewhat contradictorily "represent[ing] the interests of energy customers," whom it defines as residential and small commercial users served at retail by utilities under its jurisdiction.¹¹² Its Director will be a Presidential appointee confirmed by the Senate, and must be an attorney.¹¹³ The Director in turn appoints a "Consumer Advocacy Advisory Commission" with five members, two of whom must "[represent] state utility consumer advocates" and one of whom must be from a "nongovernmental organization representing consumers."¹¹⁴ OCA will "monitor and review [retail] energy customer complaints" about their rates or service, with powers to "investigate" them "independently," collect data and issue reports.¹¹⁵

Since states set retail rates, the rationale for OCA at first appears unclear. However, section 198 mentions, almost in passing, that FERC's "Office of Administrative Litigation [OAL] shall be

¹¹² House Final at 313 and 317 (Sec. 198). These customers make up approximately half of total retail power sales. The remainder is sold to large commercial and industrial users, who go unmentioned in the bill. Municipal and cooperative utilities (which together deliver 25 percent of all electricity) are not regulated by FERC and will be largely unaffected.

¹¹³ There is no corresponding requirement that the Chairman of FERC be an attorney, and the same holds true for other regulatory agencies.

¹¹⁴ House Final at 316 (Sec. 198). Candidates for such organizations might include Ralph Nader groups and ACORN.

¹¹⁵ House Final at 314–315 (Sec. 198). FERC already has an internal staff that investigates wholesale dockets and reports its findings to the Commission. FERC also produces numerous statistical reports.

incorporated into [OCA]."¹¹⁶ Currently, OAL is coequal with the Office of Administrative Law Judges and the Office of Executive Director.¹¹⁷ At this level, the requirements for independence are greatest. All contacts between staff and Commissioners must be made public, and the Commission may generally act only after someone at this level has written a preliminary decision. OAL in particular must be independent, since it is charged with negotiating settlements when possible and litigating cases that do not settle. It has powers to conduct discovery (often of confidential information), analyze data, submit testimony, conduct cross-examination, file briefs, and ensure an adequate evidentiary record.¹¹⁸ H.R. 2454 removes OAL's independence by putting it under the Presidential appointee who heads OCA, who in turn answers to no one. OCA will have no responsibility to report to the Commissioners (or anyone else in government), and the Commissioners will have no authority over OCA. In effect the founding of a seemingly minor bureaucracy will take FERC's most important regulatory office away from the authority of the Commission.

OCA is not just another bureaucratic office: H.R. 2454 specifies that it will be almost dynastic. A new President's only power over OCA is the ability to appoint a new Director. The Advisory Committee, whose membership qualifications virtually guarantee an anti-market orientation, has no specified expiration. OCA'S startup Director can name the Committee, but there are no provisions for replacement by a new director. Instead, "[n]otwithstanding any other provision of law, the Advisory Committee shall continue in operation during the period for which the office exists," that is, their appointments are for life unless the law is changed.¹¹⁹

OCA's real purpose is in all likelihood only dimly related to FERC's current rate-setting roles, and statements about its intervention into markets that are not in the Commission's jurisdiction are probably better viewed as distractions. Under H.R. 2454, FERC will gain broad new powers to monitor markets for GHG allowances, enforce renewable power requirements, and design and oversee markets for renewable energy credits. Under the bill, it will initiate massive

¹¹⁶ House Final at 313 (Sec. 198).

¹¹⁷ See FERC's organization chart at <http://www.ferc.gov/about/strat-docs/fy08-an-rpt.pdf>.

¹¹⁸ <http://www.ferc.gov/about/offices/oal.asp>.

¹¹⁹ House Final at 316–317 (Sec. 198). This has been verified in conversations with attorneys formerly employed at FERC.

rulemakings that will determine the institutional details of these markets and have important financial implications for all involved interests. Attorneys who will be under OCA's control will also have powers to initiate proceedings against market participants without requiring the approval of FERC commissioners. If a regulatory agency must have oversight of these markets, FERC as it is organized today is by far the least objectionable candidate. Reorganized under Section 198, it might well be the most objectionable one.

