The Clean Energy Future Starts Here

Understanding the American Clean Energy and Security Act

ENVIRONMENT AMERICA

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Executive Summary

America's dependence on fossil fuels wreaks havoc on our environment and is a drag on our economy. With a new president committed to tackling our energy challenges – and with the momentum generated by a decade of clean energy innovation at the state level – Congress has taken up the task of mapping out a new energy future for the nation.

The American Clean Energy and Security (ACES) Act, passed by the House this June and currently under consideration by the U.S. Senate, is the fruit of that effort. Passing the ACES Act – even with the compromises made to secure passage in the House – would be a significant step toward a clean energy future for the United States and would represent a ground-breaking political achievement.

We have the technology and the know-how to repower America with clean energy. Congress and the president should embrace and work to achieve ambitious goals to obtain our electricity from clean sources, curb our dependence on oil, create millions of new jobs, and prevent the worst impacts of global warming.

- America can save energy by improving the efficiency of our homes, businesses and factories. At the same time, America has access to enough energy from the sun, wind, water and other renewable sources to power the nation several times over. *The nation should set a goal of obtaining 100 percent of our electricity from clean sources of energy.*
- We have the tools to use less oil in our transportation system by vastly improving the energy efficiency of our vehicles, replacing at least some of the oil we use with cleaner sources of energy, and bringing new transportation options – including public transportation, high-speed rail, and more opportunities for walking and biking – to more Americans. *The nation should strive to achieve energy independence by cutting our consumption of oil in half.*

- Hundreds of thousands of Americans already work in clean energy industries. Repowering America would create millions of new jobs in manufacturing, installing, financing, selling and servicing energy efficient products and renewable energy technologies. *America should embrace the goal of creating five million clean energy jobs to revitalize our economy.*
- The actions we take to repower America with clean energy will also dramatically reduce our emissions of pollutants that contribute to global warming. To prevent the worst impacts of global warming, *America should commit to reducing our emissions of global warming pollutants by at least 35 percent by 2020 and by at least 80 percent by 2050.*

State and local governments have laid the groundwork for a new energy future for America through innovative public policies. The Obama administration, in its first months in office, has followed suit. Together, those efforts have made a meaningful contribution toward achieving the vision of an America powered by clean energy.

- More than two dozen states have adopted minimum requirements for the percentage of their electricity that comes from renewable energy. Nineteen states have set similar requirements for tapping energy savings from improved efficiency. Fourteen states adopted clean cars standards designed to reduce global warming pollution from cars and light trucks. Six states have adopted enforceable caps on global warming pollution. And many states, cities and towns have taken other important steps to promote clean energy.
- These state efforts are making a difference. America now gets a greater share of our electricity from wind, solar, geothermal and biomass energy than at any time in our modern history. In the two-year span between 2006 and 2008, America's production of wind power nearly doubled and our production of solar power increased by two-thirds. State energy efficiency programs, meanwhile, saved approximately 63 billion kilowatt-hours of electricity in 2007, enough to power 5.6 million American homes.
- Recent efforts by the Obama administration and Congress – most notably the American Recovery and Reinvestment Act enacted in February – build on these efforts. By investing in clean energy technologies, the economic recovery plan will:
  - Double the amount of wind power produced in America in 2012 compared with business-as-usual projections.
  - Reduce energy consumption for home heating by 1.7 percent, and for cooling by 3.0 percent, in 2030.
  - Reduce household energy bills by $64 per year on average between 2009 and 2030.
- In addition, the Obama administration's proposal to improve vehicle fuel economy will save 19 billion gallons of gasoline per year by 2030, reducing our dependence on foreign oil.

The American Clean Energy and Security Act moves the nation further toward a clean energy future.

- The ACES Act includes strong provisions to improve the energy

efficiency of the American economy, as well as the nation's first-ever mandatory nationwide limits on emissions of global warming pollutants. In addition, the bill establishes a framework for the future expansion of renewable energy in the United States.

- Analyses of the bill by the Environmental Protection Agency, the Department of Energy and others show that the ACES Act will move the nation one large step closer to a clean energy future. These analyses (which undersell the benefits of the bill because they omit analysis of several key provisions) project that the ACES Act will:
  - Reduce electricity consumption by 7 to 12 percent by 2030 versus business-as-usual projections through improvements in energy efficiency.
  - Increase the share of America's electricity coming from non-hydroelectric renewable sources of energy from a projected 10 percent to approximately 15 percent by 2030.
  - Cut our consumption of oil by at least 4 to 7 percent below business-as-usual in 2030, with America using up to 12 percent less oil in 2030 than we did in 2006.
  - Create hundreds of thousands to millions of new jobs.
  - Reduce domestic emissions of global warming pollutants by 5 to 14 percent by 2020 and by 15 to 21 percent by 2030, and drive overall emission reductions (including reductions overseas achieved through the use of "offsets") equivalent to 25 to 38 percent of 2005 U.S. emissions by 2020 and 40 to 46 percent of U.S. emissions by 2030 (assuming all offsets are real, additional, and permanent).

However, the ACES Act gets several important things wrong and so represents an incremental, rather than a transformative step toward a clean energy future. The following flaws in the bill should be fixed in the Senate:

- The bill removes EPA's authority to regulate carbon dioxide emissions from existing coal-fired power plants – the majority of which are already more than a quarter-century old – removing an important tool from the toolbox of strategies that can speed the transition from inefficient, polluting technologies to clean, renewable sources of power.
- The ACES Act's heavy reliance on offsets – global warming emission reductions that take place overseas or in areas of the economy not covered by the emission cap – and its lack of clarity regarding how the offset program will be implemented leave too much to chance, possibly eroding the bill's effectiveness in reducing global warming pollution and promoting clean energy.
- The ACES Act misses out on important opportunities to expand the use of renewable energy and create new clean energy jobs. The renewable electricity standard (RES) in the bill will not result in any additions of renewable energy beyond those already forecast (although other provisions in the bill will promote renewables). And by giving away a significant number of valuable emission allowances to polluters, the bill fails to invest the resources necessary to encourage the clean energy technologies of the future.

Despite these flaws, passage of the ACES Act would be an historic achievement, for both substantive and political reasons.

- The ACES Act is a **clear step in the right direction** and, if passed into law, will result in significant improvements in the energy efficiency of the American economy and our use of clean energy – helping to reinvigorate America's economy and prepare the nation for the serious energy challenges it faces in the decades to come.
- Passage of the bill would represent a **political breakthrough** – the first time the U.S. Congress has ever set mandatory limits on emissions of global warming pollutants – and establish a precedent for action that can be built on over time.
- The ACES Act requires periodic scientific review that creates a pathway for the bill's goals to be **strengthened over time**.
- Passage of the ACES Act would **send a message to the world** that America is serious about dealing with our energy challenges, including global warming. American leadership is particularly important with world leaders scheduled to meet in Copenhagen this December to construct a successor to the Kyoto Protocol.
- Finally, the battle over the ACES Act presents an historic opportunity to educate the public about the need for a clean energy future and to **build strength** and momentum for future battles to come.

