The American Clean Energy Security Act (ACES) Creates More American Jobs and Saves Americans Money

State-by-state figures on job creation, electric bill reductions, and transportation savings from the Natural Resources Defense Council

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By passing the American Clean Energy and Security Act (ACES), or H.R. 2454, the U.S. House of Representatives set the U.S. on a course to create millions of new clean energy jobs and save consumers money on their electric and transportation bills.

ACES is a critical step to create 1.7 million jobs for Americans

Through direct investment in clean energy and the leveraging of private investment by putting a price on carbon, ACES will fuel a new era in clean energy development in the U.S., along with the businesses and jobs to support it. Combined with the American Reinvestment and Recovery Act (ARRA), ACES will help spur $150 billion in clean energy investments, which will create 1.7 million good-paying jobs throughout the United States. Clean investments create more jobs across all skill and education levels than comparable investments in fossil-fuel energy sources because clean energy is more labor intensive. In fact, clean energy investments create 3.2 times as many jobs as fossil-fuel investments overall. Clean energy investments also create 5.5 times as many jobs accessible to workers with few educational credentials and little work experience, compared to fossil-fuel investments – 871,000 such jobs. Furthermore, 75% of those clean energy jobs provide opportunities for advancement and higher salaries. As a result, ACES will help to remobilize our work force and enable workers to raise themselves and their families out of poverty. Building a clean energy future will take years, so there's plenty of job security as long as the U.S. remains committed to clean energy.

US Total:
1,713,500 Clean Energy Jobs Created
871,000 of which are accessible to workers with low education credentials / skill sets