B. Adaptation to Climate Change

For all its length, H.R. 2454 never discusses its own likely efficacy. There is general agreement¹²⁰ that even the most optimistic projections of U.S. emissions reductions will have so little effect on overall atmospheric carbon that there will be no detectable effect on world temperature.¹²¹ If increases in GHGs will have substantial harmful effects, protecting America from their consequences (an activity known as adaptation) may be more effective than preventing the increases themselves. H.R. 2454 includes an extensive adaptation program, but one that appears less concerned with dealing with the issue than with forming a coalition to move the bill forward. A remarkably large assortment of committees and panels will administer and perform research on adaptation.

Sections 451 to 453 introduce the organizational basics. At the top will be a presidentially appointed Interagency Committee charged with developing the plan, and a separate Interagency Global Change Research Program to be administered by the Office of Science and Technology Policy.¹²² The research program will include an Assessment Plan to establish the program's goals,

¹²⁰ Using a standard modeling technique, climate scientist Chip Knappenberger found that if the United States met the Waxman-Markey targets, while the rest of the world continued on its baseline emissions path, then the mid-range estimate has the earth warming only *one-tenth of a degree Celsius less* by the year 2100, because of the cap-and-trade program contained in H.R. 2454. See <http://masterresource.org/?p=2355>. It is interesting to note that the pro-climate legislation scientists at the website "Real Climate" endorsed Knappenberger's analysis and simply claimed that if the United States did nothing, then neither would any other major governments. See: <http://www.realclimate.org/index.php/archives/2009/05/the-tragedy-of-climate-commons/>.

¹²¹ If the justification for the climatic benefits of H.R. 2454 is that it will give the U.S. government a credible bargaining position in order to get *other* major emitters to enact comparable legislation, then this strategic argument needs to be carefully spelled out. After all, one could plausibly argue that unilateral U.S. commitments to penalize carbon-intensive industries could make other countries *less* likely to constrain their own economies, as they would benefit from the unbalanced playing field.

¹²² House Final at 1230–1237 (Sec. 451). \$10 million per year is to be appropriated through 2014.

identify its effects, and evaluate its research.¹²³ There will be Annual Reports, data exchange mechanisms, "Vulnerability Assessments" every five years, and "Policy Assessments" every four years.¹²⁴ H.R. 2454 also authorizes formation of a National Climate Service as a counterpart to the National Weather Service, its output to be evaluated by a Climate Service Advisory Committee and publicized through a new Climate Service Program. There will also be Regional Assessment Centers and Regional Climate Teams centered around universities.¹²⁵ The politics of state allowance allocations seen elsewhere in the bill is also present here. Allowances awarded to help build state resilience to climate change will be distributed on the basis of population and per capita income (the lower the income the more a state gets).¹²⁶ Health aspects of climate change will be under the Department of Health and Human Services, which has two years to develop a "strategic action plan" that enumerates threats and proposed responses. It will issue a new plan every four years.¹²⁷ There will also be a scientific advisory board, commissioned reports and a "Climate Change Health Protection and Promotion Fund" whose appropriation is not disclosed.¹²⁸

H.R. 2454 also contains additional stealth provisions in "natural resources adaptation." It will create institutions with powers that extend existing environmental regulation in important ways. These extensions will apply in areas other than climate change. Ninety days after enactment of H.R. 2454, the President is to appoint a "Natural Resources Climate Change Adaptation Panel." Led by the Chair of the Council on Environmental Quality, its ten designated members will all be secretaries or administrators of such agencies as EPA, the Department of Interior, Bureau of Land Management, and the National Park Service.¹²⁹ There will be no representatives from the private sector or other levels of government. Alongside the Adaptation Panel will be yet another group, a

¹²³ House Final at 1240–1245 (Sec. 451). A sign that politics will play a role is that the two most important reviews of this material will come from the National Academy of Sciences and the National Governors' Association.

¹²⁴ House Final at 1245–1258 (Sec. 451). The bill singles out special studies on ice sheet melting and hurricanes.

¹²⁵ House Final at 1257–1290 (Sec. 452). They will of course offer summer outreach programs to high school teachers.

¹²⁶ House Final at 1291–1294 (Sec. 453). There are further adjustments if a state's income has recently fallen due to a natural disaster.

¹²⁷ House Final at 1305–1312 (Sec. 463).