Even assuming passage of the ACES Act, much work will remain to be done to repower America with clean energy. Among the most urgent tasks are:

- Winning a national renewable electricity standard that assures that the nation will get at least 25 percent of its electricity from new, renewable sources of power by 2025.
- Adopting a national energy efficiency resource standard designed to cut America's electricity consumption by 15 percent by 2020.
- Implementing a national low-carbon fuel standard with a goal of cutting the global warming impact of transportation fuels by 10 percent by 2020 – encouraging a transition to cleaner, non-petroleum fuels for cars and trucks.
- Investing in new transportation choices for Americans, including efficient public transportation and high-speed rail, and expanding Americans' opportunities to walk and bike to the places they need to go.
- Encouraging the development and implementation of innovative clean energy policies and programs by state and local governments.
- Ensuring that the ACES Act and similar efforts to reduce global warming pollution at the state level deliver real results and ensuring that the United States takes leadership in securing a worldwide agreement to reduce global warming pollution.

Introduction

Eight years ago this January, a new administration came to Washington with a vision for America's energy future.

It was a vision that included oil rigs in the Arctic National Wildlife Refuge and off our coastlines, hundreds of new power plants, many of them operated on coal, and a massive rollback of environmental protections. Left out of that vision: clean, renewable energy and any meaningful efforts to help Americans use energy more wisely. To the architect of the new administration's plan, Vice President Dick Cheney, "conservation may be a sign of personal virtue but it is not a sufficient basis for a sound, comprehensive energy policy."

How far we have come.

Less than a decade later, wind turbines are sprouting by the hundreds on the plains of West Texas; solar panels are taking root on rooftops in New Jersey; highly efficient hybrid-electric vehicles – virtually unheard of eight years ago – are now in the driveways of more than 1 million Americans; there are more than 2,400 certified green buildings in the United States; and energy efficient products such as compact fluorescent light bulbs are becoming common fixtures in American homes.

A new president has taken office – one who campaigned on a clean energy platform, accepts the challenge of dealing with global warming, and has committed to rebuilding the American economy on a foundation of green jobs.

It is virtually impossible to get 90 percent of Americans to agree on anything, but more than 90 percent now believe that the federal government should take action to build more solar and wind power. About three-quarters of Americans support more action to encourage energy conservation in homes, business and industry.[1]

How far we have come … but how far we have yet to go.

Despite the progress America has made toward a new energy future, the scale and seriousness of the energy challenges we face are greater than ever. International events have reminded Americans that

the money we spend to satisfy our dependence on oil at home can feed instability abroad. Hurricane Katrina, *An Inconvenient Truth*, and the conclusion of the U.N. Intergovernmental Panel on Climate Change that the evidence of human-caused global warming is now "unequivocal" have started to open Americans' eyes to the necessity and urgency of dramatically reducing our use of fossil fuels that contribute to global warming. And price spikes for oil and natural gas have reminded us that fossil fuels are inherently finite resources.

This June, in an effort to address these challenges and reposition the United States as a world leader in addressing global warming, the U.S. House of Representatives adopted the American Clean Energy and Security (ACES) Act, a bill that includes the nation's first-ever mandatory, economy-wide limits on global warming pollution and sweeping reforms in almost every area of America's energy economy. The Senate is slated to consider its own version of the bill this fall.

The ACES Act makes progress on many fronts toward the goal of repowering America with clean energy. It builds on the momentum generated by a decade's worth of clean energy innovation at the state level and the Obama administration's ambitious early efforts to improve the energy efficiency of our buildings and vehicles. It creates a framework for continuing that progress into the future. And it will create hundreds of thousands of new green jobs here in the United States.

Nonetheless, the ACES Act is not all that it could or should be. The bill's failure to guarantee emission reductions consistent with those that science tells us are necessary to prevent the worst impacts of global warming is troubling. And in many other areas, the political compromises made to ensure the bill's narrow passage in the House are disappointing.

Despite the progress America has made toward a new energy future, the scale and seriousness of the energy challenges we face are greater than ever.

Powerful interests, ranging from the coal industry to electric utilities, have already used their influence to extract concessions under the ACES Act, and will continue to try to do so as the legislative battle moves to the Senate. Winning passage of a strong version of the ACES Act through the U.S. Congress will take one heck of a fight.

The ACES Act isn't perfect, but it is a beginning, not an end. No single piece of legislation will ever be sufficient, in and of itself, to achieve a clean energy future. And the effort to address America's energy challenges and embrace a better future will and must continue, regardless of the fate of the ACES Act.

This paper argues that winning passage of the ACES Act will leave America in a far better position to address those challenges than it would be otherwise.

In short, the battle to pass the ACES Act is a fight worth winning.

The Goal: Repowering America with Clean Energy

Lewis Carroll wrote, "If you don't know where you are going, any road will take you there." As Congress considers sweeping legislation to revamp our energy economy, it is critical to know where we should be headed so that we are sure to take the right road.

America should head toward a new energy future – one in which we produce the vast bulk of our energy here at home, using energy sources that never run out. A new energy future is one in which we get the energy we need without producing pollution that harms our health or the health of the planet. And it is a future in which America enjoys a vibrant economy built on a foundation of green jobs, and without the turmoil and uncertainty caused by volatile fossil fuel prices.

America has the technology, the resources, and the know-how to achieve the goal of a new energy future starting right now. The vast majority of Americans are eager to get started. Congress should adopt legislation that moves us toward the goal of a clean energy future – and the faster the better.

Clean Power

America does not need to rely on dirty and dangerous sources of energy for our electricity. We can use electricity more wisely and improve the energy efficiency of our homes, businesses and factories. We can also take advantage of America's virtually limitless potential to generate electricity from the wind, sun and other renewable sources.

America should embrace a future of clean power by making our economy more energy efficient and getting 100 percent of our electricity from clean sources.

Improving Energy Efficiency

The first step is to use energy more wisely. Energy efficiency is the cleanest, cheapest, fastest way to address America's

energy challenges – our greatest untapped energy resource. Leaky windows, inefficient furnaces, energy-sucking appliances and light bulbs are all sources of energy waste – but they are also sources of energy we can reap to meet our nation's needs.

Smart public policies can encourage energy efficiency improvements in all areas of our economy. A recent analysis by the McKinsey & Company found that cost-effective improvements in energy efficiency – those that pay themselves back over time – could reduce energy consumption in homes, business and industry by 23 percent by 2030 compared with business-as-usual projections.[2]

Renewable Energy

The energy that we can't save we should obtain from clean, renewable sources that will never run out. America has vast renewable energy resources – the heat of the sun, the movement of the wind and waves, the heat beneath the earth's surface, and the energy contained in trees and crops – capable of powering the nation several times over.