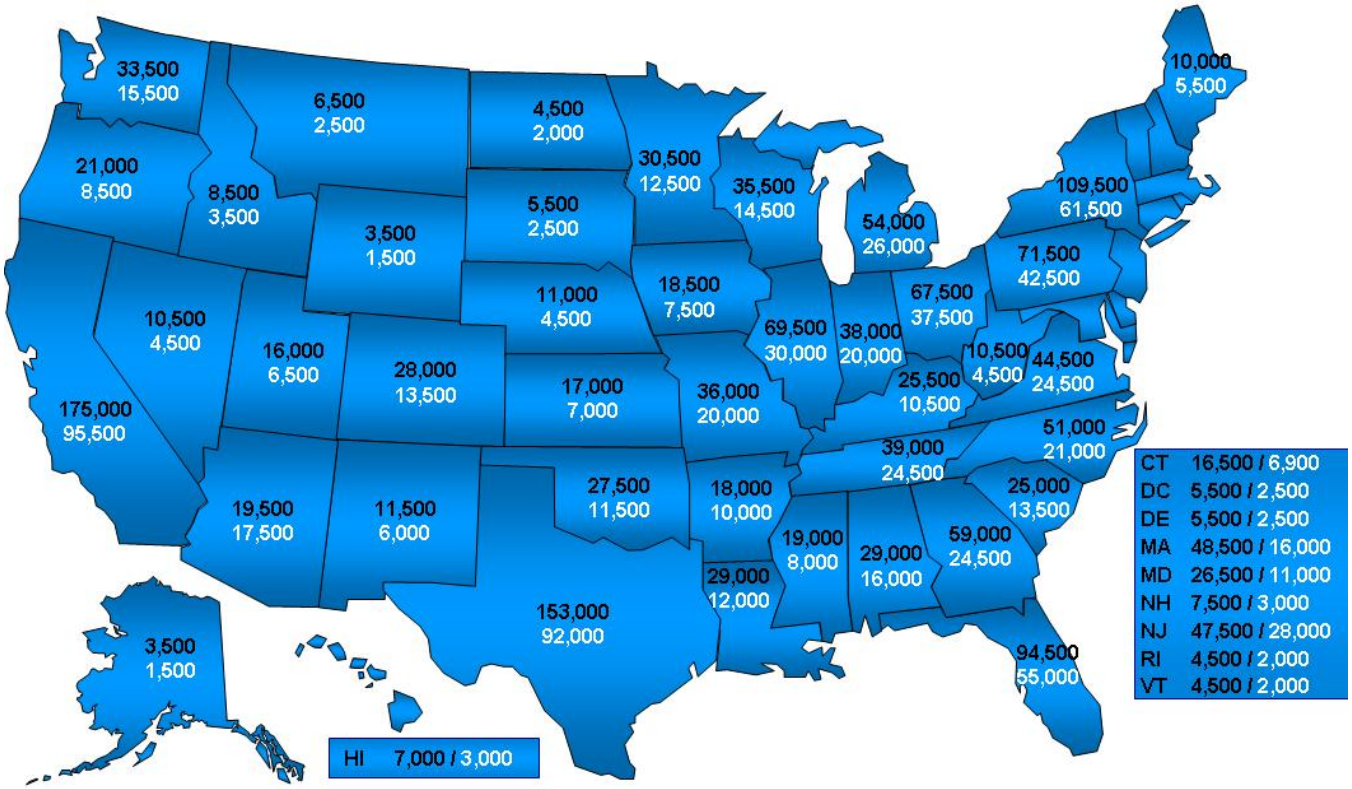


Figure 1 illustrates the expected number of clean energy jobs that will be created in each state as a result of ACES and ARRA. Total jobs created per state appear in black, while the number of those jobs

accessible to workers with fewer credentials appears in white. Sources and a more detailed discussion of methodology can be found in the Appendix.

ACES cuts household electricity bills an average of $6 per month

The energy-efficiency and consumer protection provisions in ACES mean that Americans in nearly every state will save on their monthly electricity bill. Even in the few states where no savings are projected relative to business-as-usual, bills will still be lower under ACES than they were in 2007.

The average American household will save $6 per month on electricity bills under ACES. These modest savings are due to the bill's investments in and incentives for energy efficiency improvements, and also to the returning of 30% of allowance value back to consumers via regulated electric local distribution companies (LDCs.)