¹²⁸ House Final at 1315–1316 (Sec. 467).

¹²⁹ House Final at 1319–1321 (Secs. 474–475).

"Science Advisory Board" of between ten and twenty members chosen in part by their political interests. Its membership will be "balanced" among federal, state, and local representatives, Indian tribes, universities, and conservation organizations.¹³⁰

The Adaptation Panel has one year to develop a strategy based on the "best available science" (not further defined) after "consult[ing] with local governments, conservation organizations, scientists, and other interested stakeholders."¹³¹ Again, no consumer or producer interests are to be consulted, and policy formation will be independent of federal administrative procedures. Two more new institutions will disseminate its research: a National Climate Center (not to be confused with the National Climate Service described earlier) and a National Climate Change and Wildlife Science Center, both under the U.S. Geological Survey.¹³² The latter will "forecast the ecological impacts of climate change" and develop tools for wildlife management. H.R. 2454 contains no statements on the limits of possible interventions or the Center's decision-making process, which might not be public.¹³³ Each federal resource agency with a seat on the Climate Adaptation Panel will create a report for the President and Congress on aspects of climate change under its jurisdiction. The reports are to identify "specific conservation actions," which might strongly suggest new laws that Congress might enact. The specific areas for action include "protection and restoration" of marine habitats, establishment of "habitat linkages and corridors," "restoration and conservation of ecological processes," and "protection of fish, wildlife and plant health."¹³⁴

The potential scope of federal expansion becomes clearer in the bill's "National Wildlife Habitat and Corridors Information Program." In this program, the Department of the Interior will act as lead agency in constructing a database of habitats and corridors. Various unspecified agencies may use it to set policies that "avoid, minimize, and mitigate the impacts on fish and wildlife habitat and corridors in siting energy development, water, transmission, transportation, and other land use projects; [and] assess the impacts of existing development on habitats and

¹³⁰ House Final at 1328 (Sec. 477). No other agents of the private sector will sit on it.

¹³¹ House Final at 1322–1323 (Sec. 476). The National Adaptation Strategy appears quite similar to the many failed "national energy strategies" proposed in the past by administrations of both parties.

¹³² House Final at 1325 (Sec. 477). Note that wildlife has been singled out for special attention in the name.

¹³³ House Final at 1328 (Sec. 477).

¹³⁴ House Final at 1332–1333 (Sec. 478).

corridors."¹³⁵ It is easy to see the potential value of this data to people attempting to impede otherwise locally permitted economic activity. The invitation to intervene in energy production, housing, and local planning is even more explicit in a requirement that the database "incorporate biological and geospatial data on species and corridors found in energy development and transmission plans, including renewable energy initiatives, transportation, and other land use plans."¹³⁶ There is a further and more comprehensive call for recommendations on how to apply the data to state programs that will "promote the landscape connectivity necessary to allow wildlife to move as necessary to meet biological needs, adjust to shifts in habitat, and adapt to climate change; and minimize the impacts of energy, development, water, transportation, and transmission projects and other activities expected to impact habitat and corridors."¹³⁷

V. Other Wealth Transfers

A. Displaced Workers

H.R. 2454's supporters call it an engine of "job creation," but its language implies that it will have adverse employment effects, particularly in the industries most affected by cap-and-trade. The bill funds retraining for "green" occupations and directly assists individuals and groups who can demonstrate harm from H.R. 2454's provisions. It authorizes curriculum development grants by the Department of Education to "partnerships" that include an institution of higher education and "experienced ... [unspecified] representatives of the community", even if a lower-level institution offers the program.¹³⁸ The bill creates a clearinghouse for job and training information in which each politically important renewable electricity source will get its own department. There will also be a "Green Construction Workers Demonstration Project" aimed generally at workers in poverty rather than those displaced by the law.¹³⁹

¹³⁵ House Final at 1359 (Sec. 481).

¹³⁶ House Final at 1361–1362 (Sec. 481).

¹³⁷ House Final at 1363 (Sec. 481).

¹³⁸ House Final at 1127–1131 (Sec. 422 and 423). Priority goes to online learning, with a focus on poorly performing students rather than promising ones. \$150 million is to be allocated to the retraining fund. House Final at 1131 (Sec. 422).

