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L ECONOMY OF CONGRESSIONAL SUPPORT FOR LEGISLATION INTENDED TO MITIGATE GREENHOUSE GAS

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ABSTRACT

Stringent regulation for mitigating greenhouse gas emissions will impose different costs across geographical regions. Low-carbon, environmentalist states, such as California, would bear less of the incidence of such regulation than high-carbon Midwestern states. Such anticipated costs are likely to influence Congressional voting patterns. This paper uses several geographical data sets to document that conservative, poor areas have higher per-capita carbon emissions than liberal, richer areas. Representatives from such areas are shown to have much lower probabilities of voting in favor of anti-carbon legislation. In the 111th Congress, the Energy and Commerce Committee consists of members who represent high carbon districts. These geographical facts suggest that the Obama Administration and the Waxman Committee will face distributional challenges in building a majority voting coalition in favor of internalizing the carbon externality.

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Introduction

Faced with ongoing world population growth and per-capita income growth, the world's greenhouse gas (GHG) emissions could double over the next 50 years.[1] Scientists are calling for a sharp reduction in greenhouse gas emissions. "Very roughly, stabilization at 500 ppm requires that emissions be held on average near the present level of seven billion tons of carbon per year over the next 50 years, even though they are currently on course to more than double."[2] Since carbon dioxide will increase for at least the next decade or longer, this means that future emissions, e.g. by 2030 and thereafter, will have to be below current levels.

The Obama Administration has announced its intention to pursue more stringent climate change mitigation legislation than President George W. Bush's Administration. The current Administration has explicitly stated that GHGs represent a threat to public health.[3] To significantly reduce GHG emissions will require more forceful steps than past actions such as raising the CAFE standards for new vehicles, encouraging electric utilities to produce more power using renewable sources, or encouraging the use of low carbon fuels. Direct control policies often have unintended consequences (Holland, Hughes and Knittel 2009). To avoid these, economists have advocated transparent anti-carbon incentives such as a carbon tax or a comprehensive carbon dioxide cap and trade system. In fact, both market-based (carbon pricing) solutions and non-price policies may be required to achieve the enormous changes implied by the carbon stabilization goal. Since GHG mitigation is a global public good, a severe free rider problem arises (Sunstein 2007) if these policies are not very widely or homogeneously

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[1] "Stabilization Wedges: Mitigation Tools for the Next Half-Century." Keynote Speech on Technological Options at the Scientific Symposium on Stabilisation of Greenhouse Gases "Avoiding Dangerous Climate Change" Met Office, Exeter, London. 1 Feb. 2005.

[2] Pacala, S. and Robert Socolow, "Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies." *Science* Vol. 305, No. 5686, 2004. p. 968-972.

[3] Tankersley, Jim. "Obama administration declares greenhouse gases a threat to public health." *Los Angeles Times* 17 Apr. 09.

adopted. In mid-2009 the direction of carbon regulation is unclear and as this paper shows, will certainly be constrained by the political reality that the incidence of regulatory costs arising from carbon regulation is highly skewed.

In this paper, we examine the geography of carbon emissions across the United States and argue that several basic facts are relevant for understanding who will bear the incidence of carbon regulation. Certain 'high-cost' geographical areas are likely to be hotbeds of political opposition to climate change regulation. As defined by the basic theory of pressure groups, groups that face both high potential costs of regulation and low transaction costs of organizing will lobby their congressional representatives to block or mitigate such regulation even if this regulation is globally efficiency-enhancing. Recent research on carbon regulation has focused on which income groups will bear the costs of the regulation.[4] This research uses computable general equilibrium models to prospectively examine how alternative climate policies will affect heterogeneous consumers' welfare.

We also pursue a complementary approach by examining the geographical distribution of carbon emissions. Using a county-level dataset based on 2002 carbon emissions (the Purdue University Vulcan data set), we study the variation in carbon emissions across the United States. The variation is extreme: across the 1,559 counties with at least 25,000 residents in 2002, the average carbon emissions per-capita is 7.66 tons, the median is 3.28 tons, and the standard deviation is 16.9 tons.[5] With such geographical variation, any meaningful carbon policy will impose high costs on some and have a smaller impact on others. Therefore, political

[4] Burtraw, Dallas, Sweeney, Richard and Walls, Margaret, "The Incidence of U.S. Climate Policy: Where You Stand Depends on Where You Sit," Resources for the Future Discussion Paper No. 08-28, 2008. Available at SSRN: http://ssrn.com/abstract=1272667

[5] A ton of carbon dioxide equals 0.367 of a ton of carbon; conversely a ton of carbon is 2.73 tons of carbon dioxide. Thus, the average emissions of 7.66 tons of carbon is equivalent to 20.87 tons of carbon dioxide.

compromises to build a coalition in support of climate legislation will likely reduce the economic efficiency of whatever legislation emerges.

To further explore the second-best constraints, we analyze the geographical distribution of carbon emissions relative to the political leanings and demographic characteristics of the voters in each area. We document that counties with high carbon emissions per-capita are more likely to be poorer and represented by a conservative (based on voting records). Assuming that counties with high carbon emissions will have the most trouble in substituting away from carbon, these areas will more heavily bear the cost of carbon regulation. Conservative, poor, rural areas will face a higher carbon bill under a cap and trade system than liberal, rich, urban areas. This compounds the regressivity of any energy tax or cost increase, making it a political necessity that some offset be designed.

Based on data from the League of Conservation Voters (www.lcv.org), Democrats in congress are much more likely to vote "pro-environment" on key pieces of legislation than are Republicans. However, a lack of unity in the Democratic Party due to the geographical realities of carbon emissions will affect the types of legislation that emerge from congressional house committees. Based on the 110th Congress, fifteen Democrats in the House represented districts with per-capita carbon emissions above the nation's median, and had personal ideology scores (based on voting data) above the median representative's "conservativeness". Such "swing" voters could determine what types of legislation pass in this new congress.

We explore voting behavior from 2007 on anti-carbon legislation to demonstrate that the constraints defined in this paper are economically significant. We show that representatives in high carbon districts are more likely to vote against regulation, a behavior captured in the self-interest hypothesis of Stigler (1971) and Peltzman (1975). Liberal representatives, whose constituents have high per-capita incomes and whose district features low per-capita carbon emissions, are the most likely to vote in favor of anti-carbon legislation.

We anticipate that our analysis will motivate economists to consider the theory of the second-best in helping design policies to tackle carbon emissions.[6] Much debate exists on the relative merits of a carbon tax or cap and trade regulation and the best method to inject revenues derived from pricing carbon back into the economy.[7] However, economists must also take into account the constraints imposed by the existing carbon emitting infrastructure. This includes not only existing electricity generation facilities (which produce about one-third of carbon emissions) but also the transportation and industrial and urban/suburban infrastructures (which account for the majority of non-generation facility emissions).

Geographical Carbon Data

We use the 2002 Vulcan carbon emissions data set.[8] Carbon is measured in tons per-capita (not carbon dioxide). The data are based on production, not consumption.[9] We begin our empirical work by presenting a series of maps (see Figures One through Six) to highlight the

[6] R.G. Lipsey & Kelvin Lancaster (1957), The General Theory of Second Best, The Review of Economic Studies, Vol. 24, No. 1., pp. 11-32.

[7] See Joseph Aldy and William Pizer "Issues in Designing U.S. Climate Change Policy," Resources for the Future, 2008. Terry Dinan "Trade-offs in Allocation Allowances for CO2 Emissions," Congressional Budget Office, 2007. Robert Stavins "A U.S. Cap-and-Trade System to Address Global Climate Change," Brookings Institution, 2007. Metcalf et. al. (2007) "Analysis of U.S. Greenhouse Gas Tax Proposals," NBER, 2008.Gilbert Metcalf, "A Proposal for a U.S. Carbon Tax Swap," The Hamilton Project, Brookings Institutions, 2007.

[8] The data and a technical description of how the data set was created can be accessed at http://www.purdue.edu/eas/carbon/vulcan/research.php. See Gurnery et. al. 2005.

[9] An alternative approach for studying the geography of carbon dioxide emissions is presented in Glaeser and Kahn (2008). They estimate residential household production of carbon dioxide for a standardized household as a function of how much gasoline, electricity and the resulting greenhouse gas emissions from producing this power and home heating a household would consume in each of 63 major cities.

geography of per-capita carbon production. The first map displays the total per-capita geography. The coastal states, such as California, Oregon, and Washington stand out as low-carbon areas largely due to their proximity to large Northwest hydroelectric facilities and natural gas. In contrast, the Midwest and South have higher than average per-capita emissions largely due to their coal intensive electric generation. In the next set of maps, we disaggregate the total carbon emissions into five major sectors; electric utilities, commercial, mobile, residential, and industrial. Commercial sector per-capita emissions are high in the Northeast and low in the South, in stark contrast to the geographic distribution of total per-capita emissions (see Figure Two). Industrial sector emissions are concentrated around Texas (see Figure Three), whereas the highest emissions in the mobile sector occur around Tennessee (see Figure Four). Residential emissions are focused in Northeast (see Figure Five), and low in much of the Southeast, whereas utility-sector emissions are focused in the Rocky Mountain area and the Midwest (see Figure Six). Clearly, the level and geographical distribution of the most important emissions sources varies greatly by region. This suggests that piecemeal legislation dealing source-by-source could yield economically less efficient results than comprehensive legislation, since distributional issues can be aggregated and dealt with comprehensively. On the other hand, reaching national agreement becomes more difficult given this heterogeneity, so regional solutions (like RGGI in the Northeast) becomes more likely.

To establish some facts about the geographic distribution of electric utility generated GHG production, we use electric utility level data from the EPA's 2006 EGRID database, which contains data on more than 4,700 power plants from calendar year 2004.

> "eGRID, or Emissions & Generation Resource Integrated Database, contains emissions and resource mix data for virtually every power plant and company that generates electricity in the United States. Emissions data from EPA are

carefully integrated with generation data from EIA to produce useful values like pounds per megawatt-hour (lbs/MWh) of emissions, which allows direct comparison of the environmental attributes of electricity generation."[10]

We use eGRID's carbon emissions factor, measured in pounds of carbon dioxide per megawatt/hour, for each plant. Given vast outliers in the data, we assign all plants to the 1st percentile of the empirical distribution if the plant's emissions factor is less than the 1st percentile and we assign all plants to the 99th percentile of the emissions factor distribution if a plant's emissions factor exceeds the 99th percentile. For each state, we calculate its average carbon dioxide emissions factor by constructing a weighted mean using the plant's power generation as the weight. We also calculate the breakdown of power production by fuel type for each state. At the national level, the average commercial power plant emits 1,358 pounds of carbon dioxide per megawatt hour. In 2004, 48 percent of electricity was generated by coal-fired power plants. As shown in Table One, this average masks huge statistical variation. For example, California's average emissions factor is 697 pounds per megawatt hour while Indiana's is 2,091 pounds per megawatt hour. In the Midwest, a significant share of electricity is generated by coal power. For example, in Ohio and Missouri, coal's share is over 86 percent.