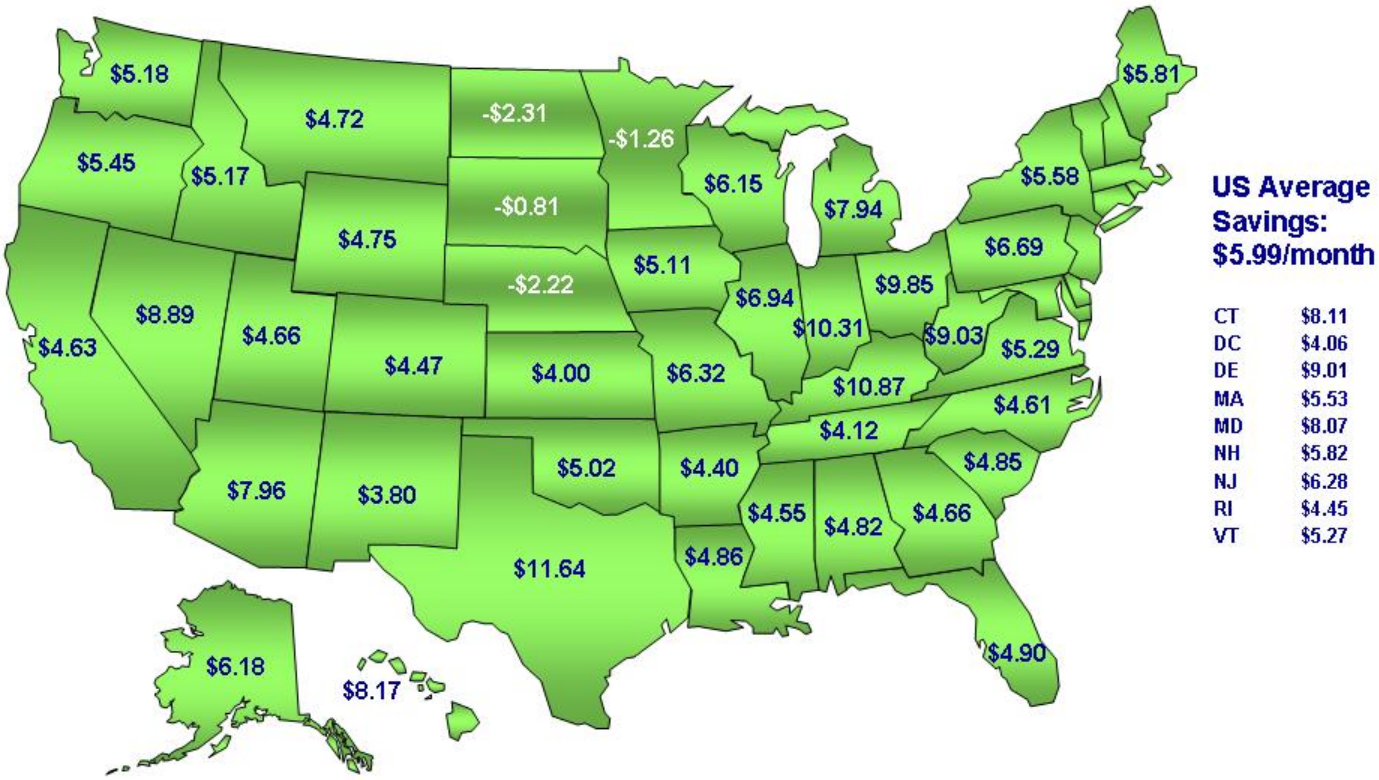
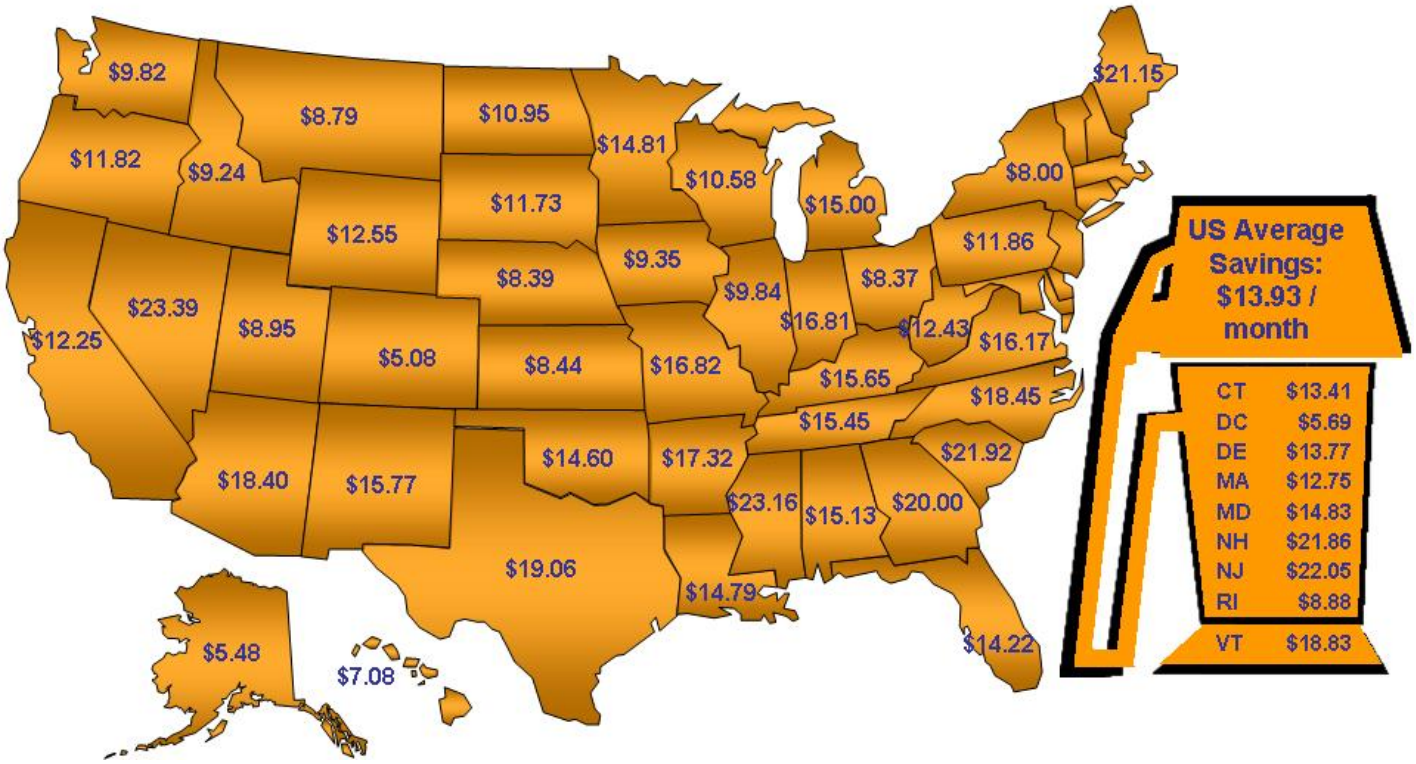


Figure 2 illustrates the state-by-state estimates for monthly electricity bill savings per household; more details on the methodology are available in the Appendix. Negative amounts indicate slightly higher bills under H.R. 2454 relative to business-as-usual, even though in both cases they represent a savings relative to 2007 bills.