The wind blowing over just five U.S. states – North Dakota, South Dakota, Kansas, Montana and Texas – could theoretically produce enough electricity to power the entire United States.[3] Similarly, America's coastlines could host enough wind turbines to nearly match the capacity of all of America's current electricity generators combined.[4] Concentrating solar power (CSP) plants installed on just 9 percent of the land area of Nevada – the area contained by a square 100 miles to a side – could produce enough electricity to power the entire United States.[5] Meanwhile, the space available on America's rooftops could host enough solar photovoltaic panels to provide more than 700 gigawatts of generation capacity – representing about 70 percent of the capacity of America's existing power plants.[6]

The wind blowing over just five U.S. states can generate as much electricity as is currently used in the entire nation.
Photo: Oak Ridge National Laboratory

Other forms of renewable energy can also help break dependence on dirty and dangerous sources of electricity. There is enough traditional and enhanced geothermal energy potential in the United States to support more than 500 gigawatts of electricity generation – equivalent to about half the total electricity production capacity in the United States today.[7] Plant-based energy and energy from waves and currents could augment America's supplies of renewable energy, playing significant roles in our energy future.

We do not need to wait to tap this potential. Recent analyses suggest that the United States could realistically get at least 20 percent of our electricity from the wind by 2030[8] and at least 10 percent

of our power from the sun by 2025.[9] Continued advances in technology – coupled with improvements in the electric grid and efforts to tap other readily available sources of renewable energy – could vastly expand the share of our electricity needs we can meet with renewable energy. America should settle for nothing less than a future in which *all* of our electricity comes from clean, renewable sources.

Energy Independence

America now imports 57 percent of our oil from abroad – up from 27 percent in 1985 – threatening our economy and our national security.[10] We spent twice as much on gasoline in 2008 as we did just five years earlier – an additional $220 billion per year sucked out of Americans' pocketbooks, with much of it sent to high-profiting Big Oil companies and unfriendly nations overseas.[11]

Thankfully, there are many opportunities to reduce our consumption of oil. America should adopt the ambitious goal of ***achieving energy independence by cutting our consumption of oil in half – nearly as much as we currently import from all other nations.***

Reducing our use of oil in homes, business and industry can help curb America's dependence on petroleum. But we use most of our oil to power cars, trucks, planes, trains and other forms of transportation. To break our dependence on oil, we need cars and trucks that go further on a gallon of gas, clean fuels that can substitute for petroleum without harming the environment, and more transportation choices for more Americans.

More Efficient Cars and Trucks

In 2009, President Obama committed to improve the fuel economy of cars and light trucks to an average of 35.5 miles per gallon by model year 2016. That single step will save a total of approximately 1.8 billion barrels of oil over the lifetime of the vehicles affected – twice as much as we import from the Persian Gulf each year.[12]

The oil savings delivered by these new standards, however, are only the tip of the iceberg of what is possible. By using advanced technologies, such as hybrid-electric vehicles, the Union of Concerned Scientists projects that we could lift the average fuel economy of the U.S. light-duty vehicle fleet to 55 miles per gallon by 2030 – meaning that Americans could use less than half as much oil to travel the same number of miles as today.[13] Similar improvements are possible for other transportation vehicles that use oil – such as heavy-duty trucks, planes and trains.

Clean Fuels

A second way to wean ourselves off of oil is by replacing the oil we use in transportation with alternative fuels. Not all alternative fuels are good for the environment or enhance our energy security – fuels such as coal-to-liquid fuels and oil from tar sands and oil shale all produce more global warming pollution than gasoline and cause serious environmental damage, making them poor substitutes for conventional oil. Even fuels such as corn-based ethanol can have significant environmental impacts and dubious benefits for reducing global warming emissions.

Yet, there are some alternative fuels that have the potential to be good substitutes for oil. Electricity – whether used in electric cars, plug-in hybrids, or trains – can reduce global warming emissions

and other forms of air pollution, especially when the electricity is generated from clean sources. Ethanol produced from energy crops and crop wastes could also someday play a role in reducing oil consumption in cars.

Expanding Transportation Choices

Even if America moves toward more efficient cars powered in part by clean fuels, we will remain dependent on oil if we drive more miles with each passing year. In many areas of the country, unfortunately, driving is the only convenient transportation choice available. That leaves too many Americans vulnerable to spikes in gasoline prices, stuck in long and frustrating commutes, and subjected to dangerous pollution from vehicle tailpipes.

Modern public transportation – such as this streetcar line in Portland, Oregon – can provide new transportation choices for Americans while reducing oil consumption, global warming pollution, and emissions of air pollutants linked to asthma attacks and other health problems.

Photo: istockphoto.com, Daniel Deitschel

The United States should invest in creating a balanced, modern transportation system, one in which a range of options – including light rail transit, commuter rail, subways, modern buses, high-speed rail, and even biking and walking – can meet our transportation needs. Americans with access to transportation alternatives are already embracing them; in 2008, for example, public transportation ridership hit a 52-year high.[14] By investing in transportation alternatives – and by developing communities where more people can reach work, stores, schools and entertainment via transit, on foot or on bike – we can reduce our dependence on oil while curbing congestion on our roads.

With progress toward more efficient cars and trucks running on cleaner, non-petroleum fuels and the addition of more transportation choices for more Americans, America can achieve the goal of cutting our consumption of oil in half – effectively freeing ourselves from reliance on foreign oil and reducing the pressure to drill in pristine or environmentally sensitive areas of the United States.

Creating Millions of Green Jobs

Most Americans understand that our dependence on fossil fuels is harmful to our environment, our national security *and* our economy. To put America on track for a clean energy future, we need to make sure that that future enables a healthy and vibrant economy built on a foundation of green jobs.

While they may not necessarily know it, many Americans already hold "green jobs." The Pew Center for the States estimated that, in 2007, 770,000 Americans working for 68,200 businesses in all 50 states were employed in the "clean energy economy."[15]

Workers assemble blades for wind turbines. *Photo: NEG Micron*

And that is only the beginning of what is possible. Wind and solar power manufacturers are building new plants across the country to take advantage of increased demand for renewable energy. In 2008, for example, 10 new wind energy manufacturing facilities were opened in the United States and 17 existing facilities were expanded, helping the wind industry to add approximately 35,000 jobs over the previous year.[16]

"Green" jobs aren't all that different from regular jobs. In fact, most of them *are* regular jobs.