¹³⁹ House Final at 1124–1140 (Secs. 423 and 424A).

Alongside education is "adjustment assistance" for certified groups of workers, unions and employers (but not individuals) who have successfully applied to their state's governor and the Secretary of Labor. Workers in energy-related industries can qualify, as well as those in "other industries whose employment the Secretary determines has been adversely affected by any requirement of title VII of the Clean Air Act."¹⁴⁰ Displaced workers who qualify can get "Climate Change Adjustment" payments of 70 percent of average weekly wages for up to three years.¹⁴¹ This is considerably more liberal than most existing assistance programs, and there is no discernible ceiling written into H.R. 2454. A worker judged to be without a "marketable skill" generally must take retraining, either from educational institutions or on the job. The Department of Labor also allows displaced workers to apply for relocation allowances that include cash grants of no more than \$1,500.¹⁴²

B. Employed Workers

Workers on nearly all projects contemplated in H.R. 2454 are to be paid in accordance with the prevailing (basically, union) wage standards of the Davis-Bacon Act. Employers found in violation are subject to a loss of funding or allowance allocations.¹⁴³ The effects of the requirement will be the same as elsewhere. Some nonunion workers who get the coveted jobs will be wealthier. Employers will respond to higher wages with decreased hiring, leaving the displaced workers to seek jobs elsewhere. As these workers add themselves to the labor supply in non-green industries, they will likely depress wages in those industries, or at best leave them unchanged.

C. Tax and Welfare Policy

H.R. 2454 will also use the tax code to redistribute income in order to lessen the effects of the higher prices that cap-and-trade will inflict on low-income people. The bill's "Energy Refund Program" is intended to "reimburse households for the estimated loss in their purchasing power as

¹⁴⁰ House Final at 1140–1144 (Sec. 425). Public sector workers are also eligible to form groups.

¹⁴¹ House Final at 1146–1151, 1157–1165 (Sec. 426).

¹⁴² House Final at 1169–1173 (Sec. 427).

¹⁴³ House Final at 1024–1025 (Sec. 338).

a result of [the law]."¹⁴⁴ EIA will estimate these losses in order to calculate monthly payments that state governments will make to households with incomes below 150 percent of the poverty line.¹⁴⁵ The payments will not qualify as taxable income. There will also be an increase in the percentage Earned Income Credit for childless individuals.¹⁴⁶ There are as yet no estimates of how much is to be redistributed.

D. International Trade

H.R. 2454 contemplates a negotiated agreement to control "leakages" of carbon-intensive production from nations with tighter GHG limits to nations without them.¹⁴⁷ There would be an international "reserve allowance" program (i.e., national quotas) with assistance for harder-hit countries. The bill requires a report from the President in 2017 that will estimate its costs to different sectors of the economy.¹⁴⁸ After 2020, the President will be obliged to impose "border adjustments" (i.e., tariffs) on countries that fail to limit their emissions.¹⁴⁹ The President can escape this obligation only if Congress votes that he can do so. The tariff provisions were not in the draft bill and were inserted as part of the last-minute addendum. There are a substantial number of questions about implementation and measurement. For example, if the prices of GHG permits fluctuate, how will a tariff be calculated based on these costs? And will it in fact be possible to set tariffs that fluctuate this way? Further, estimating the carbon in foreign products will require detailed knowledge of their technologies, which foreigners would resist divulging even if there were no carbon issues.

Lastly, H.R. 2454 sets up a Clean Energy Technology export program to increase employment in producing carbon-limiting technologies.¹⁵⁰ A country will be eligible for the exports if it has an acceptable strategy for reducing an acceptable amount of emissions, as determined by

¹⁴⁴ House Final at 1194–1195 (Sec. 431).

¹⁴⁵ House Final at 1198–1200 (Sec. 431).

¹⁴⁶ House Final at 1208–1210. (Sec. 432).

¹⁴⁷ House Final at 1115–1116 (Sec. 766).

¹⁴⁸ House Final at 1117–1123 (Sec. 768).

¹⁴⁹ House Final at 1125–1126 (Sec. 768).