ACES works with other clean energy policies to cut household transportation bills $14 per month

ACES allocates funding to produce the next generation of clean, fuel-efficient vehicles in the United States, which will complement the clean vehicle performance standards adopted by the Obama Administration. As a result, the American on-road fleet will go about 25% further on a gallon of gas over the next decade, and by 2020 Americans will drive more efficient vehicles and have lower household transportation costs. Even if gasoline prices rise under an emissions cap, cleaner vehicles will save money by sipping instead of guzzling gasoline. In addition to saving Americans money at the pump, these provisions will enhance our national energy independence by allowing our country to rely less on foreign oil supplies and keeping more of our income in the U.S. Reduced oil dependence will

also protect Americans from disruptive oil price shocks, such as those experienced in the 1970s—which significantly damaged the economy—and the more recent price run up to $4 per gallon experienced last summer.



In Figure 3, NRDC estimates the monthly savings in transportation bills that the average household experiences under climate-protection policies in 2020, including both ACES and the recently-announced clean vehicle performance standards. Because Americans get more choices in fuel-efficient vehicles going forward, households in every state will benefit, anywhere from $5 to $23 per month. The analysis considers fuel savings from more efficient vehicles, the incremental purchase cost of those more efficient vehicles, and allowance costs. In addition, it accounts for the fact that a reduction in U.S. oil demand—the U.S. currently consumes nearly a quarter of world oil production—puts downward pressure on world oil prices, and therefore prices at the pump. However, it should be noted that even without this cost-reduction effect, all states still experience a net savings.

Conclusion

By harnessing market forces to create a better energy policy, the American Clean Energy and Security Act will create new jobs and save Americans money on their electric and transportation bills.

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TABLE 1: Clean Energy Jobs by state, with rankings

State	Clean Energy Jobs			
	Total	State rank	Low education / few skills	State rank
AK	29,173	50	12,050	23
AL	3,730	19	1,541	50
AR	29,548	12	17,677	16
AZ	17,732	11	10,030	28
CA	174,927	31	95,661	1
CO	28,149	51	13,719	20
CT	16,741	27	6,915	33
DC	5,726	49	2,365	45
DE	5,514	26	2,278	46
FL	94,725	25	55,245	4
GA	58,816	7	24,294	12
HI	7,146	48	2,952	42
IA	8,504	39	3,513	40
ID	69,624	40	30,240	7
IL	38,013	37	20,046	14
IN	18,290	14	7,555	31
KS	17,070	44	7,051	32
KY	25,705	17	10,618	27
LA	29,095	23	12,018	24
MA	9,957	28	5,688	36
MD	26,605	21	10,990	26
ME	38,410	6	15,865	17
MI	53,816	20	26,119	9
MN	30,263	22	12,501	22
MO	19,007	13	7,851	30
MS	35,989	2	19,972	15
MT	6,303	43	2,604	44
NC	11,059	10	4,568	37
ND	10,553	35	4,359	38
NE	7,686	45	3,175	41
NH	47,519	5	28,075	8
NJ	11,443	3	5,955	35
NM	109,441	16	61,280	3
NV	51,210	1	21,153	13
NY	4,257	47	1,758	49
OH	67,356	46	37,428	6
OK	27,684	24	11,435	25
OR	20,931	33	8,646	29
PA	71,667	32	42,317	5
RI	4,540	42	1,875	47
SC	24,757	4	13,264	21
SD	5,272	34	2,714	43
TN	39,128	18	24,509	11
TX	152,760	8	91,912	2
UT	16,149	41	6,670	34
VA	4,270	15	1,764	48
VT	44,668	9	24,556	10
WA	33,505	38	15,735	18
WI	10,334	36	4,269	39
WV	35,238	30	14,555	19
WY	3,522	29	1,455	51
US Total	**1,713,530**		**870,781**	