Engineers and accountants work to plan and finance renewable energy projects. Skilled construction workers build renewable energy facilities and renovate homes and businesses to maximize energy efficiency. Manufacturing workers produce wind turbine towers, fuel-efficient cars, solar panels, energy efficient products and more. Agricultural workers produce energy crops. And behind those ranks of clean energy workers are many others who owe their jobs at least in part to the increased economic activity generated by clean energy investment, whether they are truckers, producers of raw materials, service workers or employees at corporate headquarters.

By investing in a new energy future, we can put millions of Americans back to work, while also keeping more of our hard-earned dollars at home. In 2008, the nation spent more than $1 trillion on fossil fuels – with much of that money leaving the American economy and being shipped overseas to pay for imported oil.[17] By contrast, investments in energy efficiency and renewable energy technology keep money in the American economy, spurring the creation of additional jobs in all segments of the economy.

Reducing Global Warming Pollution

America's dependence on fossil fuels doesn't just threaten our security and economic health, but it also pollutes the environment. Smog, soot and mercury pollution from fossil fuel burning threaten the health of millions of Americans, and fossil fuel consumption is the number one contributor to global warming.

The science is clear: to avoid the most dangerous impacts of global warming, we must limit additional warming to as far as possible below 2 degrees Celsius over pre-industrial levels.[18] According to the Intergovernmental Panel on Climate Change (IPCC), we have a reasonable chance of meeting this objective if developed countries as a whole cut their emissions to 25-40 percent below 1990 levels by 2020 and to 80-95 percent below

1990 levels by 2050.[19] Major developing countries also must act.[20]

The United States, which is responsible for more of the global warming pollution in the atmosphere than any other nation and remains the world's second-largest polluter, must shoulder our share of the burden. The IPCC's targets for developed nations translate into U.S. emission reductions equivalent to at least 35 percent of 2005 levels by 2020 (with the majority of those emission reductions occurring domestically), and at least 83 percent of 2005 levels by 2050.[21]

Meeting those goals will be challenging, but it can be done. A series of recent analyses show that the nation has ample opportunities to reduce global warming pollution – often in ways that benefit the economy. A 2009 study by McKinsey & Company estimated that cost-effective investments in energy efficiency improvements in homes, business and industry could reduce U.S. emissions by an amount equivalent to 15 percent of 2005 emissions by 2020.[22] The Union of Concerned Scientists, looking at a broader set of clean energy initiatives, found that the nation could reduce global warming emissions by 30 percent below 2005 levels by 2020 and by 44 percent below 2005 levels by 2030 – all while delivering $465 billion in annual savings by 2030.[23]

The nation has ample opportunities to reduce global warming pollution – often in ways that benefit the economy.

Many of the steps we take to reduce global warming pollution are the same steps that are needed to free ourselves of our dependence on fossil fuels – including improving the energy efficiency of our economy and developing our renewable energy potential.

America Is Making Progress Toward a Clean Energy Future

America has made great strides toward a clean energy future over the last decade. Like most great changes in American history, the clean energy revolution has taken place from the bottom-up, with path-breaking innovations at the state level eventually working their way up to Washington, D.C.

The American Clean Energy and Security Act, in other words, did not emerge suddenly and from out of nowhere. Nor is it the only game in town. Local and state governments, along with the federal government, have a variety of policy tools they can use to advance the nation toward a clean energy future. Those tools have already made a meaningful contribution toward the goal of repowering America with clean energy.

States Are Leading the Way

Over the last decade, frustrated by inaction at the federal level, states have increasingly taken energy policy into their own hands. The result has been a flurry of innovative policies designed to reduce dependence on fossil fuels, clean up the environment, and create good clean energy jobs.

Renewable Electricity Standards

Twenty-nine states and the District of Columbia have committed to increasing the share of their electricity that comes from clean, renewable sources of electricity through renewable electricity standards (RESs). State RESs have contributed to the boom in renewable energy development taking place in much of the country – a recent analysis by the Lawrence Berkeley National Laboratory found that 70 percent of the record amount of wind power installed in the nation in 2008 was in states with an RES.[24] Renewable energy targets in RES states are scheduled to increase over time, such that 76.7 gigawatts of qualifying renewable energy facilities will be online by 2025 – equal to about 7 percent of the

nation's current electricity generating capacity.[25]

Energy Efficiency Resource Standards

A total of 19 states have adopted specific targets for energy savings to be achieved through improvements in energy efficiency.[26] Leading states with energy efficiency resource standards (EERSs) have achieved savings of 1 percent or more per year in total electricity use through programs designed to improve the efficiency of homes, businesses and industry.[27]

Clean Cars Program

Fourteen states adopted the Clean Cars Program initiated by the state of California, the centerpiece of which is the first-ever emission standards for global warming pollution from cars. The standards are designed to reduce global warming pollution from new cars by 34 percent and new light trucks by 25 percent by model year 2016, with the additional benefit of achieving similar reductions in gasoline consumption. Earlier this year, President Obama announced that he would apply similar standards nationwide – with states able to adopt stronger standards after 2016.

Energy Efficiency Programs

Thirty-five states have ratepayer-supported energy efficiency programs for electricity consumers, while at least 19 states have similar programs for natural gas customers.[28] These programs provide important services, such as home and business energy audits, weatherization assistance, and financial incentives for the purchase of energy efficient appliances or equipment. These energy efficiency programs saved approximately 63 billion kilowatt-hours of electricity in 2007 (enough to power 5.6 million average American homes), along with 218 million therms of natural gas (enough to power nearly 300,000 homes).[29]

Building Codes and Appliance Standards

States have also taken leadership by adopting advanced, energy efficient building codes and energy efficiency standards for appliances. Eleven states have adopted energy efficiency standards for appliances and equipment, while others have moved quickly to adopt model energy efficient building codes or develop their own strong codes to ensure that new homes and commercial buildings do not waste energy.[30]

Caps on Global Warming Pollution

Six states – California, Connecticut, Hawaii, Massachusetts, Maryland and New Jersey – have adopted mandatory caps on global warming pollution from their states' economies. In many other states, governors have established emission reduction goals by executive order and developed climate change action plans with lists of recommended actions to achieve those targets.

Recognizing that issues related to energy production and use cross state borders, leaders in several areas of the country have worked to develop regional programs to reduce global warming pollution. One pioneering effort – the Regional Greenhouse Gas Initiative (RGGI) – brought together 10 northeastern states to create a cap-and-trade program for carbon dioxide emissions from electric power plants. The program, which began operation in 2009, is designed to reduce emissions from the region's power plants by 10 percent by 2019 and even now is

demonstrating the feasibility of cap-and-trade as a mechanism to address global warming pollution in the United States.