Consider one coal fired power plant in Missouri:

> "The cars arrive at places like Meramec, a 56-year-old, 850-megawatt power plant in south St. Louis County. The cost of building the sprawling plant has long since been paid off by its owner, AmerenUE, an investor-owned utility. Because Meramec generates electricity from cheap fuel, it produces cheap power. And because Meramec's operational costs are low and most equipment-replacement costs have been recouped, AmerenUE often underbids competitors in selling excess electricity out of state. These profits give Missouri consumers an extra discount. From 1987 to 2007, AmerenUE and its predecessor, Union Electric, did not raise electric rates, while power production rose about 65 percent."[11]

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[10] http://www.epa.gov/cleanenergy/egrid/index.htm

[11] Barringer, Felicity. "In Areas Fueled by Coal, Climate Bill Sends Chill." New York Times 09 Apr. 09.

Our point is that certain parts of the country are (or should be) well aware that they have benefited from cheap coal-based power. Residents of such areas, and shareholders of such companies, have a strong financial incentive to oppose legislation (or lobby for free permits) that will raise the price of consuming power generated from coal.[12] A carbon permit price of $50 per ton of carbon dioxide is predicted to raise the price of gasoline by 26 percent (assuming a price level around $2.50 per gallon without the carbon price) and the price of residential natural gas by 25 percent and the price of utility coal by 384 percent (see Stavins 2008, Table 3). A carbon dioxide price of around $50 is about what is needed for low/no carbon generation to become viable, *e.g.* nuclear power plants or coal IGCCs with carbon capture and sequestration (CCS). A $50 price is forecasted to occur by 2030 under the Lieberman-Warner Climate Security Act proposed in 2007.

County Carbon Regressions

We now present some cross-county correlates of 2002 per-capita carbon emissions. In our first set of regressions, we seek to parsimoniously describe what correlates with counties having high carbon emissions. We use county level weighted regressions with per-capita carbon emissions as the dependent variable and measures of political ideology and household income as

[12] We recognize that shareholders of companies that rely on coal will bear part of the incidence of higher fossil fuel prices bought about by carbon legislation. Given worldwide financial markets, there is no obvious connection between one's location and one's financial stake in different companies. In this paper, our focus is on the geography of the costs of carbon. We are implicitly assuming that the ownership of carbon intensive companies is uniformly distributed. If residents of low-carbon producing areas, such as California, owned large percentages of carbon intensive companies (such as by owning shares in St. Louis coal companies), then we might observe California's representatives voting against carbon legislation. As we will show, we do not find evidence of this.

the independent variables.[13] County income data is derived from the 2000 Census of Population and Housing.

Congressional representative political ideology is measured with Voteview which is a broadly used dataset from political science literature. Keith Poole's Voteview data provides us with the roster of the House of Representatives in each congress. Our measure of representative ideology is the first factor from "dwnominate".[14] Poole and Rosenthal estimate this factor from a principal-components factor analysis of all congressional roll call votes (not simply environmental votes).[15] A more positive score indicates voting a conservative ideology. In the political science literature, this is the most commonly used measure of legislator preference (see Heckman and Snyder 1997).[16]

Table Two reports the cross-sectional county regression results based on equation (1).

$$Carbon = \beta_1 + \beta_2 * log(Income) + \beta_3 * Ideology + U \qquad (1)$$

As shown in columns (1) and (2), conservative ideology is positively correlated with county carbon emissions, and per-capita income is negatively correlated with carbon emissions. Each of these results is statistically significant. In column (3), when both are included in the regression, the ideology measure is no longer significant but income remains statistically

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[13] We weight the regressions by county population in the year 2002.

[14] Poole, Keith T. and Howard Poole, "Congress. A Political-Economic History of Roll Call Voting," Oxford University Press, 1997. (see http://voteview.com/dwnomin.htm)

[15] In the first session of the 110th Congress, the representatives voted on 1,186 separate pieces of legislation (see http://voteview.com/house110.htm).

[16] Densely populated counties such as Los Angeles county have several representatives so we average their respective ideology scores to calculate the county's ideology score. In rural areas, several counties share one representative whose ideology is assigned to each of the counties.

significant. In column (4), we re-estimate equation (1) but now use the log of county per-capita carbon emissions as the dependent variable. We find a statistically significant income elasticity of -0.6. The conservative ideology effect is positive and statistically significant. A one standard deviation increase in a county's representative's conservative ideology is associated with a five percent increase in county carbon emissions.

Table Three disaggregates total county emissions by sector. In each regression, the dependent variable is the county's per-capita level of emissions from a specific sector. Richer urban counties have statistically significantly lower industrial, utility and transport emissions. Incomes are higher in cities and in such relatively dense areas, people use public transit more and this conserves on greenhouse gas production (Glaeser and Kahn 2008). The evidence demonstrates that conservative, poor districts emit more carbon than liberal, rich districts on a per-capita basis. We find no evidence of statistically significant interaction terms. Looking across the sectors, we see that transportation emissions are higher in more conservative areas. Again, this may reflect the low use of public transit in such counties.

Major liberal cities such as Portland, San Francisco, and Boston are not hotbeds of manufacturing activity or coal-fired electric power generation. This is no accident. These cities self-select (via Tiebout sorting) an educated population of amenity-seeking residents who vote in favor of regulations to promote "greenness". Of course, geography also plays a big role in this carbon intensity as well. The Northeast is remote from coal fields and the Northwest is well endowed with hydro resources. In 2009, these areas feature relatively low average carbon factors in part due to regulation's direct effects (such as California's energy efficiency standards), greater access to adaptation strategies such as a built up public transit network, and in part due to regulation pushing energy-intensive manufacturing away. This suggests that liberal cities will face a lower total carbon bill for complying with new climate legislation. Such areas have already taken steps to "decarbonize," and are naturally lower in carbon by geographic advantage.

The Political Economy of Congressional Support for Carbon Mitigation

We adopt a simple cost/benefit framework to analyze support for carbon mitigation legislation. The political economy literature indicates that economic self interest, constituent preferences and representative ideology influence voting patterns (Peltzman 1984, Pashigian 1985, Levitt 1996). On the benefits side, we assume that liberal representatives gain greater benefits from voting against climate change legislation. They may personally favor such regulation and will recognize that their constituents will also support such legislation.

On the cost side, we focus on differences in per-capita carbon emissions across counties and congressional districts. If a geographical area features higher per-capita carbon production, then we assume that this area would face a higher cost from enacting carbon legislation. We appreciate that economic incidence issues arise. These are beyond the scope of this paper. Consumers of carbon intensive goods and owners of assets whose value is derived from fossil fuels (*i.e.* shareholders of coal power plants) will bear part of the incidence of carbon regulation.[17] Tracking the geography of such final consumers and asset owners is very

[17] Carbon pricing in the energy sector in many locations can have a first-order effect in determining how legislation is enacted. Our data measures carbon emissions at the source of release but the incidence will be determined by substitution opportunities at the point of consumption. For instance, being a dirty plant when most plants in the relevant supply curve are dirty will mean that carbon costs will be directly passed to consumers because the whole supply curve shifts. In contrast, being a dirty plant when there are ample substitution opportunities means that plant's relevant position in the supply curve will change and the plant workers and owners will bear the costs of carbon pricing.

difficult.[18] Our per-capita state carbon emissions measure is highly correlated with state endowments of coal. Based on 2007 data, the top five producers of coal measured in thousands of short tons are: Wyoming (454), West Virginia (153), Kentucky (115), Pennsylvania (65) and Montana (43). These five states account for 72 percent of total U.S coal production.[19] Each of these states features much higher per-capita carbon emissions than the national average of 5.35 tons. Per-capita carbon emissions in these states in 2002 stand at: 34.8 in Wyoming, 16.82 in West Virginia, 9.36 in Kentucky, 5.47 in Pennsylvania, and 9.25 tons in Montana. These facts suggest that areas endowed with coal and fossil fuels use these resources in their own production activities. Thus, our carbon measure in part reflects endowment effects.

We also examine whether combating climate change is a normal good by testing whether richer areas are more likely to support climate legislation. This simple model predicts that geographical areas featuring conservative leaders of poor, rural areas that are carbon intensive are the least likely to support climate change mitigation regulation.

To test for the role of per-capita income, per-capita carbon and overall ideology in explaining carbon mitigation voting patterns, we use recent voting data from the 110th Congress. In the 110th Congress, representatives voted on various bills that had direct implications for mitigating climate change. We rely on the 2007 League of Conservation Voter ("LCV") Scorecard to help us identify key carbon legislation.

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[18] If asset holders in low carbon states, such as California, consistently hold a "carbon-heavy" stock portfolio, then this would represent an omitted variable in our congressional regressions we report below. In this case, we might observe California's representatives voting against carbon mitigation legislation.

[19] http://www.eia.doe.gov/cneaf/coal/page/acr/table6.html

The first bill we look at is House Roll Call 555. In 2007, the League of Conservation Voters included this as a key vote in their scorecard.

> "Conservationists have long asserted that the pollution reductions necessary to curb global warming will require more than voluntary initiatives. For instance, H.R. 2643, the Interior-Environment appropriations bill, included a nonbinding Sense of the Congress resolution, sponsored by Representative Norm Dicks (D-WA), that endorses mandatory limits on global warming pollution. Representative Joe Barton (R-TX) offered a motion to strike the resolution from the bill. On June 26, 2007, the House rejected the motion by a 153-274 vote (House roll call vote 555). NO is the pro-environment vote. This marked the first time that the House had gone on record endorsing mandatory global warming pollution limits."[20]

We recode this variable to equal zero if a representative voted "yes" and to equal one if a representative voted "NO". Intuitively, a "one" will equal a pro-environment vote. The second bill that we look at is House Roll Call 827. This bill is also singled out by the League of Conservation Voters in its 2007 Scorecard.