TABLE 2: Electricity and Transportation Savings by state, with rankings

State	Electricity Savings		Transportation Savings	
	Monthly savings ($)	State rank	Monthly savings ($)	State rank
AK	6.18	17	5.48	50
AL	4.82	33	15.13	19
AR	4.40	43	17.32	12
AZ	7.96	11	18.40	11
CA	4.63	38	12.25	31
CO	4.47	41	5.08	51
CT	8.11	9	13.41	27
DC	4.06	45	5.69	49
DE	9.01	6	13.77	26
FL	4.90	30	14.22	25
GA	4.66	36	20.00	7
HI	8.17	8	7.08	48
IA	5.11	28	9.35	39
ID	5.17	27	9.24	40
IL	6.94	13	9.84	37
IN	10.31	3	16.81	14
KS	4.00	46	8.44	44
KY	10.87	2	15.65	17
LA	4.86	31	14.79	23
MA	5.53	22	12.75	28
MD	8.07	10	14.83	21
ME	5.81	20	21.15	6
MI	7.94	12	15.00	20
MN	(1.26)	49	14.81	22
MO	6.32	15	16.82	13
MS	4.55	40	23.16	2
MT	4.72	35	8.79	43
NC	4.61	39	18.45	10
ND	(2.31)	51	10.95	35
NE	(2.22)	50	8.39	45
NH	5.82	19	21.86	5
NJ	6.28	16	22.05	3
NM	3.80	47	15.77	16
NV	8.89	7	23.39	1
NY	5.58	21	8.00	47
OH	9.85	4	8.37	46
OK	5.02	29	14.60	24
OR	5.45	23	11.82	33
PA	6.69	14	11.86	32
RI	4.45	42	8.88	42
SC	4.85	32	21.92	4
SD	(0.81)	48	11.73	34
TN	4.12	44	15.45	18
TX	11.64	1	19.06	8
UT	4.66	37	8.95	41
VA	5.29	24	16.17	15
VT	5.27	25	18.83	9
WA	5.18	26	9.82	38
WI	6.15	18	10.58	36
WV	9.03	5	12.43	30
WY	4.75	34	12.55	29
US Avg.	**5.99**		**13.93**	

APPENDIX: METHODOLOGY AND SOURCES

Figure 1 (Jobs)

Methodology Overview:

The figures presented are based on an analysis by the Political Economy Research Institute (PERI), which is an independent unit of the University of Massachusetts, Amherst. Overall job figures per state are from the PERI report "The Economic Benefits of Investing in Clean Energy," commissioned by the Center for American Progress. The figures on jobs accessible to workers with limited educational and work credentials are based on the PERI report "Green Prosperity: How Clean Energy Policies Can Fight Poverty and Raise Living Standards in the United States," commissioned by the Natural Resources Defense Council and Green for All. Both reports fully explain the methodologies used. We provide a brief summary below.

Methodology Notes:

- Net job creation is estimated using input output data from the Bureau of Economic Analysis at the U.S. Department of Commerce. This data traces all of the inputs (i.e., labor and raw materials) that go into the making of a final product. Estimated jobs include direct employment (for example, from building a wind turbine), as well as indirect employment from producing inputs such as plastic and steel. They also include "induced" jobs created by what economists call the "multiplier effect." These jobs result from workers employed in the direct and indirect production spending their earned income on other goods and services in the economy, which in turn supports more jobs.
- The analysis assumes a multiplier of 40%, estimated by the authors from the input output data. That is, the number of induced jobs is assumed to equal 40% of the number of direct plus indirect jobs. This multiplier is in line with low-end estimates found in a survey by economists at the International Monetary Fund (2002). For a more detailed discussion of the authors' methodology, see the Technical Appendices of "The Economic Benefits of Investing in Clean Energy" and "Green Prosperity" reports.
- To create the net number of jobs created by investing in clean energy instead of carbon intensive energy, the same analysis described above is done for an equivalent amount of spending on fossil fuel energy. The estimated jobs (direct, indirect, and induced) are then subtracted from the number of jobs created in clean energy, to arrive at the net increase in jobs.
- PERI calculated the jobs accessible to workers with limited education and work credentials in the "Green Prosperity" report for 21 states. NRDC derived estimated figures for the remaining states by allocating the remainder of the national figure for low-credential jobs reported by PERI among those states for which the figure was not originally calculated. This was accomplished by taking the percentage of low-credential jobs in the states for which such jobs were calculated, and applying that percentage to the total number of jobs (i.e., all levels of credentials) in each of the remaining states. States for which NRDC calculated low-credential accessible jobs by this method are Alabama, Alaska, Connecticut, Delaware, Georgia, Hawaii, Idaho, Iowa, Kansas, Kentucky, Louisiana, Maryland, Massachusetts, Minnesota, Mississippi, Montana, Nebraska, Nevada, New Hampshire, North Carolina, North Dakota, Oklahoma, Oregon, Rhode Island, Utah, Vermont, West Virginia, Wisconsin, Wyoming, and the District Of Columbia. Figures for these states should be considered approximate.
- All figures are rounded to the nearest 500.
- The job figures presented indicate the net jobs that will be created by investing $150 billion in clean energy, an amount PERI calculates based on spending from the American Reinvestment and Recovery Act, the American Clean Energy and Security Act, and the private investments that both will spur. The imposition of a carbon price in the ACES act is particularly important to leveraging the private investments assumed.
- State job figures may not add up to national total due to rounding.