Washington Begins to Meet the Challenge

The first months of the Obama administration have seen quick progress in efforts to move the nation toward a cleaner energy future. Among the most significant efforts are the following:

A Green Economic Recovery Plan

The American Recovery and Reinvestment Act, passed by Congress and signed by President Obama in early 2009, included a $78 billion investment in energy efficiency, clean energy and green transportation. Among the highlights of the bill were:

President Obama and Vice President Biden inspect solar panels on the roof of the Denver Museum of Nature & Science prior to the signing of the American Recovery and Reinvestment Act, which will provide a big boost to renewable energy projects.

Photo: White House, Pete Souza

- Extension of federal tax incentives for renewable energy development, assuring would-be developers of renewable energy projects reliable, long-term support for their investments.
- An increase in funding for the nation's proven Weatherization Assistance Program, which improves energy efficiency for low-income homeowners.
- Creation of a new grant program to provide funding for state and local government efforts to improve energy efficiency.
- Increased investment in public transportation, rail infrastructure, and high-speed rail.
- Investment in advanced transportation technologies, such as plug-in hybrid vehicles.
- Investment in job training programs for emerging "green jobs."[31]

A U.S. Department of Energy analysis of the law's impact estimated that it will:

- Double the amount of wind power produced in America in 2012 compared with business-as-usual projections.
- Reduce energy consumption for home heating by 1.7 percent, and for cooling by 3.0 percent, in 2030.
- Reduce household energy bills by $64 per year on average between 2009 and 2030.
- Reduce energy expenditures in the commercial sector by an average of 2.7 percent between 2010 and 2030.[32]

Clean Cars Standards

As noted above, in May 2009, President Obama announced new standards for vehicles that are designed to improve fuel economy and reduce emissions of global warming pollutants. These standards for cars, SUVs and light trucks are intended to boost the average fuel economy of new vehicles to 35.5 miles per gallon by model year 2016, saving a total of approximately 1.8 billion barrels of oil – twice as much as we import from the Persian Gulf each year.[33] By 2030, Americans will be using 19 billion fewer gallons of gasoline each year as a result of the new standards, and the measure is projected to reduce global warming pollution by 29 billion metric tons over the course of the next century – savings equal to four years' worth of America's current emissions.[34]

Energy Efficiency Standards for Lighting and Appliances

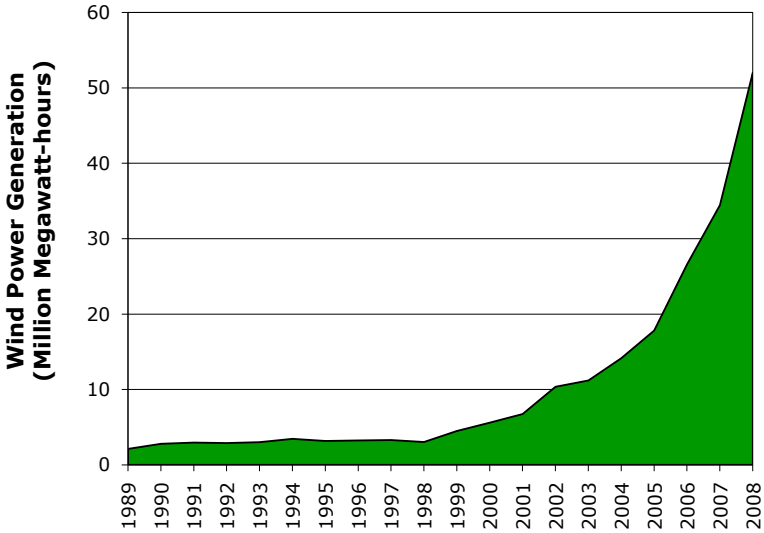
In June 2009, the Obama administration announced new energy efficiency standards for lighting – one of a series of new standards due to be issued over the next several years as a result of the 2007 energy bill adopted by Congress. The new standards are estimated to save 1.2 trillion kilowatt-hours of electricity over the next 30 years – approximately the same amount of electricity as used by all of America's homes in a year.[35]

Keeping Up the Momentum

Justice Louis Brandeis called states "the laboratories of democracy." Over the last decade, the states have been the proving grounds for a variety of innovative energy policy ideas, while the federal government – once largely on the sidelines – has finally begun to offer meaningful support.

The impact of these efforts is beginning to be felt across the country. Excluding hydroelectric power, America now generates a greater share of our electricity from renewable sources than at any time in our modern history. In the two-year span between 2006 and 2008, America's production of wind power nearly doubled and our production of solar power increased by two-thirds.[36]

Figure 1. Wind Power Generation, United States



No single piece of legislation enacted by Congress – however ambitious – will get us all the way to a new energy future. It will take effort by individuals, businesses and governments at all levels to put the nation on track to a future powered by clean energy and to keep it on track. But any federal legislation should move the nation in the right direction, expanding on efforts at the local and state levels to tap clean sources of energy, reduce our dependence on oil, create new green jobs, and reduce pollution.

So, by that measure, how does the American Clean Energy and Security Act stack up?

The American Clean Energy and Security Act Moves America in the Right Direction

The American Clean Energy and Security Act builds on the clean energy advances made over the past several years by the states and in the early months of the Obama administration – moving the nation yet another step toward a clean energy future.

Analyses by the U.S. Department of Energy (DOE), the Environmental Protection Agency (EPA) and others project that the ACES Act will:

- Reduce electricity consumption by 7 to 12 percent by 2030 versus business-as-usual projections through improvements in energy efficiency.
- Increase the share of America's electricity coming from non-hydroelectric renewable sources of energy to approximately 15 percent by 2030, compared with 10 percent under business-as-usual conditions.
- Cut our consumption of oil by 4 to 7 percent below business-as-usual in 2030, with America using up to 12 percent less oil in 2030 than we did in 2006.
- Create hundreds of thousands to millions of new jobs.
- Reduce domestic emissions of global warming pollutants to 5 to 14 percent below 2005 levels by 2020 and to 15 to 21 percent below 2005 levels by 2030, while driving further emission reductions abroad.

Because both the DOE and EPA analyses fail to estimate the impact of several key pieces of the ACES Act, it is likely that the bill will deliver additional energy savings, renewable energy development and global warming pollution reductions beyond those projected by the agencies.

The American Clean Energy and Security Act: What It Does

The American Clean Energy and Security Act seeks to transform how America uses and produces energy – encouraging a shift toward energy-efficient

buildings and products and forms of energy with less impact on the environment.

The ACES Act seeks to move America toward a clean energy future by:

- Improving the energy efficiency of the American economy.
- Capping emissions of global warming pollution, thereby encouraging investment in cleaner forms of energy.
- Expanding production of clean, renewable energy.

