CAN GLOBAL WARMING LAWS REDISTRIBUTE WEALTH?

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"It's really now a battle over the economics . . . . The debate is not about the climate problem. Everybody could agree on the principles and still get the economics wrong."[1]

I. INTRODUCTION

This Note discusses two Senate bills, America's Climate Security Act of 2007 (Senate Bill 2191)[2] and the Low Carbon Economy Act of 2007 (Senate Bill 1766),[3] that aim to address global warming by reducing greenhouse gas (GHG) emissions in the United States. Even though both bills failed to become law,[4] they remain relevant to policymakers because some of the measures discussed in the two bills have either become law or are expected to become law. In early 2009, the stimulus package included funding for home weatherization and upgrading of home appliances.[5] In addition, President Obama's proposed budget includes a cap and trade pro-

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[1] Jad Mouawad, *Industries Allied to Cap Carbon Differ on the Details*, N.Y. TIMES, June 2, 2008, at C1 (quoting James E. Rogers, chief executive of Duke Energy).

[2] America's Climate Security Act, S. 2191, 110th. Cong. (2007) (as introduced in Senate, Oct. 18, 2007).

[3] Low Carbon Economy Act, S. 1766, 110th. Cong. (2007).

[4] Though neither bill has the power of law, the provisions of each are discussed in the present tense for readability throughout this Note.

[5] *E.g.*, American Recovery and Reinvestment Act of 2009, H.R. 1, 11th Cong. (2009) (Enrolled as Agreed to or Passed by Both House and Senate) (providing tax incentives as an alternative redistribution or recycling methods); Darren Samuelsohn, *Obama Makes Bold Climate Bill Prediction: "We'll get it done,"* N.Y. TIMES, Mar. 25, 2009, *available at* http://www.nytimes.com/cwire/2009/03/25/25climatewire-obama-makes-bold-capandtrade-prediction-well-10277.html; *cf. infra* Part II.C.

gram beginning in 2013 based on auctioning carbon credits.[6] The proposed budget also relies on tax breaks in the stimulus bill to offset the costs to consumers of reducing GHG emissions.[7] In conjunction with the President's plans, several Congressional committees are currently crafting cap-and-trade legislation.[8]

The inclusion of GHG reduction provisions in the economic stimulus package and the budget proposal also reflects the Senate's debate over Senate Bill 2191, which marked a major change in policymakers' discussion of global warming. The debate focused on the bill's economics rather than on the efficacy of the bill's greenhouse gas reduction program.[9] Opponents argued the bill was too costly for consumers, framing it as a measure that would raise the prices of fuel, energy, and consumer goods at a time when the costs of these goods were already rising and gas prices were high.[10] Senator Barbara Boxer countered opponents' claims by touting the bill's economic benefits to consumers.[11] Who was right? And what should one make of Senator James Inhofe's statement that this was "probably the largest bill ever considered by the Senate in its impact on the economy and our way of life"?[12] What impact will a greenhouse gas reduction bill have on consumers? And how big does it have to be to make (or balance out) significant impacts on the economy?

This Note evaluates whether the GHG emissions reduction programs established by Senate Bill 1766 and Senate Bill 2191[13] would cost the poor more than the wealthy, whether the mechanisms to collect revenue and redistribute funds to provide assistance to those with low incomes do so ef-

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[6] OFFICE OF MGMT. & BUDGET, A NEW ERA OF RESPONSIBILITY: RENEWING AMERICA'S PROMISE 21 (2009); *cf. infra* Part II.B.

[7] *See* H.R. 1; *cf. infra* Part II.C. & Part IV.

[8] Richard Cowan, *Complex Path for Climate Bills in Congress*, REUTERS, Mar. 18, 2009 *available at* http://www.reuters.com/article/environmentNews/idUSTRE52H5X020090318.

[9] Senate Bill 2191 was modified by the Senate Committee on Environment and Public Works and debated under a new name, the Lieberman-Warner Climate Security Act of 2008, S. 3036, 110th Cong. (2008). This Note was completed before the Lieberman-Warner bill was revised and debated by the Senate. Therefore, references are primarily to Senate Bill 2191 as it was introduced to the Senate Committee on Environment and Public Works in 2007. However, in those instances where revisions to the bill make substantive changes relevant to the issues discussed herein, footnotes include citations to Senate Bill 3036.

[10] *E.g.*, *Bill Moyers Journal* (PBS television broadcast June 27, 2008), *available at* http://www.pbs.org/moyers/journal/06272008/transcript4.html (quoting Senator Inhofe: "As gasoline prices continue to rise and set new record highs every day, this bill would only keep prices rising").

[11] *Id.* (quoting Senator Boxer).

[12] David. M. Herszenhorn, *After Verbal Fire, Senate Effectively Kills Climate Change Bill*, N.Y. TIMES, June 7, 2008, at A12 (quoting Senator Inhofe).

[13] S. 1766 §§ 101–103; S. 2191 §§ 1201–1203.

fectively,[14] whether redistribution undermines the reduction scheme, and whether redistribution effectively offsets any disproportionate cost to the poor.

Part II of this Note summarizes the reduction programs, creation of government revenue, and redistribution programs established by the Senate bills. Part III analyzes state lotteries and Medicare as programs that collect revenue for redistribution, but also unfairly rely on funds from participants with lower incomes. Part IV contends the poor pay proportionally more to reduce GHG emissions, but the redistribution programs offset this burden. Part V concludes the redistribution programs may be inadequate if the poor actually pay more to reduce GHG emissions.

II. SUMMARY OF SENATE BILL 1766 AND SENATE BILL 2191

A. REDUCTION PROGRAMS

Both Senate bills regulate economic sectors that emit large amounts of greenhouse gasses. Senate Bill 2191 regulates facilities that use fossil fuels to produce electric power, industrial facilities, importers and producers of transportation fuels, and producers and importers of nonfuel chemicals that emit over 10,000 metric tons of carbon dioxide (CO_2) per year.[15] Senate Bill 1766 also regulates electricity production (coal facilities), the production of fuels (petroleum refineries and natural gas processing plants), industry (aluminum smelters), and nonfuel chemical producers and importers (sources of hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, nitrous oxide, and hydrofluorocarbon-23).[16] It also regulates any facility in the United States the President deems necessary.[17]

The bills regulate electricity and fuel producers because the combustion of fossil fuels produces CO_2,[18] the most common greenhouse gas.[19] As a result, energy production is the largest source of GHG emissions in

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[14] S. 1766 § 403; S. 2191 §§ 4101, 4501.

[15] S. 2191 § 4(7)(A)–(D). *But see* S. 3036 § 4(7) (referring instead to facilities that use, produce, or distribute coal, natural gas, petroleum-based fuels, group I GHGs defined in §4(14), and hydrofluorocarbons).

[16] S. 1766 §3(6)(A)(i–viii).

[17] *Id.* §3(6)(A)(ix).

[18] INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (I.P.C.C.), CLIMATE CHANGE 2007: SYNTHESIS REPORT: SUMMARY FOR POLICY MAKERS 5 (2007), *available at* http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf.

[19] *Id.*

the United States.[20] The bills regulate industry and non-fuel chemicals because they also produce greenhouse gasses that contribute to global warming,[21] making industrial use the third largest source of CO_2 emissions in the United States.[22] Neither bill directly regulates transportation,[23] the second largest source of CO_2 emissions,[24] but Senate Bill 2191 indicates that changing vehicles, fuels, and consumer behavior to reduce GHG emissions from transportation require separate policies[25] since these issues are difficult to address.

Both Senate bills set an overall cap on the number of tons of greenhouse gasses that regulated entities can emit.[26] The cap is set by distributing emissions allowances to the regulated entities at the beginning of the year.[27] Each allowance is equal to one metric ton of carbon dioxide or an amount of other greenhouse gasses that have the same effect on the atmosphere as one metric ton of CO_2.[28] For example, Senate Bill 1766 gives 53% of allowances to the industrial and energy sectors, including regulated and unregulated entities, for the year 2012 while Senate Bill 2191 gives 40% to both sectors.[29] At the end of the year, the regulated entities must return to the government a number of allowances equal to their actual emissions or face a penalty.[30]

The Senate bills aim to reduce the amount of greenhouse gas emissions by reducing the number of allowances given to regulated entities over time and by reducing the overall number of allowances distributed each

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[20] U.S. ENVIRONMENTAL PROTECTION AGENCY (U.S.E.P.A.), INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS: 1990–2005, EXECUTIVE SUMMARY ES-4–ES-7 (2007), *available at* http://www.epa.gov/climatechange/emissions/downloads06/07ES.pdf.

[21] I.P.C.C, IPCC/TEAP SPECIAL REPORT: SAFEGUARDING THE OZONE LAYER AND THE GLOBAL CLIMATE SYSTEM: ISSUES RELATED TO HYDROFLUOROCARBONS AND PERFLUOROCARBONS: SUMMARY FOR POLICYMAKERS 3 (2005), *available at* http://www.ipcc.ch/pdf/special-reports/sroc/sroc_spm.pdf.