Sources:
PERI: "The Economic Benefits of Investing in Clean Energy" (http://www.americanprogress.org/issues/2009/06/clean_energy.html), "Green Prosperity: How Clean Energy Policies Can Fight Poverty and Raise Living Standards in the United States" (http://www.nrdc.org/energy/greenjobs/).

Figure 2 (Electricity Bills)

Methodology Overview:
The data presented are based on analyses that NRDC commissioned from OnLocation Inc., using NEMS-NRDC. NEMS was developed by the U.S. Department of Energy, and is the model that the Energy Information Administration (EIA) uses to develop its Annual Energy Outlook. OnLocation has extensive experience with the NEMS model, and has provided NEMS model development and support to EIA for over 20 years. For this project OnLocation analyzed ACES using a modified version of the model, which is referred to as NEMS-NRDC. NEMS-NRDC portrays the effects of ACES, including carbon price projections, energy efficiency improvements (represented by adopting EIA's High Technology case assumptions), allocations to local distribution companies (LDCs), and dynamic responses (e.g., demand reductions and fuel switching to lower carbon fuels). The bill's refunds to low-income consumers are not included in the results presented here. The NEMS model generates results at a regional level, not at the state level. NRDC estimated results at the state level by assuming each state's electricity prices and consumption would change by the same percentage as those of the region in which the state is located, and its population would change by the same percentage as the overall U.S. population. As variation may occur between state and regional and state and national trends, these results should be considered approximate.

Methodology Notes:

- Electricity bill savings (or costs) are the difference in residential electricity expenditures (price multiplied by consumption) between the Business-as-usual (BAU) and ACES cases, per household. Changes in expenditures on energy-using devices are not included.
- Business-as-usual state-specific electricity prices and consumption levels are projected to 2020 by scaling state-specific 2007 data in proportion to changes in the electricity prices and consumption levels of the region in which the state is located. [Sources: 2007 state data from EIA. Projected electricity prices and consumption levels of each region from NRDC-NEMS Reference case based on AEO2009.]
- The percentage changes in electricity prices and consumption levels per state under ACES are assumed to be the same as the percentage changes in electricity prices and consumption levels of the region in which the state is located. [Sources: Projected changes in electricity prices and consumption levels of each region from NEMS-NRDC modeling of ACES.]
- State-specific number of households is projected to 2020 using 2000 state-specific data scaled in proportion to the projected change in the national total [Sources: 2000 data from U.S. Census. Projected growth in number of households in total U.S. from EIA.]
- Regions are based on the NERC regions and sub-regions that EIA uses in AEO 2009. If a state falls into more than one region then its projections are calculated through taking a population-based weighted average of the two or more regions into which it falls.
- In the four states with slightly negative numbers shown, electricity prices fall from 2007 levels more under business-as-usual than they do under ACES. As a result, even though there are decreases in electricity bills under ACES, they are smaller than those under business-as-usual. In other words, electricity bills go down in both cases relative to 2007 bills, just less so under ACES.

Sources:
U.S. Department of Energy's Energy Information Administration (EIA), U.S. Census Bureau, and NEMS-NRDC modeling of ACES (which is built upon EIA's Annual Energy Outlook 2009).