¹⁵⁰ House Final at 1212–1214 (Sec. 441).

the Secretaries of State, Treasury, and Energy. Aid will be in the form of allowances (amounts set elsewhere in the bill) whose proceeds will be used to obtain equipment that embodies the technologies.¹⁵¹ The scope of this program will depend on the market value of allowances. The government has an interest in raising that value, which is clearly at odds with the interests consumers and businesses have in minimizing harm from high prices.

E. Higher Education

H.R. 2454 is rife with research grants, many of which will go to higher education, national laboratories, and consulting firms. Some of the largest will go to eight "Energy Innovation Hubs," each of which will specialize in developing some new technology. Each Hub will be a consortium of at least two research universities and another qualified entity such as a nonprofit or government lab. Applications to become a Hub will be competitive, and their operations will be funded in part by allowance allocations made elsewhere in the bill.¹⁵² Allowances will also fund "advanced energy research" by both universities and businesses.¹⁵³ Businesses, however, cannot obtain funds to study what they build—only institutions of higher education are eligible to operate "Building Assessment Centers" that analyze efficient construction and building management.¹⁵⁴ The list goes on. H.R. 2454 increases funds for "Industrial Research and Assessment Centers" and "Clean Energy Application Centers" initiated by 2005 and 2007 energy legislation. To coordinate activities of the Hubs and Centers, the bill also establishes "Centers for Energy and Environmental Knowledge and Outreach."¹⁵⁵

¹⁵¹ House Final at 1223–1230 (Sec. 443).

¹⁵² House Final at 238–243 and 246–249 (Sec. 171).

¹⁵³ House Final at 249–251 (Sec. 172).

¹⁵⁴ House Final at 251–253 (Sec. 173). These will be funded by \$50 million in annual appropriations through 2014.

¹⁵⁵ House Final at 259–274 (Sec. 174). It appears that these will receive funding of \$15 million per year in total.

VI. Conclusions

Almost all of H.R. 2454's intricate programs reduce to simple strategies of taxation and wealth redistribution whose only purpose is the elicitation of political support for a policy that is questionable on scientific grounds and untenable on economic ones. As vehicles for redistribution, allowances are ideal. Important interest groups such as researchers would normally want low allowance prices because they are also consumers, but high allowance prices increase their funding. High allowance prices also increase the numbers of workers and consumers who will qualify for various transfers and subsidies. Well-off environmentalists will be happy with increasingly stringent regulations that drive allowance prices upward, and a large set of current and future Washingtonians will be happy to learn of the Congressional Budget Office's finding that \$8 billion will have to be spent over the next ten years just to staff H.R. 2454's bureaucracies.

H.R. 2454's authors, and members of their coalition, are clearly aware that it will have perverse outcomes and harm a broad range of Americans. The awareness lives in its provisions on displaced worker assistance and in its revisions of tariffs and the tax code, among other places. The underlying economics is worth a further look. These outcomes are not so much unfortunate side effects as they are basic elements of the logic that make it a highly attractive legislative package. Normally, tax bills and spending bills come before Congress separately, which raises the cost of bargaining and increases the risk that some coalition members will defect and upset a complex bargain. Legislation like H.R. 2454 combines tax and spending legislation into a single package that lessens the difficulty of enforcing the political agreements that brought it into existence. In one legislative act, legislators can determine who gets free allowances, who must pay for them, how much revenue to give various beneficiaries, and how much to compensate certain victims.

Regarding the science, even if the bill's schedule for GHG reductions is met, there is general agreement that its impact on global temperatures will be undetectable.¹⁵⁶ If climate change would indeed cause important dislocations, there is much to be said for "hardening the target," particularly if halfhearted efforts at GHG control by a minority of nations will have little effect on its buildup. To their credit, the authors of H.R. 2454 have noted the importance of adaptation. Their adaptation policies, however, almost exclusively take the form of new regulations and agencies devoted to maintaining pre-existing natural environments in the face of climate change. The bill

¹⁵⁶ Patrick Michaels and Robert Balling, *Climate of Extremes*, (Cato Institute, 2009), 122–149.

never reaches questions about the effects of these policies on the nation's production and employment.