> "To be effective, an energy bill must reduce our dependence on fossil fuels, protect the environment, and take meaningful steps to solve global warming while creating jobs and saving money. H.R. 3221 met these criteria. It set new efficiency standards for appliances, lightings and buildings. It also took important steps toward restoring sound stewardship of public lands and helping America's fish and wildlife, public lands, coasts, and oceans adapt to global warming. During consideration of H.R. 3221, a comprehensive energy bill, Representatives Tom Udall (D-NM), Todd Platts (R-PA) and Ciro Rodriguez (D-TX) introduced an amendment requiring utilities to produce at least 15 percent of their electricity from renewable energy sources by 2020. This amendment would save consumers $16.4 billion on energy bills through 2030 and create tens of thousands of new jobs. At the same time, it would slash global warming pollution by 180 million metric tons per year by 2030—equivalent to taking more than 29 million cars off the road. On August 4, 2007, the House approved the amendment by a 220-190 vote (House roll call vote 827). YES is the pro-environment vote."[21]

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[20] http://lcv.org/scorecard/2007.pdf

[21] GovTrack.us. H.R. 2776--110th Congress (2007): Renewable Energy and Energy Conservation Tax Act of 2007, GovTrack.us (database of federal legislation) <http://www.govtrack.us/congress/bill.xpd?bill=h110-2776&tab=summary> (accessed Apr 29, 2009).

The final bill that we study is Roll Call 835, this was voted on in August 4th, 2007 (HR 2776). It is the vote on the Renewable Energy and Energy Conservation Tax Act of 2007. It amends the Internal Revenue Code provisions relating to renewable energy sources and energy conservation."[22]

Figure Seven presents a map of Congressional support for anti-carbon legislation. For each state, we calculate the share of votes cast in favor of these three bills. For large states such as California, this ratio is more meaningful than for sparsely populated states such as North Dakota. The map shows the coastal divide. The coastal pacific and the East Coast feature much higher anti-carbon voting shares than the Midwest.

We examine whether representative's voting on each of these roll calls is a function of the District's per-capita carbon, per-capita income and the representative's ideology.

Prob(Vote in Favor of Carbon Mitigation) = F(Income, Carbon Endowment, Ideology) (2)

Columns (1-3) of Table Four reports estimates based on stata's dprobit command. The dependent variable equals one if the representative voted the pro-environment position. The explanatory variables include; the representative's overall ideology, per capita carbon emissions, and per capita income as the independent variables. The results in each of the regressions are statistically significant and accord with our basic hypothesis: conservative representatives from poor, carbon intensive districts are the least likely to vote in favor of environmentally "friendly" energy legislation in the 110th Congress. Consider the regression results for Bill 827. A

[22] GovTrack.us. H.R. 2776--110th Congress (2007): Renewable Energy and Energy Conservation Tax Act of 2007, GovTrack.us (database of federal legislation) <http://www.govtrack.us/congress/bill.xpd?bill=h110-2776&tab=summary> (accessed Apr 29, 2009).

doubling of a congressional district's carbon emissions per-capita lowers the probability that a representative votes in favor of this bill by 17 percentage points.[23] Doubling this district's per-capita income increases the probability that a representative votes in favor this bill by 62 percentage points. Increasing the ideology measure by one standard deviation (more conservative) reduces the probability that a representative votes in favor by 59 percentage points.[24]

In the fourth column of Table Four, we average the voting across the three bills and estimate a linear probability model. The results are quite similar to the previous results. We use the regression results from Table Four's column (4) and predict the probability that a representative votes in favor of energy legislation. In the data appendix, we report this ranking sorted from "brownest" to "greenest". This ordering shows the names of which representatives are least and most likely to vote in favor of anti-carbon legislation as a function of their district's carbon emissions, district per-household income, and the overall ideology of the representative. We recognize that the legislation the 111th Congress will vote on is unlikely to be identical to the legislation that the 110th Congress voted on. This index is useful for sorting the representatives

[23] This marginal effect may not represent the causal effect of per-capita carbon production on congressional voting patterns. As we discussed earlier, we observe a positive correlation between state coal mining activity (a proxy for endowments) and state per-capita carbon emissions. This suggests that our carbon measure may be a proxy for a bundle of factors that all reflect self interest in stopping climate change mitigation legislation. To guarantee that the marginal effects reported in Table Four represent "causal effects", we would need to be confident that district unobservables, such as the district residents' stock holding in fossil fuel intensive industries and ownership of carbon intensive firms, is uncorrelated with the observables we include in the econometric models.

[24] We recognize that a sparsely populated county featuring a dirty power plant would count as having huge per-capita carbon emissions based on the approach used in the Vulcan data set. We have re-run the results in Table Four where we measure a county's per-capita carbon production net of electric utility emissions. The results are quite similar to the ones reported in Table Four.

into those whose own ideology and district characteristics give them the highest predicted probability of supporting legislation.

In Table Five, we show that similar political economy patterns are observed in the U.S. Senate. We estimate some simple regressions to provide some facts for U.S. senators based on their voting in the 110th Congress. In Table Five's column (1), the dependent variable is the log of a state's per-capita carbon emissions. We regress this on a senator's conservative ideology score and the log of the state's household average income, a dummy variable indicating whether the senator is a Democrat. Carbon emissions are higher in states with more conservative senators and in poorer states. Interestingly, emissions are higher in Democrat states.

We present senate voting results in columns (2) and (3) based on two key pieces of climate legislation identified in the 2007 League of Conservation Voters Scorecard. On June 21st 2007, the senate voted 65 to 27 in favor of HR 6 (which we call "Bill 226"). Part of this comprehensive energy legislation proposed to raise automobile fuel efficiency standards to 35 miles per gallon by 2020. On June 14th 2007, the Senate voted on Bill 211 (a "Yes" is the pro-environment vote). Senator Jeff Bingaman introduced an amendment to establish a 15 percent national renewable energy standard by the year 2020, to which Senator Pete Domenici countered with an amendment that would have allowed conventional and polluting sources of energy to qualify for credits under the national standard. This amendment would have effectively eliminated any increase in renewable energy production. The vote on Bill 211 was to table the Domenici amendment (see the 2007 League of Conservation Voters Scorecard page eight). As shown in columns (2) and (3) of Table Five, carbon intensive states and conservatives vote against these bills. Perhaps surprisingly, state income is statistically insignificant, which stands in contrast to the house results presented in Table Four.

Carbon Politics and the Composition of the 111th Congress

The November 2008 election, led to marked changes in the House of Representatives, the leadership, and the composition of key committees. The media has noted the transition that has taken place in the Energy and Commerce Committee leadership. Michigan's John Dingell has been replaced by Henry Waxman. This transition has been predicted to increase the likelihood that this committee will pursue meaningful carbon regulation.

Committee composition shifts have implications for the legislation drafted in the Energy and Environment Sub-Committee, within the Energy and Commerce Committee. In Table Six, we present carbon and ideology averages for different subsets of the 111th Congress using the Vulcan and Voteview data sets. The subsets of the congress featuring high average carbon levels and high conservative ideology scores are the least likely to vote in favor of carbon legislation.

The average Republican in congress represents a district whose carbon emissions are seven percent higher than the average Democrat in congress. This differential grows for the key committee members. The average Republican member of the Energy and Commerce Committee represents a district whose carbon emissions are 21 percent higher than the average Democrat on this committee. While the ideological average differences between Republicans and Democrats do not vary much across these subsets, the carbon differential is largest in the important Energy and Environment Sub-Committee. The average Democrat on this committee represents a district whose per-capita carbon emissions are 31 percent higher than the average Democrat in Congress, and the average Republican on this sub-committee represents a district whose emissions are 20 percent higher than the average Democrat on this committee. These numbers tell a clear story that the Energy and Environment Sub-Committee consists of members of both parties who represent carbon intensive districts. This poses a challenge to adopting legislation that will provide meaningful reductions in carbon emissions.

Conclusion

This paper has utilized several independent data sets to take a new look at the geography of carbon emissions across the United States and the geography of voting patterns on recent congressional legislation intended to address climate change. By combining data on county per-capita carbon emissions, county demographic data, and congressional voting data, we have uncovered several facts which will likely play an important role in constraining climate legislation. Economists and policy makers will need to address these constraints if they want to help design climate legislation that will have a meaningful effect on controlling carbon emissions and be passed by members of congress.

First, there are regions of the nation such as the Pacific West and the Northeast with much lower per-capita carbon emissions than Midwestern states. Constituents of these "low-carbon" states will face lower direct costs from any anti-carbon legislation. Whether such constituents would face high "general equilibrium" costs remains an open question and is directly a function of what other costs will be imposed to allow for meaningful controls on carbon emissions in the U.S. and abroad. While we have focused on spatial differences in the cost of achieving climate mitigation goals, climate change mitigation will offer differential benefits depending on geography. A coastal liberal city such as San Francisco will gain greater benefits from mitigating climate change and will face lower costs to comply with any new carbon legislation. Representatives from such areas face a Coasian challenge to provide implicit cross-subsidies to other regions where the costs of carbon control will be substantially higher.

Second, per-capita carbon emissions are higher in poorer counties and hence are unlikely to support climate legislation due to the costs that such legislation will impose on them. Based on voting in the 110th Congress, we find evidence of congressional self interest. Representatives whose districts are richer and less carbon intensive (based on production data) vote for climate change mitigation legislation. This finding has direct implications for the need for a climate policy that controls carbon emissions while addressing the distributional effects across space of new carbon regulation. However, one chilling effect is our robust finding of a large ideology effect. Holding district per-capita carbon and income constant, conservatives tend to vote against climate change mitigation legislation.

Finally, we have explored the composition of the key committee in the 111th Congress that is charged with drafting climate legislation. The imperative to design legislation that recognizes the need to arrive at a second-best solution, where winners compensate losers, is highlighted by the fact that the select members of these Committees are from districts with much higher per-capita carbon emission than the average members of the House from the same political party.

The consequences of the existing carbon geography, voting preferences, and the distribution of income would suggest that there are at least three potential policy outcomes:

1) Deadlock. This could create highly watered down legislation and environmentally ineffective policy. For instance, after the first year of experience with the European emissions trading system, there was an oversupply of permits and the price plummeted.[25]

[25] See for instance, Ellerman and Buchner (2007)

2) Price offsets for carbon-intensive regions. This could yield a transfer of wealth with little change in behavior. For example, there could be free allowances to producers proportional to historic emissions. This could be counterproductive if there is no change in which plants are producing energy as it might just raise prices to consumers, thereby increasing producer surplus with little change in production (except through consumers using less energy).[26]

3) Anti-regressive policies. In contrast to free distribution of allowances, this could involve rebates and/or other tax or income offsets used to protect low income consumers. It could also involve policies providing subsidies for out-of-the money but cleaner investment.