Figure 3 (Transportation Costs)

Methodology Overview:

The bulk of the average American household's transportation costs come from owning and operating personal vehicles, such as cars, minivans, SUVs, and pickup trucks. We calculate the savings to households in 2020 by taking the difference in the cost of driving a fleet made up primarily of vehicles that get the same fuel economy as the average new vehicles sold today and the cost of purchasing and driving more efficient vehicles. The cost of driving is simply the product of fuel consumption and gasoline prices. For both the base and more efficient vehicle cases, we start with gasoline prices as projected by DOE's Energy Information Administration (EIA). When calculating the transportation cost of the more efficient fleet, however, we adjust the cost to include two counteracting effects: (1) fuel prices increase because of the carbon cap under ACES (about 5% in 2020), and (2) state gasoline expenditures decrease because a reduction in U.S. oil demand puts downward pressure on world oil prices, and therefore state gas prices. It should be noted that, even without the cost-reduction effect in (2), all states have net savings. A national vehicle fleet stock turnover model developed by Therese Langer at ACEEE projects on-road vehicle efficiency. When that efficiency is divided into mileage estimates, it provides national fuel consumption projections. For this analysis, the 2020 national consumption is then allocated to states in proportion to historic state-level consumption data from EIA. State-level fuel costs are calculated by multiplying a state's consumption by its gasoline prices.

Methodology Notes:

- The Obama Administration recently enacted new vehicle standards of 27.3 mpg for model year (MY) 2011 and announced an extension of those standards to reach 35.5 mpg for MY 2016. The savings in our calculations reflect a comparison of these new standards with a fleet that remains at 2008 levels for cars and 2011 levels for light trucks (based on EPA data and regulations enacted before the Energy Independence and Security Act). The improved fleet increases linearly between 2011 and 2016 and then remains at the 2016 level.
- State gasoline prices for the base case are assumed to equal the regional prices for the region in which the state is located, as reported by EIA's Annual Energy Outlook 2009 (Updated Release, which reflects the American Recovery and Reinvestment Act). In the ACES+vehicle standards case, those base case gasoline prices were increased in proportion to the carbon content of fuel consumption using allowance prices (in $/MTCO2e) from the Congressional Budget Office (CBO). Also in the ACES+vehicle standards case, we accounted for the fact that changes in U.S. oil demand can affect world oil prices and therefore U.S. gasoline prices. Today, the U.S. consumes nearly a quarter of world daily production and a reduction in demand from driving more efficient vehicles will lower worldwide demand and therefore oil prices. NHTSA estimated in its MY2011 CAFE ruling that reduced oil consumption resulting from a more efficient vehicle fleet reduced world oil prices enough to save Americans 27 cents for every gallon of gasoline reduced. We therefore applied a 27 cent per gallon savings to the amount reduced in a given state. We did not include NHTSA's total per gallon savings resulting from increased energy security and protection from oil price shocks.
- The technology to make more efficient vehicles increases the price of the vehicles. The Obama Administration estimates that MY2016 vehicles that average 35.5 mpg will cost approximately $1300 more than today's vehicles. NHTSA estimates that achieving the shorter run MY2011 standard will cost less, at $91 per vehicle. To get costs for MY2012-2016, we interpolate linearly between MY2011 and MY2016 costs. We also assume that the incremental cost is not paid for entirely upfront but is included in a 5-year loan with an 8 percent interest rate. We allocate the more efficient vehicle incremental costs to individual states according to an estimate of new vehicles sales in each state. We use the EIA AEO 2009 projection of national sales and assign each state a share of new sales in proportion to a recent breakdown of vehicles per state provided by Ward's Automotive Group for 2006.

- It is also worth noting that though a main driver of savings is the switch to more efficient vehicles, and low income households tend to drive older and less efficient vehicles, there are provisions in the bill to ensure that low-income households are not negatively impacted. More specifically, ACES provides 15% of allowance value to low-income households in the form of a rebate to fully cover their increased costs (not only for transportation, but for home energy and all other direct and indirect costs). In fact, a recent Congressional Budget Office analysis shows that low-income households will actually benefit slightly under ACES.

Sources:
U.S. Department of Energy's Energy Information Administration, Congressional Budget Office, National Highway Traffic Safety Administration, Obama Administration, California Air Resources Board (CARB), American Council for an Energy-Efficient Economy, and Ward's Auto.