The ACES Act Makes Big Strides in Promoting Energy Efficiency

The American Clean Energy and Security Act marks a leap forward in improving the energy efficiency of virtually every aspect of America's economy. Among the key energy efficiency provisions of the bill are the following:

- New energy efficiency standards for lighting, appliances and equipment, as well as awards to manufacturers and retailers who develop and sell "best in class" energy-efficient products;
- Advanced building energy codes intended to reduce energy consumption in new homes and commercial buildings by 50 percent by 2015 and by 75 percent by 2030;
- Expanded programs for energy efficient retrofits of existing buildings, along with the creation of an energy labeling system for new homes and commercial buildings that would enable purchasers to evaluate the efficiency of those buildings at the point of sale;
- A requirement that the EPA establish global warming emission standards for heavy-duty trucks by 2011 and implement programs to reduce emissions from freight transport;
- New guidelines for local and state transportation planning that intend to align transportation investments with climate and energy targets; and
- Steps to encourage energy efficiency improvements and to expand the use of energy recovery technology in manufacturing plants.

In addition, the ACES Act allocates a portion of the revenue from the sale of global warming pollution allowances under the cap-and-trade program (see below) to energy efficiency and renewable energy. Additional allowances are distributed to natural gas utilities and to states with large numbers of homes using oil or propane for heating, with part of those allowances dedicated to energy efficiency. Finally, the ACES Act allocates some revenue from the sale of pollution allowances to clean energy innovation hubs that will engage in research and development of clean energy solutions, including energy efficiency technologies.

The ACES Act Caps Global Warming Pollution, Helping to Encourage Clean Energy

The ACES Act includes the nation's first economy-wide limits on global warming pollution. Because most global warming pollution comes from the consumption of fossil fuels, a strong cap on pollution can be a key driver in the development of a new clean energy economy. The ACES Act also ensures that America is part of a global solution to the problem of tropical deforestation, which is a major contributor to global warming.

The nominal targets for emission reductions in the ACES Act are roughly consistent with the reductions scientists tell us are necessary to prevent the worst

impacts of global warming, but the near-term target should be stronger. More importantly, however, there are legitimate questions about whether the global warming pollution cap in the ACES Act will achieve its desired results.

The mechanism used in the ACES Act to regulate global warming pollution is called "cap and trade." Cap and trade has been the most widely discussed portion of the ACES Act … to the point where it seems that sometimes it is the *only* part of the bill discussed in news reports.

The "cap" in cap and trade is the annual limit on global warming pollution established under the bill for those polluters covered under the program – electricity generators, oil refiners and importers, industrial facilities, and suppliers of natural gas, which, collectively, are responsible for about 87 percent of the nation's global warming pollution.[37] Under the ACES Act, any of these facilities that produce global warming pollution (either directly or through the sale of fossil fuels) must hold a permit – called an "allowance" – for every unit of pollution they create. Because these allowances may be bought or sold, they have economic value. The more polluting the activity, the greater the cost of the allowances one must hold, the greater the financial incentive will be to switch to cleaner practices.

The cap starts in 2012 and declines each year through 2050. It aims to reduce global warming emissions *from covered sources* by 3 percent below 2005 levels by 2012, 17 percent by 2020, 42 percent by 2030, and 83 percent by 2050. The bill also directs the EPA to establish performance standards for some smaller sources that are not included in the cap, such as landfills and coal mines. In addition, the bill directs the EPA to achieve additional emission reductions through agreements to prevent tropical deforestation, requiring reductions equivalent to another 10 percent of 2005 U.S. emissions in 2020.[38]

The most recent climate science suggests that developed countries as a whole must cut their emissions to 25-40 percent below 1990 levels by 2020 and to 80-95 percent below 1990 levels by 2050 if the world is to have a chance to avoid the worst impacts of global warming. For the United States, that means reducing emissions by at least 35 percent below 2005 levels by 2020 and by at least 83 percent by 2050.[39]

Ideally, the ACES Act would call for a minimum 20 percent reduction in emissions from covered sources below 2005 levels by 2020. But even if the ACES Act were to achieve its current stated goals, it would be a large step forward for the world in the effort to stop dangerous global warming. Together with the ACES Act's commitment of U.S. resources toward combating tropical deforestation – the source of about 20 percent of the world's global warming pollution – achieving the bill's emission reduction commitments would vault the United States into a position of world leadership in addressing the challenge of global warming.

Unfortunately, there are several provisions in the bill – including provisions that allow for the use of large numbers of "offsets" and that establish weak environmental safeguards for the use of "renewable" biomass fuel – that could undermine its ability to achieve its promised emission reductions. These provisions are discussed in detail on page 31.

Putting a price on emissions of carbon dioxide and other global warming pollutants will drive investments in clean energy technologies – helping to move the nation toward a new energy future. But other provisions of the ACES Act can also contribute to the development of the nation's renewable energy potential.

The ACES Act Creates a Framework for Future Expansion of Renewable Energy

With "clean energy" as its middle name, one would expect the American Clean Energy and Security Act to include ambitious steps to promote renewable energy. The ACES Act does take some important steps forward, but the bill falls short of taking full advantage of the nation's potential for wind, solar and other forms of clean energy.

The ACES Act includes several provisions that will increase the amount of renewable energy produced in the United States. It establishes the first renewable electricity standard for federal agencies, requiring the federal government to generate 6 percent of its energy from clean renewable energy sources in 2012, gradually rising to 20 percent in 2020. The bill also extends the limit on contracts for federal agencies to acquire electricity generated from renewable sources from 10 to 20 years – enabling renewable technologies to better compete with fossil fuel technologies for market share. Since the federal government is the largest electricity consumer in the nation, these measures will provide a significant boost to the development of renewable energy in the United States.[40]

The bill also dedicates a portion of the revenue from the sale of pollution allowances to clean energy, including renewable energy. The bill dedicates 9.5 percent of allowances to state programs to promote renewable energy and energy efficiency when the program begins in 2012, with lesser shares of allowances devoted to these purposes over time.[41] The Solar Energy Industries Association estimates that these provisions will generate approximately $90 billion by 2025, of which one-fifth, or $18 billion, must be spent on renewable energy projects.[42]

Finally, the cap on global warming pollution will encourage the use of clean technologies such as renewable energy in place of highly polluting forms of electricity generation such as coal-fired power plants.

However, the most heralded renewable energy policy in the bill – the nationwide renewable electricity standard (RES) for utilities – is disappointing. The bill requires large electric utilities to achieve 20 percent of their sales by 2020 from a combination of "renewable" energy generation and energy efficiency improvements. States could allow their utilities to meet up to 27 percent of the total standard each year with energy efficiency (i.e., 8 percent of sales in 2020).

The bill adds garbage incineration and coal mine methane to the sources that qualify as "renewable" – despite neither actually being renewable – and allows utilities to subtract energy generated from new nuclear power plants and coal plants with carbon capture and storage from the baseline upon which the final percentage is calculated. In addition, the bill exempts all but the largest utilities and electricity co-ops from the renewable energy requirement.