[22] U.S.E.P.A., *supra* note 20, at ES-7.

[23] However, both bills would regulate facilities like oil refineries and provide incentives to produce more fuel-efficient cars. *See, e.g.*, S. 2191 §§ 4(7)(C), 4405; S. 1766 §§ 3(5)(B), 401(a)(1)(C).

[24] U.S.E.P.A., *supra* note 20, at ES-7.

[25] S. 2191 § 2(9).

[26] S. 1766 § 102(a); S. 2191 § 1202. I refer to sources of GHG emissions "capped" by the two bills as regulated entities. Provisions in each bill refer to them using various terms including regulated facilities, *e.g.*, S. 1766 § 3(6), regulated entities, *e.g.*, S. 1766 § 3(23), covered facilities, *e.g.*, S. 2191 § 4(7), and affected facilities *e.g.*, S. 2191 § 1102(1).

[27] S. 1766 § 101; S. 2191 § 1201.

[28] S. 1766 § 3(2)(B) (CO_2 equivalent), § 3(6)(B) (metric tons); S. 2191 § 4(5),(10) (allowance amount).

[29] S. 1766 § 201(a)(1); S. 2191 § 3901. *Cf.* S. 3036 §§ 3901–3908 (covering more industries, but renaming the subtitle containing free allocations "Transition Assistance").

[30] S. 1766 § 102(a); S. 2191 § 1202.

year.[31] Under Senate Bill 2191, the electric power sector and the industrial sector start out with 40% of allowances in 2012 and end up with 12% of allowances in 2030.[32] Under Senate Bill 1766, the industrial sector starts out with 53% in 2012 and ends up with 25% in 2030.[33] During the same time, the overall number of allowances drops from 5.2 billion to less than 3.5 billion under Senate Bill 2191 and from 6.6 billion to 4.8 billion under Senate Bill 1766, so regulated entities receive a smaller percentage of a smaller number of allowances.[34]

In addition to regulated entities, both bills distribute allowances to annual auctions,[35] states,[36] and carbon sequestration projects.[37] Senate Bill 2191 also gives allowances to early auctions,[38] load-serving entities,[39] and early action programs.[40] If an entity does not have enough allowances to cover its actual emissions for the year, it must decide whether it is cheaper to reduce its emissions or buy enough allowances from one of these other sources (or from a regulated facility that has more allowances than emissions) to cover the excess emissions.[41] Entities and offset projects that sell their extra allowances may reinvest the sales revenue as they wish and the proceeds from government sales of allowances are redistributed.

Under both bills, the allowances for annual auction increase over time while the allowances given to entities decrease.[42] It may become more cost-effective for an entity to reduce emissions than to buy allowances[43] as fewer allowances become available each year. In addition, the cost of buying allowances increases as demand increases and supply remains fixed or

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[31] S. 1766 § 101 (overall reduction), § 201(a) (allowances to emitters); S. 2191 § 1201 (overall allowances), § 3901 (allowances to emitters). *But see* S. 3036 § 3901 (reducing the number of allowances to emitters to 34%).

[32] S. 2191 § 3901.

[33] S. 1766 § 201(a)(1).

[34] S. 2191 § 1201(d); S. 1766 § 101; *cf.* S. 3036 § 1201 (increasing the overall number of allowances to nearly 5.8 billion in 2012 and nearly 3.9 billion in 2030, but allocating them to more uses than Senate Bill 2191).

[35] S. 2191 § 3201; S. 1766 § 201.

[36] S. 2191 §§ 3401–3403; S. 1766 § 204.

[37] *See* S. 2192 § 3602 (geological), § 3701 (domestic agriculture and forestry), § 3803 (international forestry); S. 1766 § 201.

[38] S. 2191 § 3101.

[39] *Id.* § 3501.

[40] *Id.* § 3301. *But see* S. 3036 §§ 3101–3102 (auctions), § 3201 (early action), §§ 3301, 3303–3304 (states), § 3401 (electric utilities), §3501(natural gas utilities), §§ 3601, 3701 (sequestration), § 3803 (international forestry).

[41] Kristen Sheeran, *Beyond Kyoto: North-South Implication of Emissions Trading and Taxes*, 5 SEATTLE J. SOC. JUST. 697, 708–09 (2007).

[42] S. 2191 § 3101; S. 1766 § 201.

[43] *See* Sheeran, *supra* note 41.

reduced. For example, at the time of this writing, carbon offset futures contracts on the Chicago Climate Exchange trade for only about $1.50,[44] while Certified Emissions Reductions (offset futures contracts of equal size) trade for about $15.22 (€11.23) on the European Climate Exchange, where a mandatory emissions reduction program, the European Union Emissions Trading Scheme, has sparked demand.[45] The price of reducing emissions may be so high, however, that buying allowances at auction may be the only way to comply with the cap when an entity no longer receives free allowances.

Senate Bill 1766 recognizes that some entities may be unable to afford to buy allowances and uses a mechanism it calls the technology accelerator payment (TAP).[46] When regulated entities lack enough allowances to cover their emissions for a given year, they must pay the TAP in lieu of an allowance.[47] The TAP functions as a price cap on allowances because entities will not pay more to acquire allowances from other sources than they would pay to the government.[48] Yet even the TAP incentivizes emissions reductions because its price would increase every year.[49]

Both bills also provide relief for regulated entities by allowing them to bank allowances.[50] Banking allowances enables an entity to keep an unused allowance issued in one year and retire it in a later year.[51] Senate Bill 2191 also allows entities to borrow allowances.[52] Borrowing allowances enables an entity to use allowances allocated up to five years in advance to cover up to 15% of emissions in an earlier year but requires interest payments.[53] Banking and borrowing provisions give more flexibility to regulated entities that have changing needs for emissions but still reduce emissions because the overall number of allowances does not increase. Though emissions reduction programs under both bills allow regulated entities

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[44] CHICAGO CLIMATE EXCHANGE, http://www.chicagoclimatex.com/ (last visited Mar. 20, 2009).

[45] Certified Emissions Reductions Historical Data: ECX CER Futures, EUROPEAN CLIMATE EXCHANGE, http://www.europeanclimateexchange.com/ (last visited Mar. 20, 2009).

[46] S. 1766 §§ 3(27), 102; *cf.* S. 2191 §§ 2601–2605; S. 3036 §§ 2601–2605 (creating a Carbon Market Efficiency Board with powers far beyond regulating the price of allowances).

[47] S. 1766 §102(a).

[48] *See* HENRY D. JACOBY & A. DENNY ELLERMAN, M.I.T. JOINT PROGRAM ON THE SCI. & POLICY OF GLOBAL CLIMATE CHANGE, THE SAFETY VALVE AND CLIMATE POLICY 1(revised ed. July 2002), http://web.mit.edu/globalchange/www/MITJPSPGC_Rpt83.pdf (describing the safety valve concept).

[49] S. 1766 §102(d)(2).

[50] *Id.* § 103(a)(2); S. 2191 §§ 2201–2202.

[51] S. 2191 § 2201.

[52] *Id.* §§ 2301–2303.

[53] *Id.* §§ 2301(a)(2), 2303.

some flexibility, they still impose the costs of reducing emissions or buying allowances from government auctions or other sources.

B. REVENUE STREAMS

Under both Senate bills, the federal government earns revenue by auctioning allowances.[54] Senate Bill 1766 auctions 24% of allowances in 2012: 12% for technology, 8% for adaptation, and 4% for energy assistance.[55] The 266 million allowances allocated to energy assistance in 2012 would generate $3.2 billion of revenue when sold at the $12 TAP price.[56] Similarly, Senate Bill 2191 allocates 18%, or 936 million, allowances for auction in 2012 which would generate revenue based on the market price.[57]

Both bills redistribute the auction revenue by establishing new federal funds with the auction proceeds.[58] Senate Bill 1766 establishes three funds that redistribute revenue: the Energy Technology Deployment Fund, the Climate Adaptation Fund, and the Energy Assistance Fund.[59] Senate Bill 2191 establishes four new funds: the Energy Assistance Fund, the Climate Change Worker Training Fund, the Adaptation Fund, and the Climate Change and National Security Fund.[60]

Because the funds are established using auction proceeds, their size depends on how many allowances are available for auction.[61] Over time the allowances allocated for auction by Senate Bill 1766 increase, but most of the proceeds of the increase are used to fund the technology and adaptation funds.[62] The allowances earmarked to fund energy assistance would only increase to 5% by 2030.[63] Section 208(f)(3)(A) caps the three auction funds at $25 billion for 2009 and requires that excess revenue be deposited

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[54] *Id.* §§ 3201; S. 1766 § 201.

[55] S. 1766 § 201(a)(1).

[56] *Id.* §§ 101, 102(d)(1), 201(a)(1).