Our work documents the geographical challenges faced by the Obama Administration in getting climate legislation passed and provides an important set of constraints for economists to consider. Since industrial, transportation, and utility emissions are not geographically correlated, these sectors may offer a pathway to negotiating compromises. Economists who seek to mitigate the carbon externality would gain from openly acknowledging the spatial distributional impacts introduced by efficiency enhancing policies and recognizing that place-based politicians and their constituents are sensitive to these effects.

[26] See http://www.bloomberg.com/apps/news?pid=20601072&sid=aD9LzrWO2KUE&refer=energy.

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Table One: Power Plant Emissions by State

State Abbreviation	Carbon Dioxide Factor	Coal	Hydro	Nuclear	Natural Gas	Oil	Other
AK	1,106	7%	23%	0%	56%	6%	9%
AL	1,299	46%	8%	23%	8%	0%	14%
AR	1,280	50%	7%	30%	10%	0%	3%
AZ	1,219	41%	7%	28%	24%	0%	0%
CA	697	2%	18%	16%	52%	0%	13%
CO	1,978	75%	2%	0%	22%	0%	1%
CT	754	15%	1%	51%	25%	0%	8%
DC	3,614	0%	0%	0%	0%	100%	0%
DE	1,804	71%	0%	0%	0%	23%	6%
FL	1,348	36%	0%	6%	28%	1%	30%
GA	1,382	65%	3%	27%	4%	0%	1%
HI	1,655	16%	1%	0%	0%	12%	72%
IA	1,942	82%	2%	11%	2%	0%	3%
ID	144	1%	78%	0%	15%	0%	6%
IL	1,154	50%	0%	48%	2%	0%	0%
IN	2,092	95%	0%	0%	1%	0%	3%
KS	1,870	74%	0%	22%	3%	0%	1%
KY	2,051	92%	4%	0%	0%	0%	4%
LA	1,201	26%	1%	19%	42%	0%	12%
MA	1,213	23%	2%	13%	45%	1%	16%
MD	1,293	38%	5%	28%	1%	1%	27%
ME	772	6%	16%	0%	55%	0%	22%
MI	1,399	59%	1%	19%	13%	7%	2%
MN	1,586	68%	1%	25%	1%	0%	4%
MO	1,877	86%	2%	9%	3%	0%	0%
MS	1,409	37%	0%	25%	19%	0%	18%
MT	1,572	63%	33%	0%	0%	0%	4%
NC	1,218	61%	4%	32%	2%	0%	1%
ND	2,386	0%	5%	0%	0%	0%	95%
NE	1,503	64%	3%	32%	1%	0%	0%
NH	779	17%	6%	43%	23%	0%	12%
NJ	709	19%	0%	19%	29%	0%	33%
NM	1,954	89%	0%	0%	9%	0%	2%
NV	1,573	49%	4%	0%	44%	0%	3%
NY	891	17%	17%	29%	15%	0%	21%
OH	1,776	88%	0%	11%	1%	0%	0%
OK	1,717	59%	5%	0%	34%	0%	2%
OR	456	7%	64%	0%	25%	0%	4%
PA	1,210	53%	1%	36%	5%	0%	5%
RI	1,065	0%	0%	0%	99%	0%	1%
SC	904	40%	2%	46%	4%	0%	8%
SD	1,215	48%	48%	0%	2%	0%	2%
TN	1,255	60%	11%	29%	0%	0%	0%
TX	1,471	20%	0%	11%	47%	0%	21%
UT	2,119	95%	1%	0%	2%	0%	2%

State Abbreviation	Carbon Dioxide Factor	Coal	Hydro	Nuclear	Natural Gas	Oil	Other
VA	1,194	53%	2%	37%	6%	0%	2%
VT	7	0%	20%	71%	0%	1%	8%
WA	360	11%	70%	9%	8%	0%	2%
WI	1,711	73%	3%	6%	4%	13%	1%
WV	1,988	96%	2%	0%	0%	0%	2%
WY	2,277	68%	1%	0%	0%	0%	30%

The Carbon Dioxide Emissions Factor is measured in pounds of carbon dioxide emissions per megawatt-hour. The composition columns show the share of the state's total generation in 2004 by source.

Table Two: County Level Regressions of Per-Capita Carbon Emissions

	(1) Level	(2) Level	(3) Level	(4) Natural Log
Congressman ideology score	1.692 [0.670]***		0.782 [0.677]	0.114 [0.031]***
Log household income		-8.158 [1.107]***	-7.895 [1.129]***	-0.592 [0.052]***
Constant	5.263 [0.261]***	94.357 [12.083]***	91.452 [12.327]***	7.688 [0.570]***
Observations R-squared	3139 0.002	3139 0.017	3139 0.017	3139 0.050

The dependent variable is a county's per-capita carbon production in 2002. The household income data is from the 2000 Census of Population and Housing and the ideology measure is based on the county's average representative ideology score in the 106th Congress. The regressions are weighted by a county's population in 2002. Standard errors are presented in brackets. Coefficient estimate that are statistically significant at the 10% level are indicated by a "*", at the 5% level by "**", and at the 1% level by "***".

Table Three: County Level Regressions of Per-Capita Carbon Emissions by Sector

	(1) Commercial	(2) Industrial	(3) Residential	(4) Utility	(5) Transportation
Congressman ideology score	-0.062	0.002	-0.099	0.547	0.362
	[0.024]**	[0.279]	[0.010]***	[0.594]	[0.029]***
Log household income	0.090	-2.17	0.133	-5.109	-0.717
	[0.040]**	[0.465]***	[0.016]***	[0.990]***	[0.048]***
Constant	-0.771	24.671	-1.090	57.871	9.362
	[0.439]*	[5.082]***	[0.179]***	[10.807]***	[0.528]***
Observations	3139	3139	3139	3139	3139
R-squared	0.005	0.007	0.061	0.01	0.129

In each regression, the dependent variable is the per-capita emissions from that sector. Each regression is weighted by the county's population in 2002. Standard errors are presented in brackets. Coefficient estimate that are statistically significant at the 10% level are indicated by a "*", at the 5% level by "**", and at the 1% level by "***".

Table Four: Congressional Voting on Anti-Carbon Legislation in the 110th Congress

	(1) Bill 555	(2) Bill 827	(3) Bill 835	(4) Average Across the Three Bills
Log (carbon per capita)	-0.007 [.008]*	-.244 [.060]***	-.159 [.095]*	-.043 [.016]***
Log (District income per capita)	.026 [.033]***	.901 [.188]***	.912 [.287]***	.220 [.044]***
Congressman ideology score	-.111 [.126]***	-1.149 [.096]***	-2.193 [.255]***	-.799 [.019]***
Obs. prob.	.638	.534	.541	
pred. prob.	.995	.572	.602	
Observations	420	406	408	391
Chi2	427.93	313.84	470.91	
prob>chi2	0	0	0	
R-squared				.828

Columns (1)-(3) report estimated marginal changes in probabilities based on stata's "dprobit" command. The standard deviation for congressman ideology score equals .51. The dependent variable in column (4) is based on the share of the "pro-environment" votes the representative cast on the three bills listed in columns (1-3). Standard errors are presented in brackets. Coefficient estimate that are statistically significant at the 10% level are indicated by a "*", at the 5% level by "**", and at the 1% level by "***".

Table Five: Senator Voting on Anti-Carbon Legislation

	(1) Log(per-capita state Carbon)	(2) Bill 226	(3) Bill 211
Senator ideology score	.630 [.228]***	-.563 [.117]***	-.577 [.541]***
Log household income	-1.932 [.325]***	-.286 [.447]	.058 [.205]
Democrat Dummy	.404 [.210]*		
Log(carbon per capita)		-.227 [.123]*	-.173 [.163]**
Constant	22.538 [3.543]***		
Obs. prob.		.707	.589
Pred. prob.		.789	.964
Observations	102	92	95
R-squared	0.409		
Chi2		36.58	105.14
Prob>Chi2		0	0

In column (1), the dependent variable is the log of the state's per-capita carbon emissions. In columns (2) and (3), the dependent variable is a dummy variable that equals one if the senator voted in favor of this bill. Columns (2)-(3) report estimated marginal changes in probabilities based on stata's "dprobit" command. Standard errors are presented in brackets. Coefficient estimate that are statistically significant at the 10% level are indicated by a "*", at the 5% level by "**", and at the 1% level by "***".

Table Six: Average Ideology & Carbon in the 110th Congress

	Tons of Carbon	Ideology
Average Member	5.37	0.026
Average Democrat	5.03	-0.418
Average Republican	5.77	0.544
Average Member of the Energy and Commerce Committee	5.92	-0.016
Average Democratic Member of the Energy and Commerce Committee	5.46	-0.4
Average Republican Member of the Energy and Commerce Committee	6.63	0.578
Average Member of The Environment and Energy Sub-Committee	7.1	-0.032
Average Democrat Member of the Environment and Energy Sub-committee	6.6	-0.38
Average Republican Member of the Environment and Energy Sub-Committee	7.91	0.519
Average Member no longer in Congress	6.52	.335

Tons of carbon's standard deviation equals 4.59 and the ideology measure's standard deviation equals .51.