Regarding the economics, economists continue to debate whether the better response to GHG buildup is a carbon tax or a cap-and-trade program. Their debates have largely been held in a vacuum that naively assumes governments will understand economic logic and pass legislation to remedy the so-called "market failures." H.R. 2454 provides a compelling illustration of the irrelevance of these debates. Far from any visions of theoretically optimal legislation, it is an almost randomly assorted collection of dozens of programs, intended to transfer wealth to interest groups rather than efficiently attack the ostensible problem. The bill's only sure effect will be to cut opportunities for productive employment in the economy.

H.R. 2454's basic supply-side and demand-side measures are little more than taxes, individually and in the aggregate. A national renewable portfolio standard is an inefficient way to clean the environment and, as a practical matter, will do little more than transfer wealth from electricity consumers to wind-power producers and to speculators and venture capital firms that specialize in such schemes. There are theoretical rationales for governmental funding of research support for new technologies and subsidies to industries that produce and use them, but there is as of yet no showing that they are economically warranted in the context of climate change. They are, however, politically warranted—the inclusion of the Hubs in the last-minute addendum to the bill was sufficient to attract the votes of some Members of Congress who believed their districts would otherwise be left in the cold.

Governments generally prefer to increase rather than decrease their powers over private activity, and higher levels of government prefer to do likewise over lower levels. H.R. 2454's provisions on building codes and appliance designs are little more than attempts to move decisions best made at lower levels of government upward, for reasons that have never been comprehensibly articulated. Governments also prefer to concentrate power in ways that make them less accessible to the electorate, and here too H.R. 2454 does not disappoint. It will effectively replace the Federal Energy Regulatory Commission's imperfect (but often market-oriented) decision mechanisms with a politicized legal staff that answers to the President. As elsewhere, H.R. 2454 combines increased federal powers with increasingly poor economic analysis. With or without cap-and-trade, it will be

as efficient a tool as has ever been imagined for creating poverty, unemployment, and dependence. Government, however, will probably do just fine.¹⁵⁷

Perhaps inadvertently, Congress left in the bill some signs of its attitudes toward the public and its knowledge of energy and history. When introducing an "open fuel standard" that will tax consumers and vehicle producers to support an expanded market for ethanol and biofuels that primarily benefits their producers, H.R. 2454 tries a historical analogy:

The Congress finds that—

- (1) the status of oil as a strategic commodity, which derives from its domination of the transportation sector, presents a clear and present danger to the United States;
- (2) in a prior era, when salt was a strategic commodity, salt mines conferred national power and wars were fought over the control of such mines;
- (3) technology, in the form of electricity and refrigeration, decisively ended salt's monopoly of meat preservation and greatly reduced its strategic importance;
- (4) fuel competition and consumer choice would similarly serve to end oil's monopoly in the transportation sector and strip oil of its strategic status;
- (5) the current closed fuel market has allowed a cartel of petroleum exporting countries to inflate fuel prices, effectively imposing a harmful tax on the economy of the United States¹⁵⁸

There are in fact few if any historical examples of foreign governments using salt to extract monopoly gains from other nations, if only because most of them have competitive sources of imports and domestic deposits. The actual story of salt was more often one of government using its control of supply to extract taxes from its own citizens. One important cause of the French revolution was aggressive taxation of salt. Before the Revolutionary War, the American colonists knew of locally abundant salt but were unable to access it thanks to monopolies operated by the British government.¹⁵⁹ Revolution terminated salt monopolies in both countries, people became free to discover and sell it, and complaints about high prices and scarcity vanished. Today's energy policy is like that of the salt monopolists, and the monopoly is not foreign—it is enforced by U.S.

¹⁵⁷ "Climate Bill Would Bloat Federal Agencies," *Washington Times*, Aug. 17, 2009, at <http://washingtontimes.com/news/2009/aug/17/climate-bill-would-bloat-federal-agencies/>.

¹⁵⁸ House Final at 125–126 (Sec. 127).

¹⁵⁹ Robert Leroy Hilldrup, "A Campaign to Promote the Prosperity of Colonial Virginia," *The Virginia Magazine* 67 (Oct. 1959), 410–428.

government bans on access to hydrocarbon deposits and taxation of what energy the nation can still produce. The intent of H.R. 2454 is to strengthen that monopoly and increase the taxes.

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