[57] S. 2191 §§ 1201(d), 3201; *cf.* S. 3036 §§ 3101(c), 3103 (allocating 6.10% of allowances for 2012 and 21.5% of allowances remaining after allocations to specific uses); *Bill Moyers Journal*, *supra* note 10 (stating that "[Sen.] Boxer says a steady stream of income from the sale of pollution permits would flow into the treasury—as much as 6.7 trillion dollars over 40 years").

[58] S. 2191 §§ 4101–4103; S. 1766 §§ 401–403.

[59] S. 1766 § 208(f)(1).

[60] S. 2191 § 4101; *cf.* S. 3036 § 4101 (adding The Bureau of Land Management Emergency Firefighting Fund, The Forest Service Emergency Firefighting Fund, and The Climate Security Act Management Fund).

[61] S. 1766 § 208(b).

[62] *Id.* § 201(a)(2) (increasing the percentage of allowances for technology until 2043).

[63] *Id.* § 201(a)(1).

for general use in the U.S. Treasury.[64] After 2009, the cap increases in relation to the increase in TAP price.[65] In addition to limiting the amount of auction revenue available for redistribution, Senate Bill 1766 also provides for the number of allowances available for auction to be adjusted.[66] Auctioned allowances can be reduced so that more allowances are available to new facilities entering a regulated industry or geological or agricultural carbon sequestration projects.[67] Allowances that are available for the year but not distributed can be added to the auction pool, and allowances from the previous year can be added to the pool if they were meant for new facilities in regulated industries, if they are returned by shutdown manufacturing facilities, if they are returned by states, or if they are available for agricultural or geological carbon sequestration projects and not distributed.[68]

Senate Bill 2191 allocates 55% of the annual auction proceeds for Energy Technology Deployment—5% to the worker training fund and 20% each to the adaptation and security funds.[69] In addition to auction revenue, Senate Bill 2191 includes a general appropriations section that authorizes whatever appropriations are necessary to carry out the act.[70]

Both bills begin auctions early: under Senate Bill 1766, auctions start as early as 2009, using allowances from 2012, and continue each year.[71] Under Senate Bill 2191, allowances are to be auctioned before December 11, 2011.[72] The allowances designated for early auction represent a portion of the allowances for the years 2012, 2013, and 2014.[73] Auctioning allowances before an emissions cap becomes effective allows entities to begin trading allowances, establishes a market for allowances, and effectively pushes up the date when entities begin to decide whether to reduce emissions or buy allowances. Early auctions also generate proceeds to set up redistribution programs in anticipation of the emissions cap.

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[64] *Id.* § 208(f)(3)(A); *cf.* S. 3036 § 3101 (modifying this idea and creating the Deficit Reduction Fund).

[65] S. 1766 § 208(f)(3)(B).

[66] *Id.* § 208(c).

[67] *Id.* § 208(c)(1).

[68] *Id.* § 208(c)(2).

[69] S. 2191 § 4302(b); *cf.* S. 3036 § 4302(b)(1)–(2) (giving discretion to the number of allowances but placing minimum dollar equivalents in the firefighting funds); § 4302(b)(4)(C) (2% to Energy Independence Acceleration Fund); § 4302(b)(4)(D) (18% to Energy Assistance Fund); § 4302(b)(4)(E) (5% to Worker Training Program); § 4302(b)(4)(F) (18% to Adaptation Fund); § 4302(b)(4)(G) (5% to National Security Fund).

[70] S. 2191 § 9006. S. 3036 moves this allocation to § 9007.

[71] S. 1766 § 208(e).

[72] S. 2191 § 4301(b).

[73] *Id.* (referring to § 3101).

C. REDISTRIBUTION PROGRAMS

1. New Funds

a. Senate Bill 1766

Senate Bill 1766 establishes the Energy Technology Deployment Fund to pay incentives to projects that produce products that use less energy,[74] projects that produce energy with few or no GHG emissions,[75] projects that generate electricity from coal while producing few carbon emissions[76] or storing carbon emissions,[77] projects that produce transportation fuels from cellulosic biomass ethanol,[78] projects that reduce emissions and create energy from municipal solid waste,[79] projects that develop light duty motor vehicles with low emissions and high fuel economy,[80] and international technology development projects.[81]

Senate Bill 1766 also establishes a Climate Adaptation Fund to fund projects that protect human communities and natural resources from the effects of climate change.[82] Half of the adaptation funds are to be used to protect communities and infrastructure;[83] the other half are to be used to protect natural resources and fish and wildlife conservation.[84] The protection of communities and infrastructure includes coastal and estuarine land protection; mitigation, restoration, protection, and relocation of threatened coastal communities; coastal damage prevention and restoration, including infrastructure replacement and construction; research and deployment of technologies designed to address climate impacts and construction of energy; or transportation infrastructure capable of reducing carbon emissions.[85]

Senate Bill 1766 also establishes the Energy Assistance Fund, which allocates half of its funds to the Low-Income Home Energy Assistance Act of 1981.[86] That act gives grants to states to help consumers pay for en-

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[74] S. 1766 § 401(b)(2)(B).
[75] *Id.* § 401(b)(2)(A).
[76] *Id.* § 401(c)(1).
[77] *Id.* § 401(c)(2).
[78] *Id.* § 401(d)(1).
[79] *Id.* § 401(a)(1)(B)(ii).
[80] *Id.* § 401(e).
[81] *Id.* § 401(f)(1).
[82] *Id.* § 402.
[83] *Id.* § 402(a)(2)(A)–(B), (a)(4).
[84] *Id.* § 402(a)(2)(C)–(D).
[85] *Id.* § 402(a)(2)(A)–(B), (a)(4).
[86] *Id.* § 403(a)(1); 42 U.S.C. § 8621 et seq. (2006).

ergy.[87] It also allocates one-fourth of its funds to the Weatherization Assistance Program for Low-Income Persons established under part A of title IV of the Energy Conservation and Production Act.[88] That program also gives grants to states and helps consumers decrease their demand for energy.[89] These statutes require states to verify how they are going to spend money[90] and to report how money has been spent.[91] The weatherization program also requires states to make a request to keep any unused funds.[92] The Energy Assistance Fund allocates the final one-fourth of its funds to a new Rural Energy Assistance Program[93] intended to "provide financial assistance to promote the availability of reasonably priced electricity in off-grid rural regions in which electricity prices exceed 150 percent of the national average."[94]

b. Senate Bill 2191

Like Senate Bill 1766, Senate Bill 2191 establishes the Adaptation Fund[95] and the Energy Assistance Fund.[96] It also allocates funds to energy technology deployment.[97] In addition to the redistribution programs that parallel those in Senate Bill 1766, Senate Bill 2191 establishes the Climate Change Worker Training Fund[98] and the Climate Change and National Security Fund.[99]

Like the Senate Bill 1766 Energy Technology Deployment Fund, the energy technology deployment programs in Senate Bill 2191 also pay for high efficiency, low- or zero-emission products,[100] clean coal,[101] ethanol,[102] and more efficient motor vehicles.[103]

Like half of the adaptation funds earmarked by Senate Bill 1766, the Adaptation Fund established by Senate Bill 2191 allocates funds to protect

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[87] 42 U.S.C. § 8621 et seq.
[88] S. 1766 § 403(a)(2); 42 U.S.C. § 6861 et seq. (2006).
[89] 42 U.S.C. § 6861 et seq. (2006).
[90] 42 U.S.C §§ 6864(a), 8624(b)–(d).
[91] *Id.* §§ 6866, 6867, 8627.
[92] *Id.* § 8626(b)(2).
[93] S. 1766 § 403(a)(3).
[94] *Id.* § 403(b).
[95] S. 2191 § 4101(3).
[96] *Id.* § 4101(1).
[97] *Id.* § 4401.
[98] *Id.* § 4101(2).
[99] *Id.* § 4101(4).
[100] *Id.* § 4402(b), (d).
[101] *Id.* § 4403(a)(2), (4).
[102] *Id.* § 4404.
[103] *Id.* § 4405; *cf.* S. 3036 § 4406 (adding the Sustainable Energy Program).

natural resources.[104] It funds projects that "carry out activities (including research and education activities) that assist fish and wildlife, fish and wildlife habitat, plants, and associated ecological processes in adapting to and surviving the impacts of climate change . . . ."[105]

The Senate Bill 2191 Energy Assistance Fund contains provisions identical to those in the Senate Bill 1766 Energy Assistance Fund.[106] Additionally, the bill distributes 10% of each year's allowances to load-serving entities,[107] which sell electricity to retail consumers,[108] requiring that they sell the allowances they receive at fair market value and use the proceeds "(1) to mitigate economic impacts on low- and middle-income energy consumers, including by reducing transmission charges or issuing rebates; and (2) to promote energy efficiency on the part of energy consumers."[109]

The programs that distinguish Senate Bill 2191 from Senate Bill 1766 are the Climate Change Worker Training Fund and the Climate Change and National Security Fund. The Worker Training Fund creates grants to states to be distributed by the Secretary of Labor to fund state worker training programs.[110] The grants may also be used as income replacement, health care credits, to cover travel costs incidental to participation in a training program and to cover a portion of the cost of relocating to a new job.[111]

Just as the Adaptation Fund established by Senate Bill 1766 can be construed to protect human communities and infrastructure, the Senate Bill 2191 Climate Change and National Security Fund also provides for the effects of a changing climate on people and their communities. The bill establishes a Climate Change and National Security Council[112] to study "the extent to which global climate change, through the potential negative impacts of climate change on sensitive populations and natural resources in different regions of the world, may threaten, cause, or exacerbate political instability or international conflict in those regions"[113] and "the ramifications of any potentially destabilizing impacts climate change may have on

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[104] S. 2191 § 4702(a).