Figure One: Total Carbon Per-Capita Emissions

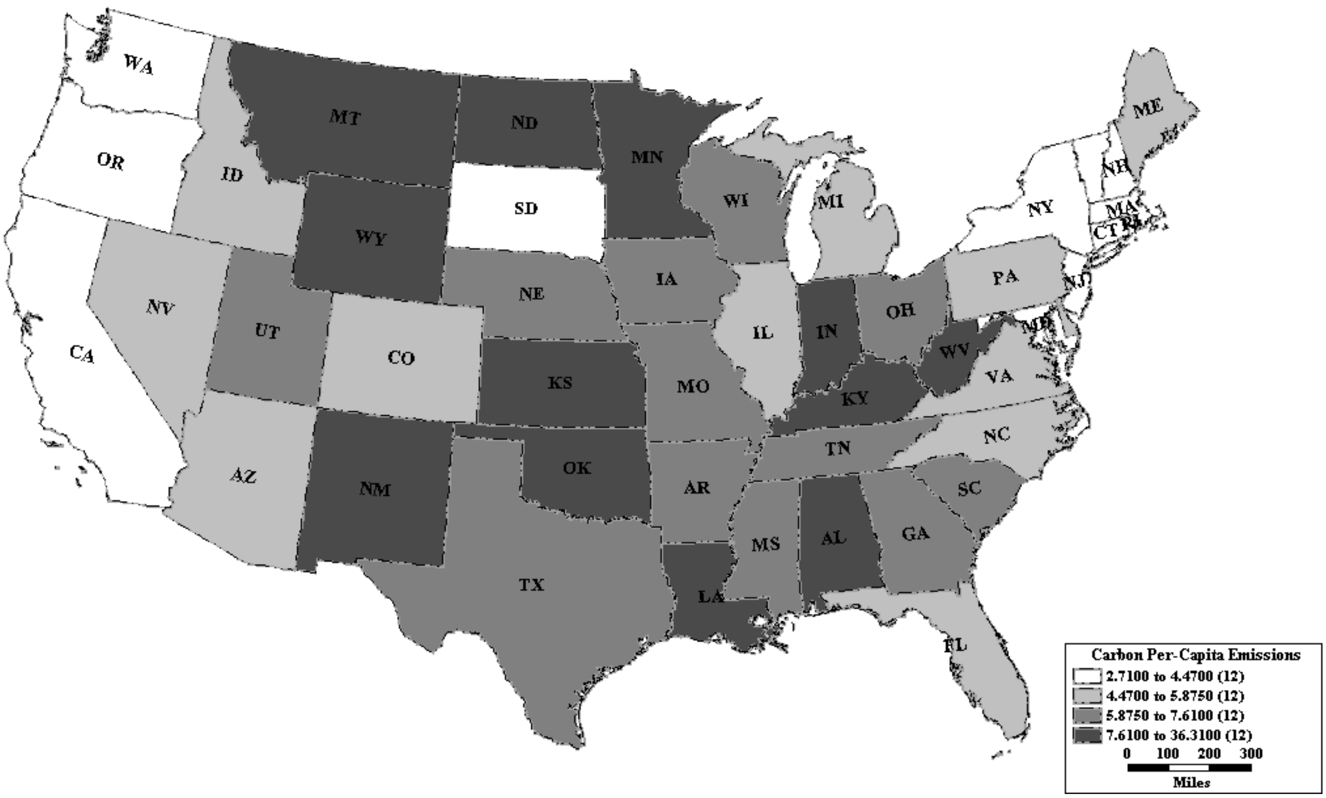


Figure Two: The Commercial Sector's Per-Capita Carbon Emissions

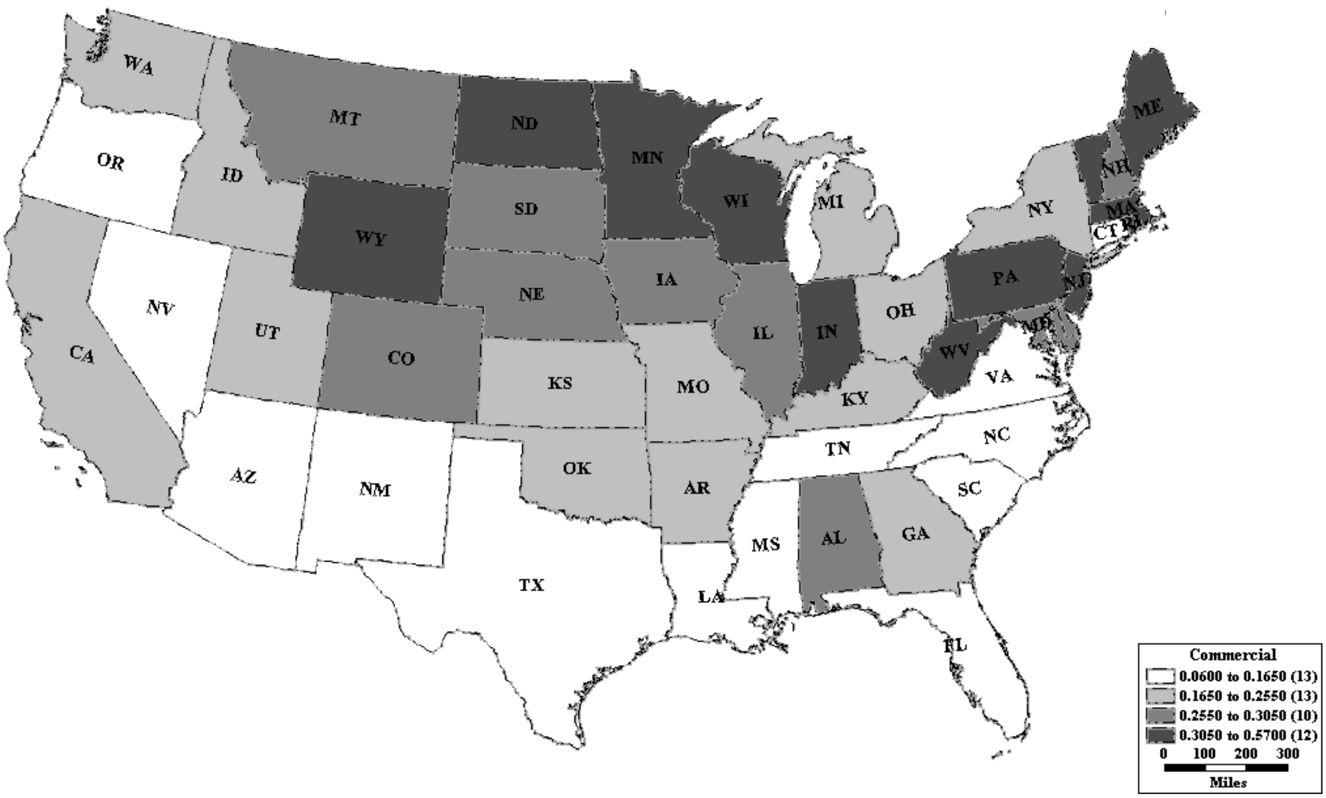


Figure Three: The Industrial Sector's Per-Capita Carbon Emissions

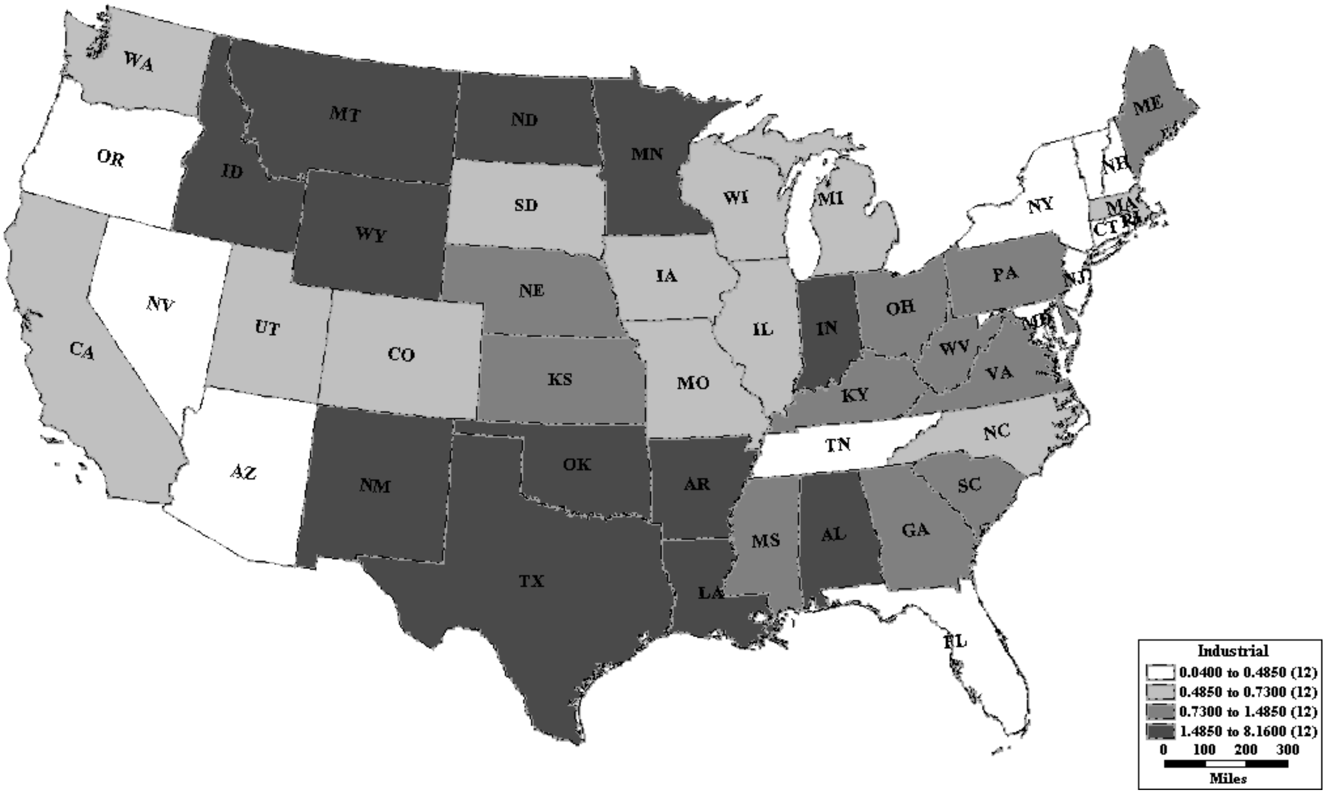