Considering these loopholes and exemptions, the Union of Concerned Scientists estimates that the combined standard requires less renewable energy than the 9.9 percent renewable energy the Department of Energy projects the nation will achieve under policies already in place – namely state renewable standards and the investments made earlier this year in the economic recovery package.[43]

Given America's vast renewable energy potential – and the potential for investments in renewable energy to create jobs that can reinvigorate the American economy – the lack of a strong renewable electricity standard in the bill is a tremendous missed opportunity. Enactment of a federal RES – even a very weak

one – will, however, create a framework for expanding renewable energy in the future. And the other renewable energy provisions in the bill will provide a boost to clean energy.

Projected Benefits of the ACES Act

How far will the American Clean Energy and Security Act move us toward the goal of repowering America with clean energy? A great deal depends on how the bill is implemented, as well as inevitable changes in technology and the economy over time. Several federal agencies and independent organizations, however, have analyzed the bill and made projections regarding its impact on the nation's energy future. (See "Benefits of the ACES Act: What the DOE and EPA Analyses Miss," below.)

The general conclusion of that research is that the ACES Act will make meaningful progress in moving America toward a cleaner energy future.

Clean Power

As noted earlier, the strongest and most visionary portions of the American Clean Energy and Security Act are those that improve the energy efficiency of the nation's homes, businesses and factories.

According to the U.S. Department of Energy's analysis of the bill, the ACES Act, combined with the economic stimulus package, will cut electricity consumption by 2 percent versus business as usual by 2020 and by 6 percent by 2030. (See Figure 2.)

Other analyses of the bill project even greater reductions in electricity consumption, reducing the amount of

Benefits of the ACES Act: What the DOE and EPA Analyses Miss

Forecasting the impact of sweeping energy legislation such as the American Clean Energy and Security Act is complex – particularly since the bill establishes several important new initiatives but leaves the details of their implementation up to administrative agencies such as the EPA. In addition, the models used by the DOE and the EPA to evaluate the ACES Act have important weaknesses that may understate the contribution the ACES Act will make in moving America to a clean energy future.

As a result, the impact of the ACES Act in several key areas is likely to be greater than estimated by either the DOE or the EPA.

Initiatives left out: The DOE and EPA analyses of the ACES Act fail to evaluate several provisions of the bill, including emission standards for heavy-duty transportation vehicles (which will reduce oil consumption) and investments in energy research and development and the deployment of clean energy technologies.[44] The EPA analysis further omits energy efficiency standards for appliances, lighting and equipment.[45]

Weaknesses: The DOE's National Energy Modeling System (NEMS), on which the agency's analysis is based, has long incorporated overly optimistic assumptions about nuclear energy technology and overly pessimistic assumptions about renewable energy technology, meaning that penetration of renewable energy may be higher than the agency projects.[46]

electricity that U.S. power plants must produce. The EPA's ADAGE model projects that the ACES Act will reduce electricity generation by 9.7 percent below business-as-usual levels in 2020 and by 11.5 percent by 2030.[48] The American Council for an Energy-Efficient Economy (ACEEE) estimates that the ACES Act's energy efficiency provisions – many of which are not included in the EPA modeling of the bill – will reduce total U.S. energy use by 5 percent below projected levels by 2020 and by 12 percent below projected levels by 2030.[49]

The energy efficiency improvements delivered by the ACES Act still fall short of America's potential for energy savings, with recent analyses suggesting that the nation could reduce energy consumption by 20 percent or more using cost-effective solutions alone. But the ACES Act would ensure that the nation's demand for electricity will remain in check for the next several decades, creating an opportunity for the nation to replace existing power plants with cleaner forms of electricity, especially renewable energy.

The ACES Act is also expected to increase the share of electricity coming from renewable sources of power, despite a weak renewable electricity standard. Before passage of the economic recovery package, the U.S. Department of Energy projected that 7.9 percent of the nation's electricity would come from renewable energy sources other than conventional hydroelectric power by 2030. The economic recovery package boosts that percentage to 9.9 percent. The ACES bill provides another large boost, increasing the share of electricity from non-hydro renewables to 15.2 percent. When hydroelectric power is included, the share of electricity from renewable energy increases from 14 percent without the economic recovery package to 16 percent with it, and to nearly 22 percent after enactment of the ACES Act.[50]

Figure 2. Electricity Consumption Under ACES Act[47]

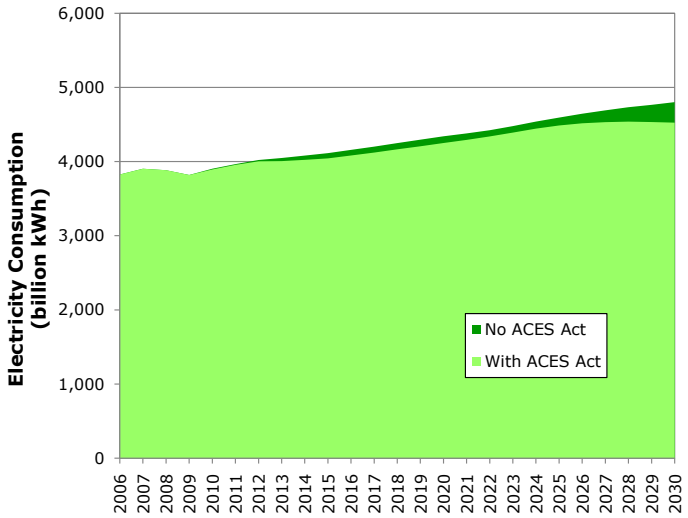
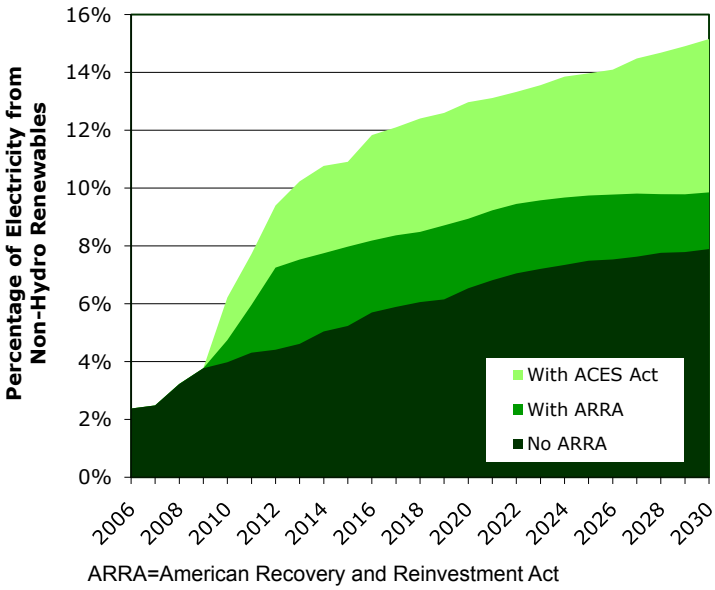