[105] *Id.*

[106] *Id.* §§ 4501–4502; S. 1766 § 403.

[107] *Id.* § 3501.

[108] *Id.* § 4(18).

[109] *Id.* § 3503; S. 3036 § 3403(b); *see also* S. 3036 § 3503(b) (using the same language for local natural gas distribution companies).

[110] S. 2191 § 4604.

[111] *Id.* § 4605; *cf.* S. 3036 §§ 4604–4606 (significantly expanding the activities of the Worker Training Fund to include grants to research programs, employers, states, and university programs, imposing wage and benefit protections to workers, and moving jobs to economically depressed areas).

[112] S. 2191 § 4801(a).

[113] *Id.* § 4801(c)(1)(B).

the national security of the United States, including—(i) the creation of refugees; and (ii) international or intranational conflicts over water, food, land, or other resources."[114] The bill requires the Council to give the President and Congress "recommendations on whether it is necessary to enhance the national security of the United States by funding programs . . . that the Council determines would assist in avoiding the politically destabilizing impacts of climate change in volatile regions of the world."[115] The funds come from 5% of the proceeds from yearly auction revenues.[116] The language of the National Security Fund is broader than the Adaptation Fund language in Senate Bill 1766 and may be interpreted to address only foreign impacts of climate change because it does not refer specifically to events in the United States, and it is unlikely the council would consider the United States a "volatile region."[117]

2. States

Both bills also use states to redistribute funds by requiring that states spend the proceeds from the sales of allowances to mitigate climate change.[118] Senate Bill 1766 allocates 9% of allowances to states for each of the years from 2012–2030.[119] Each state receives allowances based on GHG emissions within the state and on population[120] and must use at least 90% of allowances:

> (A) to mitigate impacts on low-income energy consumers; (B) to promote energy efficiency (including support of electricity demand reduction, waste minimization, and recycling programs); (C) to promote investment in nonemitting electricity generation technology; (D) to encourage advances in energy technology that reduce or sequester greenhouse gas emissions; (E) to avoid distortions in competitive electricity markets; (F) to mitigate obstacles to investment by new entrants in electricity generation markets and energy-intensive manufacturing sectors; (G) to address local or regional impacts of climate change policy, including providing assistance to displaced workers; (H) to mitigate impacts on energy-intensive industries in internationally competitive markets; or (I) to enhance energy security.[121]

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[114] *Id.* § 4801(c)(1)(C).
[115] *Id.* § 4801(c)(2).
[116] *Id.* § 4802.
[117] *Id.* § 4801; *cf.* S. 3036 §§ 4801–4804 (making explicit this fund's exclusively international aims).
[118] S. 2191 §§ 3401–3403; S. 1766 §§ 204(a) & (c)(1).
[119] S. 1766 § 201(a)(1).
[120] *Id.* § 204(b)(2).
[121] *Id.* § 204(c)(1).

Rather than establish a Worker Training Fund or distribute allowances to load-serving entities like Senate Bill 2191, Senate Bill 1766 leaves it to the states to provide assistance to displaced workers and to protect electricity consumers from rate hikes.

Under Senate Bill 2191, states receive 5% of each year's allowances,[122] but have an incentive to earn an extra 1% of allowances if they regulate utilities[123] and adopt energy efficient building codes.[124] Of the 1%, states could receive up to $500,000 to train their staffs to implement the new building codes.[125] States that have imposed stricter limits than the federal limits set out in the bill would receive 2% of allowances as an incentive.[126] States must use at least 90% of the allowances they receive:

> (A) To mitigate impacts on low-income energy consumers. (B) To promote energy efficiency (including support of electricity and natural gas demand reduction, waste minimization, and recycling programs). (C) To promote investment in nonemitting electricity generation technology. (D) To improve public transportation and passenger rail service and otherwise promote reductions in vehicle miles traveled. (E) To encourage advances in energy technology that reduce or sequester greenhouse gas emissions. (F) To address local or regional impacts of climate change, including the relocation of communities displaced by the impacts of climate change. (G) To mitigate obstacles to investment by new entrants in electricity generation markets and energy-intensive manufacturing sectors. (H) To address local or regional impacts of climate change policy, including providing assistance to displaced workers. (I) To mitigate impacts on energy-intensive industries in internationally competitive markets. (J) To reduce hazardous fuels, and to prevent and suppress wildland fire. (K) To fund rural, municipal, and agricultural water projects that are consistent with the sustainable use of water resources.[127]

Though they use some different mechanisms and allocations to achieve their purposes, both Senate bills establish parallel programs. They impose new costs on regulated entities by establishing emissions reduction schemes under which entities will either have to reduce emissions or buy allowances in lieu of reduction. Regulated entities may buy allowances at Federal auctions or from states, creating a source of government revenue.

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[122] S. 2191 § 3403(a).

[123] *Id.* § 3401(a).

[124] *Id.* §§ 3401(a)(2), 5201 (proposing amendment to section 304 of the Energy Conservation and Production Act, 42 U.S.C. § 6833 (2006) to include "Incentive Funding").

[125] *Id.* § 5201 (proposing amendment to section 304(f)(4) of the Energy Conservation and Production Act, 42 U.S.C. § 6833 (2006)).

[126] *Id.* § 3402(a).

[127] *Id.* § 3403(c); *cf.* S. 3036 §§ 3301–3304 (stating similar uses).

The proceeds from the sale of allowances are redistributed to assist displaced workers, fund adaptation, protect electricity consumers, and invest in new technologies.

III. PRECEDENTS FOR REDISTRIBUTION: STATE LOTTERIES AND MEDICARE

The Senate bills use the sale of allowances to fund technology deployment, adaptation, and energy assistance, creating new government services with built-in sources of funding. State lotteries and Medicare provide useful comparisons for these new programs because states use lotteries to collect revenue to fund state services[128] and Medicare collects payroll and income taxes to provide health insurance to seniors, [129] but studies have found that both state lotteries and Medicare cost the poor more money, identifying a major risk for new programs designed to help low-income consumers.[130] These studies also reveal those qualities that make state lotteries and Medicare effective at redistributing revenue. Effective redistribution programs have a reliable source of revenue, low administrative costs, fund services that address the needs of the poor who pay into the system, pay out adequate amounts to address those needs, are self-sustaining, and provide an overall economic gain.[131]

A. STATE LOTTERIES

1. Popularity

Lotteries are popular because they are voluntary. Unlike a tax, which people have to pay when they meet certain criteria, no one is forced to play a lottery game. Because people do not want to pay new taxes, lotteries have become a popular alternative source of state revenue. [132] Though

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[128] NORTH AMERICAN ASSOCIATION OF STATE AND PROVINCIAL LOTTERIES (N.A.S.P.L.), CUMULATIVE LOTTERY CONTRIBUTIONS TO BENEFICIARIES FROM START UP TO JUNE 30, 2006 (Dec. 2006), http://www.naspl.org/UploadedFiles/File/Cumulative_Lottery_Contributions06.pdf (listing services funded by lottery profits by state).

[129] Mark McClellan & Jonathan Skinner, *The Incidence of Medicare*, 90 J. PUB. ECON. 257, 258–59 (2006).

[130] *Id.* at 262; Todd A. Wyett, State Lotteries: Regressive Taxes in Disguise, 44 TAX LAW. 867, 873–75 (1991) (reviewing studies); *see also* Melissa Schettini Kearney, *State Lotteries and Consumer Behavior*, 89 J. PUB. ECON. 2269, 2285 (2005) (concluding consumers take money from housing, food, and bills to spend on lotteries).

[131] *See supra* note 130.

[132] Wyett, *supra* note 130, at 871 (citing high public approval ratings).