Figure Four: The Mobile Sector's Per-Capita Carbon Emissions

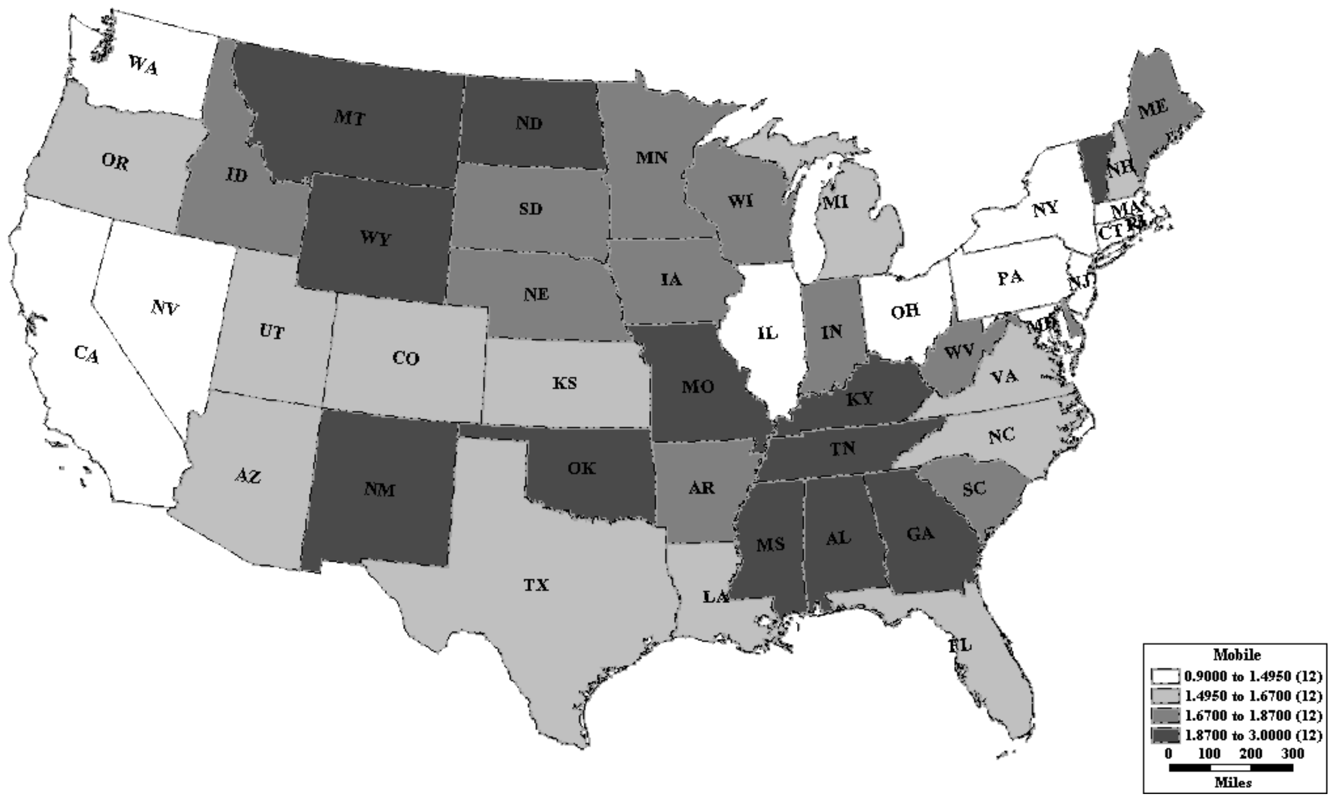


Figure Five: The Residential Sector's Per-Capita Carbon Emissions

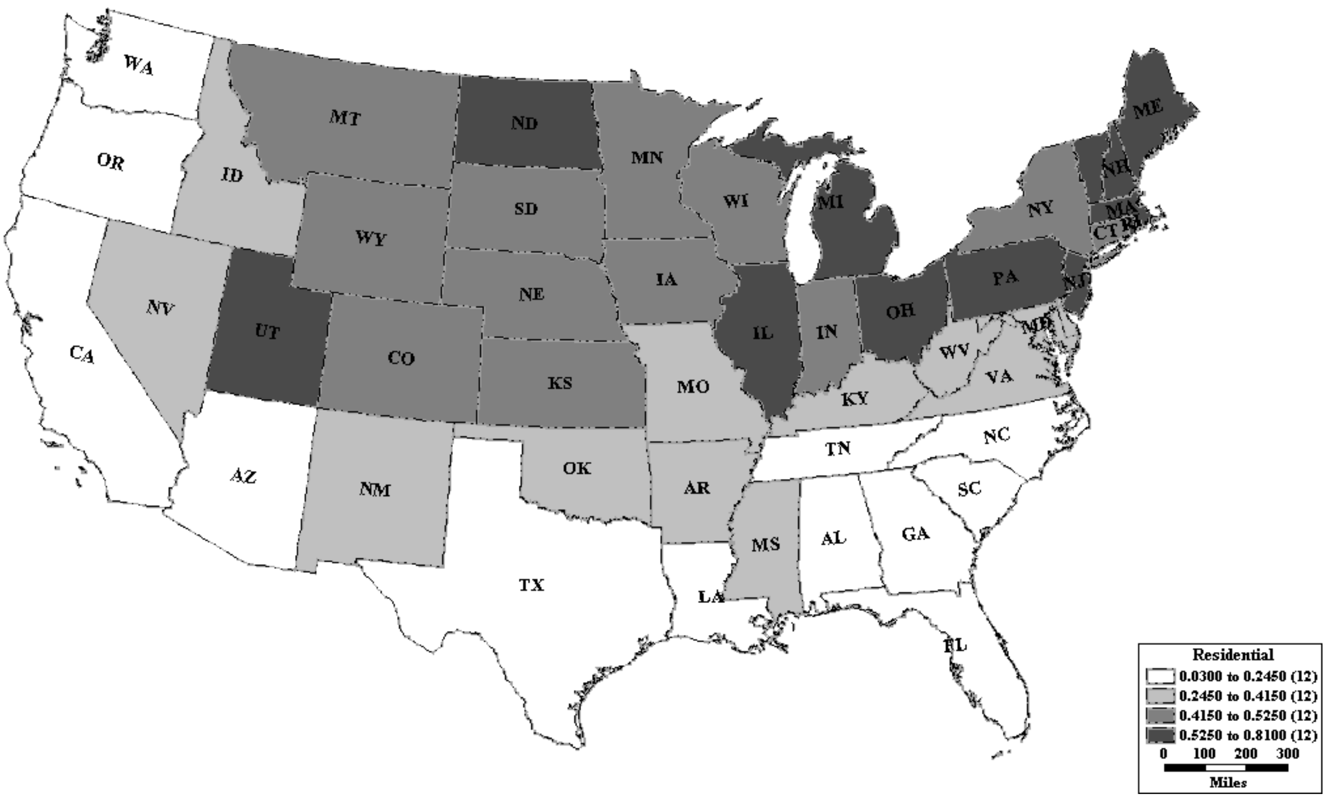


Figure Six: The Utility Sector's Per-capita Carbon Emissions

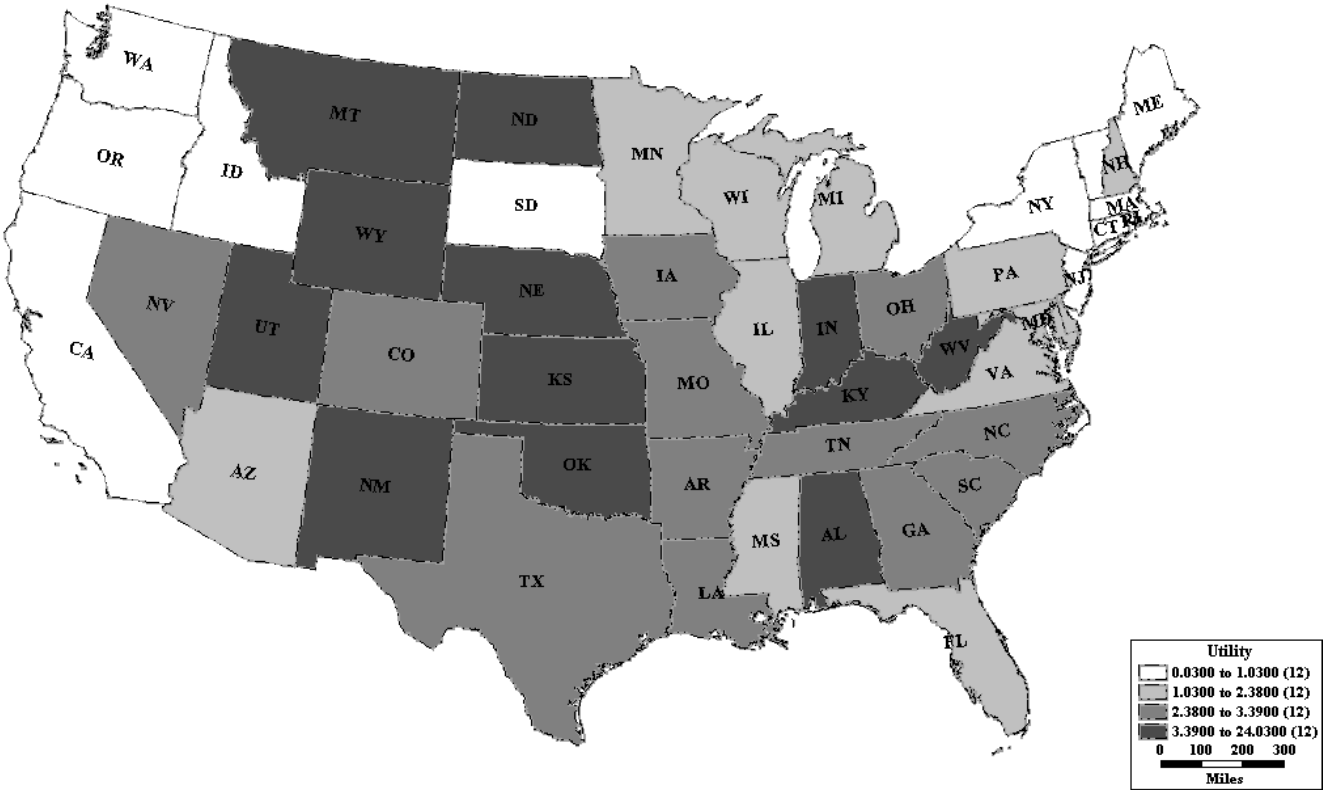
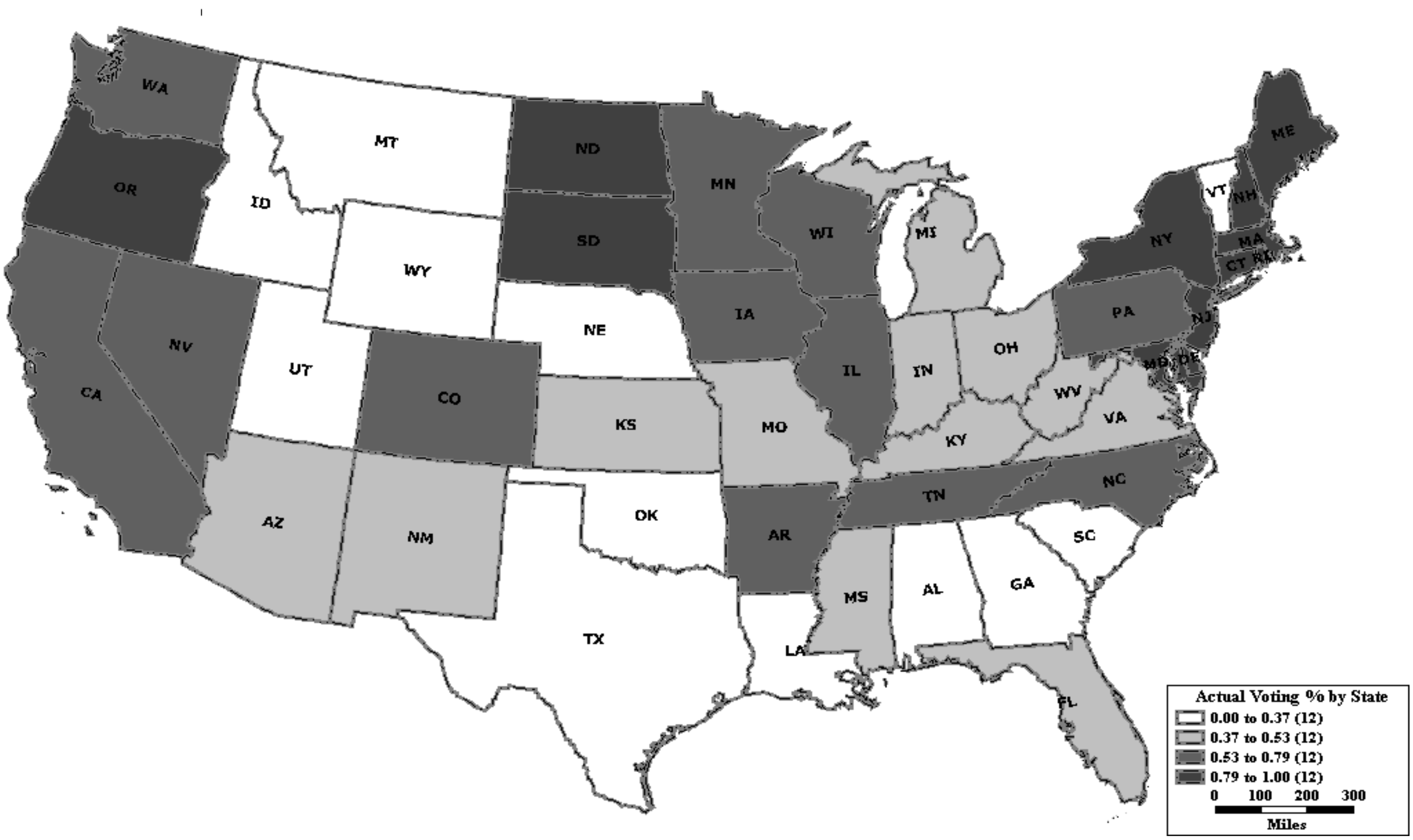


Figure Seven: State Average Congressional Voting in 2007 on Three Carbon Mitigation Bills



Appendix One: A Ranking of the 110th House of Representatives with Respect to Anti-Carbon Voting

State	Congressional District	Representative Last Name	Predicted Probability of Voting Pro-Green	Out of the 111th Congress (1=Yes)
TX	14	PAUL	0	0
GA	10	BROUN	0.18	0
GA	3	WESTMORE	0.2	0
AZ	6	FLAKE	0.2	0
AZ	2	FRANKS	0.21	0
GA	9	DEAL	0.22	0
CO	5	LAMBORN	0.23	0
ID	1	SALI	0.23	1
IA	5	KING	0.23	0
TX	5	HENSARLIN	0.24	0
SC	3	BARRETT	0.24	0
TN	2	DUNCAN	0.24	0
WI	5	SENSENBR	0.25	0
AZ	3	SHADEGG	0.25	0
NC	10	MCHENRY	0.25	0
FL	1	MILLER	0.25	0
IN	6	PENCE	0.25	0
TX	19	NEUGEBAUE	0.26	0
TX	13	THORNBER	0.26	0
NC	5	FOXX	0.27	0
OH	4	JORDAN	0.27	0
TN	1	DAVIS	0.27	1
FL	6	STEARNS	0.27	0
UT	3	CANNON	0.28	1
FL	24	FEENEY	0.28	1
GA	11	GINGREY	0.28	0
TX	11	CONAWAY	0.28	0
TX	1	GOHMERT	0.28	0
NE	3	SMITH	0.28	0
WY	1	CUBIN	0.29	1
GA	1	KINGSTON	0.29	0
CO	6	TANCREDO	0.29	1
CO	4	MUSGRAVE	0.29	1
PA	16	PITTS	0.3	0
MN	6	BACHMANN	0.3	0
CA	40	ROYCE	0.3	0
GA	7	LINDER	0.3	0
WI	1	RYAN	0.3	0
OH	1	CHABOT	0.3	1
MI	2	HOEKSTRA	0.3	0
CA	46	ROHRABAC	0.31	0

CA	2	HERGER	0.31	0
NC	6	COBLE	0.31	0
TX	2	POE	0.31	0
NC	9	MYRICK	0.31	0
SC	4	INGLIS	0.31	0
TN	7	BLACKBURN	0.31	0
TX	6	BARTON	0.31	0
NM	2	PEARCE	0.31	1
OK	1	SULLIVAN	0.31	0
SC	2	WILSON	0.32	0
MO	7	BLUNT	0.32	0
VA	5	GOODE	0.32	1
VA	6	GOODLATT	0.32	0
MO	2	AKIN	0.32	0
TX	8	BRADY	0.33	0
TX	32	SESSIONS	0.33	0
PA	9	SHUSTER	0.33	0
TX	3	JOHNSON	0.33	0
LA	6	BAKER	0.34	1
KY	5	ROGERS	0.34	0
CA	22	MCCARTHY	0.34	0
FL	14	MACK	0.34	0
LA	5	ALEXANDER	0.34	0
FL	12	PUTNAM	0.34	0
MI	7	WALBERG	0.34	1
IL	19	SHIMKUS	0.34	0
KY	4	DAVIS	0.34	0
AL	1	BONNER	0.34	0
TX	31	CARTER	0.34	0
TN	3	WAMP	0.34	0
LA	4	MCCRERY	0.34	1
VA	7	CANTOR	0.34	0
FL	15	WELDON	0.34	1
KY	2	LEWIS	0.34	1
CA	19	RADANOVI	0.35	0
IN	4	BUYER	0.35	0
OH	8	BOEHNER	0.35	0
WI	6	PETRI	0.35	0
IL	16	MANZULLO	0.35	0
UT	1	BISHOP	0.35	0
OK	5	FALLIN	0.35	0
NJ	5	GARRETT	0.35	0
IN	5	BURTON	0.35	0
CA	48	CAMPBELL	0.35	0
OK	3	LUCAS	0.35	0
CA	50	BILBRAY	0.35	0
GA	6	PRICE	0.35	0
MD	6	BARTLETT	0.35	0
KY	1	WHITFIEL	0.35	0

FL	7	MICA	0.35	0
CA	21	NUNES	0.36	0
MO	9	HULSHOF	0.36	1
AL	2	EVERETT	0.36	1
OK	4	COLE	0.36	0
OH	2	SCHMIDT	0.36	0
AL	4	ADERHOLT	0.36	0
AL	6	BACHUS	0.36	0
NV	2	HELLER	0.36	0
FL	5	BROWN-WAI	0.36	0
LA	7	BOUSTANY	0.36	0
MT	1	REHBERG	0.36	0
TX	12	GRANGER	0.36	0
CA	3	LUNGREN	0.36	0
MS	1	WICKER	0.36	0
AL	3	ROGERS	0.36	0
WA	4	HASTINGS	0.37	0
TX	7	CULBERSO	0.37	0
MN	2	KLINE	0.37	0
MO	6	GRAVES	0.37	0
SC	1	BROWN	0.37	0
TX	24	MARCHANT	0.37	0
VA	4	FORBES	0.37	0
AR	3	BOOZMAN	0.37	0
NE	2	TERRY	0.37	0
WA	5	MCMORRIS	0.38	0
MI	4	CAMP	0.38	0
FL	8	KELLER	0.38	1
PA	5	PETERSON	0.38	1
CA	49	ISSA	0.38	0
IN	3	SOUDER	0.38	0
TX	26	BURGESS	0.39	0
AZ	1	RENZI	0.39	1
KS	4	TIAHRT	0.39	0
VA	1	DAVIS	0.39	0
FL	4	CRENSHAW	0.39	0
LA	1	JINDAL	0.39	1
CA	25	MCKEON	0.39	0
VA	2	DRAKE	0.39	1
KS	1	MORAN	0.39	0
CA	42	MILLER	0.4	0
IL	14	HASTERT	0.4	0
NC	8	HAYES	0.4	1
TX	10	MCCAUL	0.4	0
WV	2	CAPITO	0.4	0
NY	26	REYNOLDS	0.4	1
PA	3	ENGLISH	0.4	1
CA	52	HUNTER	0.4	1
CA	4	DOOLITTL	0.4	1

IA	4	LATHAM	0.4	0
MS	3	PICKERIN	0.4	1
FL	13	BUCHANAN	0.41	0
MO	8	EMERSON	0.41	0
FL	25	DIAZ-BALA	0.41	0
OH	12	TIBERI	0.41	0
OR	2	WALDEN	0.41	0
TX	21	SMITH	0.41	0
MI	8	ROGERS	0.41	0
NE	1	FORTENBE	0.41	0
NY	13	FOSSELLA	0.41	1
CA	41	LEWIS	0.41	0
OH	7	HOBSON	0.42	1
IL	6	ROSKAM	0.42	0
AK	1	YOUNG	0.42	0
MI	3	EHLERS	0.42	0
ID	2	SIMPSON	0.42	0
MI	10	MILLER	0.42	0
CA	45	BONO	0.42	0
IL	11	WELLER	0.42	1
OH	5	GILLMOR	0.43	0
MI	6	UPTON	0.43	0
IL	18	LAHOOD	0.43	1
CA	44	CALVERT	0.43	0
IL	13	BIGGERT	0.43	0
FL	10	YOUNG	0.43	0
OH	15	PRYCE	0.43	1
FL	21	DIAZ-BAL	0.44	0
CA	26	DREIER	0.44	0
OH	3	TURNER	0.44	0
CA	24	GALLEGLY	0.44	0
FL	18	ROS-LEHT	0.44	0
NY	29	KUHL	0.45	1
PA	19	PLATTS	0.45	0
TX	4	HALL	0.45	0
NM	1	WILSON	0.46	1
MI	11	MCCOTTER	0.46	0
PA	18	MURPHY	0.46	0
PA	15	DENT	0.46	0
OH	16	REGULA	0.46	1
MN	3	RAMSTAD	0.47	1
NY	23	MCHUGH	0.47	0
NC	3	JONES	0.47	0
IL	15	JOHNSON	0.47	0
NY	25	WALSH	0.47	1
NV	3	PORTER	0.47	1
DE	1	CASTLE	0.48	0
MI	9	KNOLLENB	0.48	1
OH	14	LATOURET	0.48	0