New Hampshire started the first lottery as recently as 1964,[133] currently forty-two states and the District of Columbia belong to the North American Association of State and Provincial Lotteries.[134] Lotteries generated over $58.6 billion of revenue in fiscal year 2007.[135] Lotteries have high public approval ratings[136] in part because people view them as the state offering a service and a chance to win.[137] In contrast, the impact of revenue from taxes may be less obvious to the taxpayer because services are funded indirectly and an individual taxpayer may not even receive state services.[138]

2. Unreliable Revenue

Even though lotteries are popular, they are not a consistent source of revenue. In times of economic slowdown, people stop gambling. Though Nevada does not have a lottery, its state budget depends on gaming taxes and it is currently facing a budget shortfall.[139] Revenues have decreased because people are spending their money on essential goods, not on gaming.[140] Though lotteries generated $57.4 billion for fiscal year 2007, states collected over $1.2 trillion in tax revenue for the same time period.[141] The tax revenue includes all fifty states, and is over twenty times the amount of revenue collected by lotteries, which are not available in all fifty states. Taxes generate more revenue for states than lotteries because people pay compulsory taxes while they can choose to play the lottery.

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[133] N.A.S.P.L., Lottery History, http://www.naspl.org/index.cfm?fuseaction=content&PageID=12&PageCategory=11 (last visited Mar. 17, 2009).

[134] N.A.S.P.L., Member List, http://www.naspl.org/Contacts/index.cfm?fuseaction=home&PageID=45&PageCategory=17 (last visited Mar. 17, 2009).

[135] N.A.S.P.L., Lottery Sales and Profits, http://www.naspl.org/index.cfm?fuseaction=content&PageID=3&PageCategory=3 (last visited Mar. 17, 2009).

[136] Wyett, *supra* note 130, at 871.

[137] *See id.* at 873.

[138] *See id.* at 872–73 (discussing promotion of lottery games versus restriction on other products subject to "sin taxes"). Wyett goes so far as to argue that states coerce lottery players into participating by marketing the chance to win. *See id.* Meanwhile states do not market their other services in the same way. *See id.* Hence the perception that lottery players think they are getting more for their money than they would by paying a comparable tax.

[139] Robert Siegel, *States Facing Big Budget Deficits Seek Solutions*, (NPR radio broadcast Jan. 28, 2008), *available at* http://www.npr.org/templates/story/story.php?storyId=18489469 (interviewing Geoff Dornan, state capitol reporter for *Nevada Appeal*).

[140] *Id.*

[141] U.S. CENSUS BUREAU, QUARTERLY SUMMARY OF STATE AND LOCAL GOV'T TAX REVENUE, tbl.1 (2008), http://ftp2.census.gov/govs/qtax/table1.pdf.

3. High Cost

Not only does a lottery raise less money than a tax because there are fewer people paying into the system, but it must also keep players interested in order to generate revenue. As a result, the lottery must be advertised, promoted, and updated; new games and new locations must be added.[142] This means that lotteries are relatively expensive to operate. Even though lotteries generated almost $60 billion in revenue for fiscal year 2007, they only generated below $18 billion in profits.[143] In other words, lotteries spent two-thirds of their revenue on operations and payouts.[144] In states trying to expand services through the use of a lottery, a lottery's inefficiency could cause a state to divert revenue it would otherwise use for services on operations for the lottery in the hopes of making more money.[145] In response to these concerns, investors have recently offered to lease lotteries from states with the promise of saving states the operating costs while guaranteeing them revenue under the terms of their leases.[146]

4. Earmarking Funds: Pros and Cons

In times of economic slowdown, when participation in lotteries may drop and states may have to invest more in promoting lotteries, other sources of state revenue may also decrease.[147] For example, a state with shortfalls in the lottery profits used to fund services might also experience a decrease in revenues from property taxes (when home values decrease) and sales taxes (when people have less money to spend). This is a problem for states in which lottery revenues are part of a general fund because it means less flexibility in funding services and more dependence on traditional sources of revenue.[148] It is more problematic for states in which lottery revenues are earmarked for specific services. Even though earmarking lottery funds for specific uses solves traditional funding shortfalls, when the lottery-funded services suffer from funding woes, the state will start to pull funds away from other services to keep operating the lottery-funded ser-

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[142] *See* Tom Precious, *Governor Willing to Gamble with Lottery*, BUFFALO NEWS, Jan. 14, 2008, at A1; *see also* Michelle Steel, Op-Ed., *Fantasy 5 Fantasy Fix*, L.A. TIMES, May 23, 2008, at A29.

[143] N.A.S.P.L., *supra* note 135.

[144] *Cf.* Kearney, *supra* note 130, at 2272 (finding a 61% tax rate and 33% revenue).

[145] Wyett, *supra* note 130, at 878–79.

[146] Precious, *supra* note 142; Steel, *supra* note 142; Joe Mathews, Op-Ed., *Betting on the Lottery*, L.A. TIMES, June 22, 2008, at M4.

[147] Siegel, *supra* note 139.

[148] Wyett, *supra* note 130, at 878–79.

vices or make cuts to the lottery-funded services.[149] In either case, lottery-funded services may face funding shortfalls just when people depend on them the most.

5. Lack of Adequate Redistribution

State lotteries have been characterized as unfairly burdening the poor because the promise of an opportunity to win a fortune appeals to those with lower incomes, resulting in most of the revenue generated coming from those who may be least able to afford it.[150] Even though lotteries fund state services,[151] they have been criticized as unfair because the services they fund do not necessarily benefit the low-income residents paying into the system.[152] Arguably, low-income residents would receive more benefits from lotteries if more money was paid out or if states earmarked the lottery revenue to fund services aimed at low-income residents.[153]

Despite lotteries' popularity, voluntary participation makes them an inconsistent source of revenue. They can be ineffective at redistribution because they are expensive to operate, they may not direct funds to services that help the poor who pay into the system, and they can make inadequate payouts even when funds are earmarked for effective services.

B. MEDICARE

Medicare redistributes the tax revenue it collects to fund health insurance for seniors. Hospital care (Medicare Part A) is funded by a 2.9% payroll tax that is split by employers and employees.[154] Most people who have paid the payroll tax are automatically enrolled when they turn sixty-five years old.[155] Supplemental insurance for outpatient care and doctors' visits (Medicare Part B) is funded in part by insurance premiums that cover one-fourth of the cost and income taxes that cover three-fourths of the cost.[156]

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[149] *Id.* Another problem is voters' perception that lotteries provide more funding than they actually do. While Californians guess the lottery funds 30% of education, it funds only 1.5%. Mathews, *supra* note 146.

[150] Wyett, *supra* note 130, at 873—77; Steel, *supra* note 142.

[151] N.A.S.P.L., *supra* note 128; Wyett, *supra* note 130, at 868.

[152] Wyett, *supra* note 130, at 876–79.

[153] *Id.* at 879–81.

[154] McClellan & Skinner, *supra* note 129, at 258.

[155] U.S. DEP'T OF HEALTH AND HUMAN SERVS., MEDICARE ELIGIBILITY TOOL, GENERAL ELIGIBILITY AND ENROLLMENT, http://www.medicare.gov/MedicareEligibility/Home.asp?dest=NAV|Home|GeneralEnrollment#TabTop (last visited Mar.17, 2009) [hereinafter MEDICARE ELIGIBILITY].

[156] McClellan & Skinner, *supra* note 129, at 258–59.

People are not enrolled in Medicare Part B unless they pay the premiums,[157] the Department of Health and Human Services does, however, recommend both public and privately-operated Medicare Part B plans.[158]

1. The Poor Pay More

Medicare, because its funding is directly tied to income, seems like it should benefit people with lower incomes because people with higher incomes pay larger dollar amounts into the system while most people over sixty-five receive similar benefits.[159] Instead of upward redistribution, a study has found that poorer people pay more into the system and benefit from fewer payments for services than wealthier people.[160] People with higher incomes cost the system more because they live longer; they are more likely to live to sixty-five and collect Medicare and they are more likely to live beyond sixty-five and collect from Medicare longer than their poorer counterparts.[161] Better access to medical care might also benefit those with higher incomes even though Medicare pays fixed amounts for services because the poor might not have access to some services at all and may not use the benefits available to them. For example, payouts to those with lower incomes increased when legislation targeted hospitals in low-income neighborhoods.[162] Before the low-income neighborhoods were targeted, residents in those neighborhoods were paying the same amount into the system, but receiving fewer benefits paid out.[163]

2. How We Measure Redistribution

The analysis of Medicare's burden on the poor is the result of a study that used zip codes as a proxy for income while analyzing taxes paid into the system and benefits paid out.[164] In the study, high income is represented by neighborhoods in which there were more high income households, while low income is represented by neighborhoods with more low-income households.[165] This finding however is not without its critics. In fact, Medicare can be analyzed using other indicators as a proxy for income.

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[157] MEDICARE ELIGIBILITY, *supra* note 155.

[158] U.S DEP'T OF HEALTH AND HUMAN SERVS., MEDICARE PLAN CHOICES OVERVIEW, http://www.medicare.gov/Choices/Overview.asp (last visited Mar.17, 2009).

[159] McClellan & Skinner, *supra* note 129, at 258.

[160] *Id.* at 262.

[161] *Id.* at 258, 263.

[162] *See id.* at 263.

[163] *See id.* at 263–64.

[164] *Id.* at 258, 261–264.

[165] *Id.* at 261–262.