NJ	2	LOBIONDO	0.5	0
NJ	11	FRELINGH	0.5	0
VA	10	WOLF	0.5	0
MD	1	GILCHRES	0.51	1
NY	3	KING	0.51	0
NJ	3	SAXTON	0.51	1
WA	8	REICHERT	0.51	0
PA	6	GERLACH	0.52	0
NJ	4	SMITH	0.52	0
IL	10	KIRK	0.53	0
NJ	7	FERGUSON	0.55	1
OK	2	BOREN	0.56	0
IN	8	ELLSWORTH	0.58	0
CT	4	SHAYS	0.58	1
GA	12	BARROW	0.6	0
AL	5	CRAMER	0.61	1
NC	11	SHULER	0.62	0
PA	10	CARNEY	0.62	0
PA	12	MURTHA	0.62	0
TX	28	CUELLAR	0.62	0
IN	2	DONNELLY	0.62	0
WV	1	MOLLOHAN	0.62	0
TN	4	DAVIS	0.62	0
LA	3	MELANCON	0.63	0
AR	4	ROSS	0.63	0
PA	4	ALTMIRE	0.63	0
AL	7	DAVIS	0.63	0
TN	8	TANNER	0.63	0
IN	9	HILL	0.63	0
MS	4	TAYLOR	0.63	0
ND	1	POMEROY	0.63	0
VA	9	BOUCHER	0.63	0
OH	18	SPACE	0.63	0
TN	6	GORDON	0.64	0
TX	27	ORTIZ	0.64	0
OH	6	WILSON	0.64	0
MN	7	PETERSON	0.64	0
MO	4	SKELTON	0.64	0
KS	2	BOYDA	0.64	1
TX	15	HINOJOSA	0.65	0
FL	2	BOYD	0.65	0
UT	2	MATHESON	0.65	0
GA	2	BISHOP	0.65	0
TX	17	EDWARDS	0.65	0
CA	20	COSTA	0.65	0
GA	8	MARSHALL	0.66	0
NC	7	MCINTYRE	0.66	0
FL	16	MAHONEY	0.66	1
CO	3	SALAZAR	0.66	1

TX	22	LAMPSON	0.67	1
PA	11	KANJORSK	0.68	0
AR	1	BERRY	0.68	0
AZ	8	GIFFORDS	0.68	0
SD	1	HERSETH	0.68	0
TN	5	COOPER	0.68	0
PA	17	HOLDEN	0.68	0
KY	6	CHANDLER	0.68	0
CA	18	CARDOZA	0.68	0
TX	29	GREEN	0.69	0
WV	3	RAHALL	0.69	0
TX	16	REYES	0.69	0
AR	2	SNYDER	0.69	0
SC	6	CLYBURN	0.7	0
TX	20	GONZALEZ	0.7	0
AZ	5	MITCHELL	0.7	0
NC	1	BUTTERFI	0.7	0
WI	3	KIND	0.7	0
SC	5	SPRATT	0.71	0
GA	13	SCOTT	0.71	0
ME	2	MICHAUD	0.71	0
NY	20	GILLIBRAND	0.71	0
NY	27	HIGGINS	0.71	0
IL	17	HARE	0.71	0
IA	3	BOSWELL	0.72	0
IA	1	BRALEY	0.72	0
MD	2	RUPPERSBE	0.72	0
NC	2	ETHERIDG	0.72	0
WI	8	KAGEN	0.72	0
TX	23	RODRIGUEZ	0.72	0
LA	2	JEFFERSO	0.72	1
MO	3	CARNAHAN	0.72	0
IL	12	COSTELLO	0.72	0
IL	8	BEAN	0.72	0
NY	24	ARCURI	0.73	0
MI	5	KILDEE	0.73	0
PA	14	DOYLE	0.73	0
MN	1	WALZ	0.73	0
FL	3	BROWN	0.73	0
NC	13	MILLER	0.73	0
CA	11	MCNERNEY	0.73	0
NV	1	BERKLEY	0.73	0
WA	6	DICKS	0.73	0
MI	1	STUPAK	0.73	0
CO	7	PERLMUTTER	0.73	0
PA	8	MURPHY	0.73	0
FL	17	MEEK	0.74	0
WA	9	SMITH	0.74	0
PA	1	BRADY	0.74	0

WA	3	BAIRD	0.74	0
IL	3	LIPINSKI	0.74	0
CA	43	BACA	0.74	0
KY	3	YARMUTH	0.74	0
KS	3	MOORE	0.74	0
IA	2	LOEBSACK	0.74	0
MS	2	THOMPSON	0.75	0
OR	5	HOOLEY	0.75	1
TX	9	GREEN	0.75	0
IN	1	VISCLOSK	0.75	0
PA	7	SESTAK	0.75	0
FL	22	KLEIN	0.75	0
OH	17	RYAN	0.75	0
OH	9	KAPTUR	0.75	0
WA	2	LARSEN	0.75	0
NM	3	UDALL	0.75	1
CA	53	DAVIS	0.75	0
TN	9	COHEN	0.76	0
MD	5	HOYER	0.76	0
NJ	13	SIRES	0.76	0
FL	11	CASTOR	0.76	0
MI	15	DINGELL	0.76	0
PA	2	FATTAH	0.76	0
RI	2	LANGEVIN	0.76	0
NY	16	SERRANO	0.76	0
PA	13	SCHWARTZ	0.77	0
NY	7	CROWLEY	0.77	0
MI	12	LEVIN	0.77	0
MD	4	WYNN	0.77	0
CA	34	ROYBAL-A	0.77	0
CA	29	SCHIFF	0.77	0
WI	7	OBEY	0.77	0
NH	2	HODES	0.77	0
CA	37	MILLENDE	0.77	0
CO	2	UDALL	0.77	0
NY	6	MEEKS	0.77	0
TX	25	DOGGETT	0.77	0
CA	31	BECERRA	0.77	0
CT	2	COURTNEY	0.77	0
MO	5	CLEAVER	0.77	0
CA	1	THOMPSON	0.77	0
CA	36	HARMAN	0.77	0
ME	1	ALLEN	0.78	1
NH	1	SHEA-PORTER	0.78	0
NY	17	ENGEL	0.78	0
AZ	4	PASTOR	0.78	0
TX	18	JACKSON-	0.78	0
NY	2	ISRAEL	0.78	0
IL	1	RUSH	0.78	0

CA	28	BERMAN	0.78	0
VA	8	MORAN	0.78	0
VA	3	SCOTT	0.78	0
CA	37	RICHARDSON	0.78	0
OH	11	JONES	0.78	0
CT	5	MURPHY	0.78	0
NY	15	RANGEL	0.78	0
IL	5	EMANUEL	0.79	0
RI	1	KENNEDY	0.79	0
HI	1	ABERCROM	0.79	0
MA	9	LYNCH	0.79	0
NY	1	BISHOP	0.79	0
TX	30	JOHNSON	0.79	0
NJ	1	ANDREWS	0.79	0
MN	8	OBERSTAR	0.79	0
CA	47	SANCHEZ	0.79	0
IN	7	CARSON	0.79	0
NY	21	MCNULTY	0.79	1
CA	5	MATSUI	0.79	0
NY	9	WEINER	0.79	0
WI	4	MOORE	0.8	0
MD	7	CUMMINGS	0.8	0
NY	4	MCCARTHY	0.8	0
CA	10	TAUSCHER	0.8	0
MI	13	KILPATRI	0.8	0
NC	4	PRICE	0.8	0
MD	3	SARBANES	0.8	0
MN	4	MCCOLLUM	0.8	0
CO	1	DEGETTE	0.8	0
OR	1	WU	0.8	0
MO	1	CLAY	0.8	0
NY	10	TOWNS	0.8	0
NY	19	HALL	0.81	0
NJ	9	ROTHMAN	0.81	0
FL	20	WASSERMA	0.81	0
OH	13	SUTTON	0.81	0
MA	2	NEAL	0.81	0
CA	27	SHERMAN	0.81	0
CA	38	NAPOLITA	0.82	0
VT	1	WELCH	0.82	0
FL	19	WEXLER	0.82	0
IL	4	GUTIERRE	0.82	0
NY	5	ACKERMAN	0.82	0
NC	12	WATT	0.82	0
NJ	8	PASCRELL	0.82	0
FL	23	HASTINGS	0.83	0
CT	3	DELAURO	0.83	0
NY	28	SLAUGHTE	0.83	0
CT	1	LARSON	0.83	0

NY	12	VELAZQUE	0.83	0
GA	4	JOHNSON	0.84	0
OR	4	DEFAZIO	0.84	0
CA	32	SOLIS	0.84	0
CA	33	WATSON	0.84	0
CA	39	SANCHEZ	0.84	0
WA	1	INSLEE	0.84	0
IL	7	DAVIS	0.84	0
CA	16	LOFGREN	0.84	0
CA	17	FARR	0.84	0
MD	8	VAN HOLLE	0.84	0
MA	5	TSONGAS	0.85	0
AZ	7	GRIJALVA	0.85	0
CA	23	CAPPS	0.85	0
NY	14	MALONEY	0.85	0
HI	2	HIRONO	0.85	0
MA	10	DELAHUNT	0.85	0
CA	12	LANTOS	0.85	0
IL	2	JACKSON	0.85	0
MA	5	MEEHAN	0.85	0
OR	3	BLUMENAU	0.86	0
NY	18	LOWEY	0.86	0
CA	14	ESHOO	0.86	0
WI	2	BALDWIN	0.86	0
CA	8	PELOSI	0.86	0
MA	8	CAPUANO	0.86	0
NY	11	CLARKE	0.86	0
MA	3	MCGOVERN	0.87	0
MN	5	ELLISON	0.87	0
NY	22	HINCHEY	0.87	0
MI	14	CONYERS	0.88	0
NY	8	NADLER	0.88	0
MA	6	TIERNEY	0.89	0
GA	5	LEWIS	0.89	0
NJ	10	PAYNE	0.89	0
CA	15	HONDA	0.89	0
CA	51	FILNER	0.89	0
MA	7	MARKEY	0.9	0
MA	1	OLVER	0.9	0
NJ	6	PALLONE	0.9	0
CA	35	WATERS	0.9	0
MA	4	FRANK	0.9	0
NJ	12	HOLT	0.9	0
OH	10	KUCINICH	0.9	0
CA	30	WAXMAN	0.9	0
CA	7	MILLER	0.91	0
IL	9	SCHAKOWS	0.93	0
CA	9	LEE	0.94	0
CA	6	WOOLSEY	0.96	0

CA	13	STARK	0.98	0
WA	7	MCDERMOT	1	0