When education is used as a proxy for income, Medicare is found to actually transfer money from the rich to the poor.[166] Whether zip codes, education, or some other indicator is used to represent income, viewed comprehensively these studies show that Medicare skews the transfer of money. Medicare might not pay benefits to those who need it most. People with more education may pay more into the system and receive less benefit if they have another source of health insurance and people in poorer neighborhoods may receive less benefit because of shorter life spans and less access to healthcare.

3. Can Medicare Last? Part 1: Generation Gap

One reason Medicare seems to burden the poor is a generation gap. Those who did not pay into the system receive benefits paid for by those who did. For example, people who were sixty-five years old in 1966, when Medicare was enacted, never paid into the system.[167] On average, from 1987–2001, Medicare recipients born in 1922 (who turned seventy-nine in 2001) received about $26,000 in intergenerational benefits, benefits that they never paid into the system.[168] This makes Medicare seem unsustainable. Its payments continue to grow concomitantly with healthcare cost increases, and as more people and services are covered, and more high income people live longer, it becomes unsustainable.[169] When Medicare is modeled without the generation gap, as if all participants had always paid into the system, lower-income households receive more benefit than they pay into the system.[170] Unfortunately, with the aging of the baby boom generation, such a scenario is unlikely because more people are living longer and will cost the system more.[171] Even though baby boomers have paid into the system, younger generations will pay higher costs to keep the system in place.

4. Can Medicare Last? Part 2: Market Influence

Medicare's size means that it has the ability to influence the healthcare market. During the 1990s Medicare payments to lower-income households increased because of increased payments to home healthcare providers and

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[166] Jay Bhattacharya & Darius Lakdawalla, *Does Medicare Benefit the Poor?*, 90 J. PUB. ECON. 277, 278 (2006).

[167] McClellan & Skinner, *supra* note 129, at 259, 263.

[168] *Id.* at 264–65.

[169] *Id.* at 271.

[170] *Id.* at 266.

[171] *Id.* at 271; *As U.S. Ages, Programs Will Feel the Heat*, L.A. TIMES, Feb. 12, 2008, *available at* http://www.latimes.com/new/nationworld/nation/la-na-aging12feb12,1,5820291.story.

to hospitals in low-income neighborhoods.[172] These increases in payment were not without problems as providers flocked to Medicare patients resulting in forty percent of home healthcare payments being found to be inappropriate and payments to hospitals in low-income neighborhoods benefiting privately owned hospitals in addition to their patients.[173] Although this demonstrates the potential for abuse without proper oversight, it also demonstrates incentives to healthcare providers will draw them into becoming Medicare providers. After the 2006 election, Congress acknowledged Medicare's influence and called for Medicare to bargain with prescription drug manufacturers to lower retail prices.[174] In June 2008, Medicare's market influence was again demonstrated as medical equipment manufacturers lobbied to block a House bill that would force them to enter a competitive bidding process to continue to provide their goods to Medicare, rather than using the existing fee schedule, because they would lose $1 billion.[175] In contrast to Medicare's generation gap, its ability to influence healthcare providers makes it seem self-sustaining: as long as a large number of patients continue to enroll in Medicare, healthcare providers will continue to accept Medicare payments to maintain a large volume of patients, and as long as providers continue to accept Medicare payments, it makes sense for patients to enroll in Medicare because they will have access to healthcare services.

5. Overall Success

Despite its apparent burden on the poor, Medicare is effective at redistribution and has achieved its original purpose of creating a system that allows seniors to pay for health care.[176] This saves money because people without insurance often avoid medical treatment. They are afraid they cannot pay and only seek treatment for severe illness which costs more to treat than minor ailments. Because seniors with Medicare seek treatment earlier than they would if they were uninsured and therefore avoid severe illness, medical costs decrease. Thus, Medicare saves money by insuring the portion of seniors who were uninsured prior to 1965.[177]

When these savings are conceptualized as extra benefits that lower-income households receive in addition to the services that Medicare pays,

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[172] McClellan & Skinner, *supra* note 129, at 263.

[173] *Id.* at 272.

[174] Editorial, *Lowering Medicare Drug Prices*, N.Y. TIMES, NOV. 14, 2006, at A26.

[175] David Leonhardt, *High Medicare Costs, Courtesy of Congress*, N.Y. TIMES, June 25, 2008, at C1.

[176] McClellan & Skinner, *supra* note 129, at 270.

[177] *Id.* at 258.

lower-income households receive more benefit than higher income households, and households with all levels of income receive some benefit.[178] In other words, when the value of having insurance is added to the payments Medicare makes, Medicare transfers money from rich to poor and all households receive more value from the system than they pay into the system.[179]

Though Medicare has its flaws, it seems to be a more effective redistribution program than state lotteries. It has achieved its original purpose of providing health insurance to seniors, but may burden the poor, just as state lotteries seem to burden the poor despite their popularity. Though Medicare is funded by tax revenues, a more consistent source of revenue than lotteries, it still may face future funding problems because it has a generation gap that also burdens the poor. Medicare also may not provide better access to healthcare in low-income neighborhoods, just as lotteries may not pay for services that benefit low-income lottery ticket buyers. Ultimately, however, Medicare provides some benefit to those with low incomes who were previously uninsured, its ability to influence healthcare providers makes it self-sustaining, and it provides an overall economic gain.

IV. REDISTRIBUTION OFFSETS PROPORTIONATELY HIGHER COSTS TO THE POOR

Based on the foregoing analysis of state lotteries and Medicare, the GHG emissions reduction schemes established by the Senate bills will likely impose an unfair cost on low-income consumers, but the redistribution programs established by the Senate bills will effectively counter some of this extra cost without undermining the overall emissions reduction scheme.

A. THE POOR WILL PAY MORE FOR GHG REDUCTION

Under the Senate bills, the poor will pay proportionately more to reduce greenhouse gas emissions because they already pay proportionately more for energy and the reduction scheme will increase the cost of energy, thereby burdening the poor with a disproportionate share of the cost increase.[180] The poor pay proportionately more for energy because they have

[178] *Id.* at 269–70.

[179] *Id.* at 258, 269–70.

[180] *See* Robert N. Stavins, *A Meaningful U.S. Cap-and-Trade System to Address Climate Change*, 32 HARV. ENVTL. L. REV. 293, 340 (2008) (noting that two-thirds of U.S. electricity generation occurs

less income to spend, so their spending on energy is a bigger piece of their income. In 2002 and 2003, the average American family spent 6.7%, or $2,749, of its income on home fuel and utility costs out of total household spending of $40,748.[181] Poor people do not necessarily pay more for each gallon of fuel oil or kilowatt of electricity than anybody else, but they pay a larger portion of their incomes for these energy sources. A 1992–1993 comparison of families receiving public assistance to those who received no assistance found that low income families receiving public assistance such as Medicaid and Welfare spent 37.1% of their total expenditures on housing costs, including home fuel and utility costs, compared to 31.6% for families that received no assistance.[182] When the same study examined unemployment, it found families with no working members spent 43.2% of their total expenditures on housing while those with one working member spent 33.9% of their expenditures on housing.[183] Those with less money and those who are unemployed pay more for housing, including the costs to heat and light a home. Because they have less money for all their needs, they spend a bigger portion of their income on energy and fuel than people with higher incomes.

In addition to paying more for home energy, the poor will also pay more for other products.[184] The greenhouse gas reduction schemes in both Senate bills will increase costs to consumers because they impose new compliance costs and penalty fees on regulated entities. Regulated entities will have to pay the cost of reducing emissions or pay for allowances to cover the emissions in excess of the allowances they receive for free. It is likely that regulated entities will pass on the cost increase in the price of their products:

> Companies often face rising costs. Most choose to pass that along to consumers in one form or another, the most common being an increase in the retail price. Other times, they may redesign the product to lower production costs or replace more expensive ingredients with less expensive ingredients (e.g., switching from cane sugar to corn syrup). In the

under state regulatory systems that allow generators to pass on to consumers the total cost increase of an emissions cap).

[181] U.S. DEP'T OF LABOR, U.S. BUREAU OF LABOR STATISTICS, 100 YEARS OF U.S. CONSUMER SPENDING: DATA FOR THE NATION, NEW YORK CITY, AND BOSTON 58 (2006), http://www.bls.gov/opub/uscs/report991.pdf.

[182] WILLIAM D. PASSERO, U.S. BUREAU OF LABOR STATISTICS, AN EXAMINATION OF SPENDING PATTERNS OF FAMILIES RECEIVING FORMS OF PUBLIC ASSISTANCE 3 (1995), http://www.bls.gov/ore/pdf/st950140.pdf.

[183] *Id.* at 4.

[184] Stavins, *supra* note 180, at 341 (finding lower-income households spend a larger portion of their incomes on energy-intensive goods and services).

> cases of downsizing price increases, firms have chosen to maintain the sticker price of a product, but have reduced the quantity contained in that product. Thus, a tin of coffee stays $2.99, but shrinks from 14.5 ounces to 13 ounces, for an effective price increase of over 10 percent.[185]

Though not all the regulated entities sell products directly to consumers, companies at each step in the supply chain will likely pass on the new costs to those who buy their products until the accumulated cost increases reach the consumer. During the summer of 2008, companies passed through the costs of rising inflation and spiking gas prices, leaving an increased number of consumers unable to pay their utility bills because they were spending more on other items.[186] In recognition of the likelihood that regulated entities, including electricity producers, will pass on the costs of compliance, Senate Bill 2191 requires load serving entities to mitigate economic impacts on low-and middle-income electricity consumers.[187]

Public companies may be particularly prone to pass on increased costs. Under Senate Bill 2191, public companies will have to disclose to the Securities and Exchange Commission how climate change affects their business.[188] Because complying with GHG reduction represents a cost increase, public companies would rather pass the cost on to consumers than risk disclosing lower profits that would consequently lower the price of their stock. For example, a proposed tax on the five largest oil companies is being treated by financial analysts as $18 billion in lost profits over ten years.[189] Despite the companies' ability to absorb the new cost because it represents just fifty-three days of lost profits, the imposition of the tax would result in a lower stock price.[190]

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[185] E-mail interview by Manda Salls with John T. Gournville, *How to Avoid a Price Increase*, Harvard Business School, Working Knowledge (June 28, 2004), http://hbswk.hbs.edu/item/4220.html.

[186] *See* Richard Simon, *Utility Shut-offs Rise amid Downturn*, L.A. TIMES, Aug. 7, 2008, at A12; Editorial, *99 Cents Only Holds a Thin Line*, L.A. TIMES, Sept. 10, 2008, *available at* http://www.latimes.com/news/opinion/la-ed-99cents10-2008sep10,0,7940171.story.

[187] S. 2191 § 3503; *cf.* S. 3036 § 3403 (load-serving entities), § 3503 (local natural gas distributors).

[188] S. 2191 § 9002. Senate Bill 3036 has done away with this provision. However, nothing prevents analysts and shareholders from reacting to the accounting disclosures regulated entities will have to make to the EPA. *See* Whitten, *infra* note 189. Further, even without a mandatory disclosure to the SEC, public companies will still encounter the cost of valuing and documenting allowance trades. *See* Jillian Button, Note, *Carbon: Commodity or Currency? The Case for an International Carbon Market Based on the Currency Model*, 32 HARV. ENVTL. L. REV. 571, 578–79 (2008) (discussing draft accounting standards for carbon credits).

[189] Daniel Whitten, *Big Oil's Record Profit Inspires Democrats to Seek $1.8 Billion*, BLOOMBERG NEWS, Mar. 10, 2008, http://www.bloomberg.com/apps/news?pid=newsarchive&sid=aqHFYuFc4Te8 (last visited March 21, 2008).

[190] *Id.*

Both Senate bills also impose new accounting requirements. Senate Bill 1766 gives authority for new accounting regulations but does not specify what those regulations should be.[191] Senate Bill 2191 requires quarterly and annual reports to ensure that regulated entities comply with the GHG reduction scheme.[192] Though these reports will be submitted electronically,[193] regulated entities will likely face new costs comparable to the significant costs of financial audits and the costs of filing quarterly and annual financial statements with the Securities and Exchange Commission.

Finally, both Senate bills impose penalties on any regulated entity that lacks allowances equal to its emissions. The penalty price is triple the value of allowances owed (or under Senate Bill 2191 the number of allowances owed is multiplied by $200 if that price is larger than the tripled value).[194] Both bills also impose a fine of up to $25,000 per day.[195] In addition to these penalties, Senate Bill 1766 imposes criminal liability for willful noncompliance.[196] Emitters are very likely to face these penalties. In 2006, power generating stations in the UK emitted 49.5 million tons of CO_2 in excess of their allowances.[197] Because regulated entities are likely to pass on new costs, consumers will likely bear the penalty costs in addition to the costs of compliance.

Consumers will likely bear increased costs due to GHG reduction because companies, and particularly public companies, are likely to pass on the cost of compliance with the GHG reduction scheme. The poor will pay proportionately more for all products with higher prices, just as they do for home energy, because they have less money to spend. Though there may be limits on price increases because the Senate bills use banking, borrowing and the TAP price ceiling to reduce compliance costs, the cost to the poor will be significant enough that both bills include redistribution programs.

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191 S. 1766 § 103(b)(2).

192 S. 2191 § 1103.

193 *Id.* § 1105(b)(4)(A).

194 *Id.* § 1203(a)(2)(B); S. 1766 § 602(a)(1).

195 S. 2191 § 1106(b); S. 1766 § 602(b)(1).

196 S. 1766 § 602(c).

197 U.K. DEP'T FOR ENV'T, FOOD, & RURAL AFFAIRS, EU EMISSIONS TRADING SCHEME: UK RESULTS 2006 REPORT 1 (Feb. 2008), *available at* http://www.defra.gov.uk/environment/climatechange/trading/eu/pdf/euets-ukresults-2006.pdf.

B. THE REDISTRIBUTION PROGRAMS EFFECTIVELY DISTRIBUTE REVENUE AND DO NOT UNDERMINE REDUCTION.

1. Revenue Distribution

The redistribution programs provided for by Senate Bill 1766 and Senate Bill 2191 effectively offset the disproportionate cost increase paid by the poor because they take in and pay out adequate amounts of funds and guarantee that those funds are spent appropriately to address specific problems created by GHG reduction, like increases in home energy costs and the displacement of workers.

The redistribution programs under Senate Bill 1766 and Senate Bill 2191 are effective because the reduction programs provide reliable sources of revenue. In contrast to lotteries, which have an inconsistent stream of revenue based on voluntary participation, participation in the GHG reduction programs is mandatory. It is also very likely that regulated entities will need the allowances (the source of funding for these programs) allocated to states and auctions to avoid penalties. Having a consistent source of revenue allows the redistribution programs to provide services on a consistent basis.

Even though participation in the reduction schemes is mandatory, the redistribution programs benefit because the reduction schemes are not called taxes. Just as lotteries have been enacted because of strong opposition to taxes, the reduction schemes must also overcome consistent opposition to environmental taxes.[198] Because the reduction program is not a tax, and can instead be presented to the public as a market system, it is more likely to be implemented.

The redistribution programs will also pay out adequate amounts to the services they fund because of the high demand for allowances. In contrast to state lotteries, auctions and other sales of allowances will not need to be constantly promoted because entities will likely have more emissions than allowances. Also in contrast to lotteries, the only costs will be the costs of administering distribution because there are no prizes to pay out and these costs are limited. For example, Senate Bill 2191 limits the funds that can

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[198] *See* Robert R. Nordhaus & Kyle W. Danish, *Assessing the Options for a Mandatory U.S. Greenhouse Reduction Program*, 32 B.C. ENVTL. AFF. L. REV. 97, 119 (2005) ("[I]t is difficult to gain public support for a program that relies principally on direct increases in the price of energy—either through taxes or regulatory measures—even where such a program arguably is more cost-effective or will result in a more equitable distribution of regulatory burdens than other approaches.").

be used to train state workers to implement new building codes to $500,000.[199]

The redistribution programs also ensure that the funds they pay address the needs of the poor who are burdened by the cost of GHG reduction because they earmark funds for specific uses and also require certification of how the funds are spent. Just as some state lotteries earmark funds for specific services and targeted Medicare payments to providers in low-income neighborhoods make those services more effective, the energy assistance programs use existing statutory schemes that require states to certify they spend all the money they receive on energy assistance.

2. Revenue Recycling

Though the Senate bills' redistribution programs effectively distribute revenue when compared to state lotteries and Medicare, they face an additional risk not encountered by those systems: providing financial assistance to consumers could undermine GHG reduction. Redistribution programs pose a risk to GHG reduction because people with more money to spend will likely consume more and those who consume more contribute to more pollution. Economists have reported a systematic relationship between income changes and changes in environmental quality called the Environmental Kuznets Curve.[200] As per capita income increases, pollution increases, peaks, then decreases, forming an inverted U.[201] People with the lowest per capita incomes, who live on a subsistence basis, pollute less because they do not consume products that demand a lot of energy or industrial processes.[202] People in developing economies pollute more because they use fossil fuels to light and heat their homes, power transportation, manufacture goods, and provide services.[203] Once people reach a higher

[199] S. 2191 § 5201 (proposing amendment to § 304(f)(4) of the Energy Conservation and Production Act, 42 U.S.C. 6833 (2006)); *cf.* S. 3036 § 4604(b)(2)(B)(i) (limiting allocations to worker training programs receiving grants from the Worker Training Fund to programs that have demonstrated experience, rather than limiting the amount allocated).

[200] BRUCE YANDLE ET AL., PROPERTY AND ENV'T RESEARCH CTR., THE ENVIRONMENTAL KUZNETS CURVE: A PRIMER (2002), http://www.perc.org/articles/article688.php; *see also* Stavins, *supra* note 180, at 341.

[201] YANDLE , *supra* note 200.

[202] *See* Jeffrey D. Sachs, Keynote Address at the Fordham Environmental Law Review Symposium: Reducing Greenhouse Gases: State Initiatives and Market-Based Solutions, *in* 17 FORDHAM ENVTL. L. REV. 159, 164 (2006); s*ee also* Maxine Burkett, *Just Solutions to Climate Change: A Climate Justice Proposal for a Domestic Clean Development Mechanism*, 56 BUFF. L. REV. 169, 197–198 (2008) (stating that "same distributional principles that apply between nations should apply within nations" (citation omitted)).

[203] *See* Sachs, *supra* note 202, at 165–66.

income level, their emissions may level off due to the innovations in technology and efficiency that make their economies more successful.[204] They can also afford to make a choice to reduce their emissions.[205] In the case of the Senate bills, worker training programs and energy assistance may make consumers better off, allowing them to enter new jobs and freeing up more of their income to spend on goods and services other than home energy. These redistribution programs could risk an increase in GHG emissions due to increased personal energy use and increased demand for goods and services.

The redistribution programs do not undermine GHG reduction because they do not give consumers additional income, but restore the income consumers had before they had to pay the price of GHG reduction by training displaced workers in new fields and limiting cost increases in home energy. Consumption by those receiving assistance will not increase, but will remain the same and may even decrease because the energy assistance programs include grants to insulate homes and install more efficient appliances which use less energy. The new building codes required by Senate Bill 2191 will also impose efficiency standards on communities using adaptation funds to rebuild or relocate, making new and rebuilt infrastructure more energy efficient.

The redistribution programs in both bills are accompanied by technology deployment programs. Technology deployment "recycles" the revenue spent to buy allowances and forces regulated entities to spend it on new forms of emissions reduction. This is because the projects that develop clean coal, ethanol, efficient appliances, low-or zero-emission energy production projects, and efficient motor vehicles are in the energy and industrial sectors regulated by the reduction scheme. These entities not only have the ability to develop new technologies, but also have an incentive to do so, because they are able to recover some of the costs of buying allowances when they receive technology deployment incentives.[206] Just as Medicare influences the market for healthcare services because it guarantees a source of patients and income to healthcare providers, the recycling programs will likely influence the development of new technology. Thus,

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[204] Massimiliano Mazzanti & Roberto Zoboli, *Environmental Efficiency, Emission Trends and Labour Productivity: Trade-Off or Joint Dynamics? Empirical Evidence Using NAMEA Panel Data* 4–5 (Fondazione Eni Enrico MatteiWorking Papers, Paper No.38, 2007), *available at* http://www.bepress.com/cgi/viewcontent.cgi?article=1096&context=feem.

[205] *Id.*

[206] Senate Bill 3036 further incentivizes entities to reduce emissions. *Compare* S. 3036 §2403, *with* S. 2191 § 2403(c)–(d) (omitting requirements that carbon offsets be paid for with private investment and awarded proportionally to the amount of private investment used).

the revenue recycling programs will prevent increased GHG emissions because projects that receive new income in the form of technology deployment funds will have to use the funds to develop technologies that reduce overall emissions.

The redistribution programs established by the Senate bills effectively counter the proportionately higher cost imposed on the poor by the GHG reduction programs. Sales of allowances provide a reliable source of revenue, limit administrative costs, and will generate large amounts of proceeds. Energy assistance and worker training programs address the needs of the poor who pay into the system, earmarking funds ensures the programs are effective, and revenue recycling ensures that redistribution does not undermine GHG reduction.

V. ACTUAL HIGHER COSTS TO THE POOR REQUIRE MORE REDISTRIBUTION

Though the redistribution programs offset the proportional cost increases the poor face, GHG reduction may actually cost the poor more than the rich. Just as Medicare provides benefits to those who would otherwise lack health insurance, but may not address the healthcare needs of the poor; energy assistance, payments to displaced workers, and vague adaptation clauses may not address localized environmental and health problems that overlap with the emissions of GHGs, the generation gap, and price increases in goods and services that may make the poor pay a higher cost to reduce GHGs.

The redistribution programs may not provide enough services to alleviate the burden that GHG reduction programs impose on the poor because they do not account for localized environmental and health concerns that stem from sites of GHG emissions. Just as the incidence of Medicare changes when different indicators are used as a proxy for income, the incidence of GHG reduction changes when local health and environmental problems that overlap with GHG emissions are taken into account. Because GHGs are assumed to mix uniformly in the atmosphere, reduction programs that enable individual emitters to buy allowances instead of reducing emissions are successful as long as the total number of emissions is reduced. When sources of GHG emissions also emit pollutants that cause local problems, the communities near the sources of emissions pay an extra cost.[207] In addition, there is growing concern that these communities are at

[207] Editorial, *California's Cap-and-Trade Won't Work*, L.A. TIMES, Mar. 10, 2008, at A16 (calling carbon credits "permits to pollute"); Angelo Logan, Op-Ed, *Railroad's "Green" Claim Is Way Off*

risk for a higher incidence of climate change related illness and death, which will also result in higher healthcare costs.[208] As long as a reduction program enables emitters to buy allowances instead of actually reducing emissions, it would require a redistribution program that secured benefits to local communities suffering from the effects of the localized pollution. Though both Senate bills provide that states can use the proceeds from the allowances they receive to mitigate local impacts of climate change and GHG reduction, they do not specify that states can use these funds to mitigate the effects of localized pollution from sources of GHG emissions.[209]

The redistribution programs may also not address the full cost of GHG reduction paid by the poor because they do not take into account the generation gap created by GHG reduction. In the case of Medicare, payments from younger generations to older generations contribute to transfers from the poor to the rich. In the case of GHG reduction, older (current) generations pay for the benefit received by younger (future) generations. This could cause an extra burden on the poor. If so, a redistribution program would need to provide more services to the poor to counter the extra cost.[210] Since it is unclear why intergenerational transfers make Medicare regressive, and why intergenerational transfers might make GHG reduction regressive, it is unclear what services the poor should receive to balance this cost, but some type of program would be needed to offset the extra cost.

The redistribution programs may not address the full cost of GHG reduction paid by the poor because they do not address the likely price increases in goods and services other than home energy. Since all companies

Track, L.A. TIMES, Mar. 10, 2008, at A17 (noting that diesel emissions contain soot in addition to GHGs and contribute to cancer). The Environmental Justice movement examines in depth the correlation between environmental hazards, low-income communities, and communities of color, including risks related to climate change. *See, e.g.*, Burkett, *supra* note 202, at 189–92.

[208] U.S. CLIMATE CHANGE SCIENCE PROGRAM & SUBCOMM. ON GLOBAL CHANGE RESEARCH, ANALYSES OF THE EFFECTS OF GLOBAL CHANGE ON HUMAN HEALTH AND WELFARE AND HUMAN SYSTEMS: FINAL REPORT, SYNTHESIS AND ASSESSMENT PRODUCT 4.6 ES-6–ES-7 (Janet Gamble ed., 2008), *available at* http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=197244 (identifying as risks exacerbated heat related illness and death, cardiovascular and pulmonary disease, natural disasters, food- and water-borne pathogens, and discrepancies in healthcare).

[209] Though adaptation allocations in Senate Bill 3036 are less vague than in Senate Bill 2191, it is unclear whether they can be used to clean up localized, toxic sites. *Compare, e.g.*, S. 2191 § 4702, *with* S. 3036 § 4702 (focusing on wildlife). It is more likely Senate Bill 3036 will allocate funds to states (§§ 3303–3304) or technology deployment grants to modify facilities (§§ 4402(a)(2), (b)(3), 4405) for the adaptation of infrastructure.

[210] The generation gap also raises issues of fairness, who should pay, and how much. Eric A. Posner & Cass R. Sunstein, *Climate Change Justice*, 4–5, 15–17, (University of Chicago Law Sch. John M. Olin Law & Economics Working Paper Series, Working Paper No. 354, August 2007), *available at* http://www.law.uchicago.edu/files/354.pdf.

affected by GHG reduction will likely try and pass on the cost by increasing their prices, poor people will have to pay more for all goods and services, not just for increased home energy costs. An adequate redistribution program would have to address these other increased costs in addition to the increase in home energy costs.

So, when Senator Boxer argues that a bill that reduces GHG emissions can grow the economy, is she right?[211] When compared with state lotteries and Medicare, the Senate bills discussed here provide mostly effective redistribution programs to offset the foreseeable costs to the poor of reducing GHG emissions. However, risks such as rising healthcare costs and the generation gap demonstrate that broader redistribution programs may be needed if it is determined that GHG emissions reduction imposes additional costs on the poor.

[211] As for Senator. Inhofe's comment, Senate Bill 3036 is likely to have more impact than its predecessors because it is bigger in size. *See supra* notes 34, 57. However, as this analysis demonstrates, it is difficult to tell whether the net effects will be positive or negative.