Figure 3. Non-Hydroelectric Renewable Electricity Penetration Under ACES Act[51]



The EPA's analysis of the ACES Act, based on the agency's ADAGE model, projects similar but less optimistic results, with the percentage of electricity generation coming from all renewables (including hydroelectric power) in 2030 increasing from 12 percent to 17 percent.[52] The Natural Resources Defense

Council, in a recent analysis using the MARKAL model, projects that the bill will deliver greater amounts of renewable energy, with non-hydroelectric renewables accounting for more than one-quarter of all electricity generation by 2030.[53]

Figure 4. Electricity Net Generation from Fossil Fuels (Department of Energy Estimates)[55]

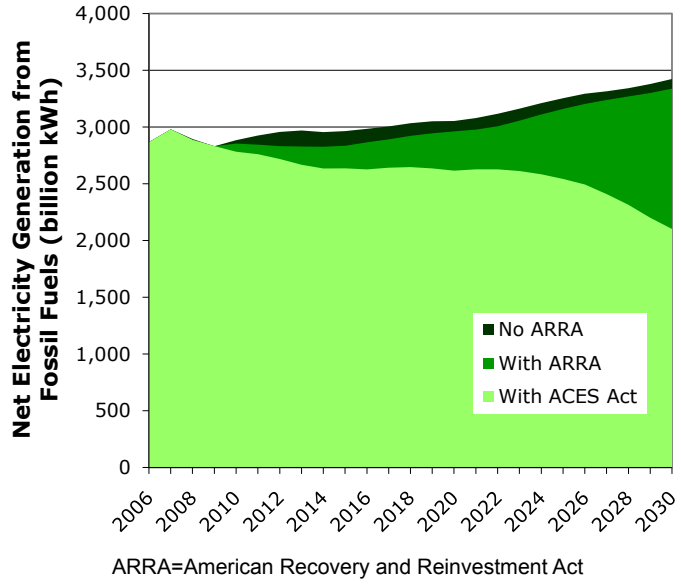
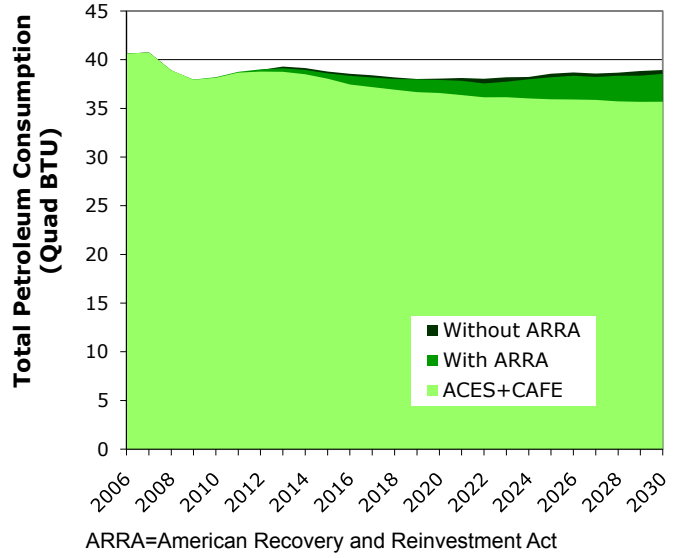


Figure 5. Total Petroleum Consumption (Quad BTU)[56]



Again, these increases in renewable energy production are driven *not* by the bill's renewable electricity standard, which is ineffectual, but by other components of the ACES Act.

Adoption of the ACES Act would likely lead to a dramatic drop in the production of electricity from fossil fuels. Before passage of the recovery package, fossil fuels were expected to produce two-thirds of America's electricity in 2030. Under the ACES Act, fossil fuels are projected by the Department of Energy to produce less than half of the nation's electricity (44 percent) in 2030 and by the EPA to produce slightly more than half (52 percent) in 2030.[54]

In sum, the ACES Act, coupled with previous efforts, is projected to significantly reduce electricity demand, nearly double the share of America's electricity that is projected to come from new renewable sources of energy, and help the nation wean itself off fossil fuels for electricity generation. While the bill could go farther to take full advantage of America's vast energy efficiency potential, the bill does make significant progress.

Energy Independence

America's dependence on oil is one of our most vexing energy challenges – leaving us dependent on foreign nations for the vast majority of our supply and leaving our economy vulnerable to the whims of international oil markets.

The ACES Act will make a meaningful contribution to weaning America off of oil. The Department of Energy projects that oil consumption will decline over the next couple of decades even without further government action as a result of higher oil prices, increased use of ethanol in America's fuel supply, and improved vehicle fuel economy. But the ACES Act will trigger greater reductions in oil consumption, cutting our use of petroleum by

an additional 7.5 percent when coupled with the stronger near-term fuel economy requirements for cars proposed by the Obama administration. (See Figure 5.) By 2030, under the ACES Act, America will use 12 percent less oil (in terms of its energy value) than we did in 2006.

The EPA projects more modest impacts of the ACES Act on oil consumption, projecting a reduction of 4 percent versus business-as-usual levels in 2030.

Were America to use these oil savings to offset imports of crude oil, it would cut our dependence on foreign oil by 27 percent by 2030.[57]

It is important to note that neither the DOE nor the EPA analyses model several important portions of the ACES Act that have the potential to significantly reduce oil consumption, including provisions to improve the energy efficiency of heavy-duty trucks, promote the production and use of plug-in electric vehicles, and encourage future investments in transportation infrastructure to be consistent with the objectives of reducing global warming pollution and reducing America's dependence on oil. As a result, the ACES Act is likely to do more to reduce America's dependence on foreign oil than the DOE or EPA analyses project.

Create Millions of Jobs

The American Clean Energy and Security Act will contribute to the creation of hundreds of thousands, and perhaps millions, of new clean energy jobs. Several organizations have compiled estimates of the job creation impacts of various portions of the ACES Act.

The American Institute of Architects has estimated that two provisions in the ACES Act directed at improving the energy efficiency of buildings would create or save 270,000 jobs in the construction industry.[58] The American Council for an Energy-Efficient Economy (ACEEE) projects that the energy efficiency provisions of the ACES Act will create 600,000 net new jobs by 2030. Expanding the energy efficiency provisions of the bill, according to the study, could result in the creation of more than a million net new jobs.[59]

Reduce Global Warming Pollution

Because of the various flexibility mechanisms and loopholes in the ACES Act, there is little certainty that the bill will deliver the level of emission reductions it promises. How close it will get to its stated goal depends on the assumptions one uses in evaluating the law and the types of emission reductions one includes.

One key factor in determining the level of emission reductions that take place here in the United States is the degree to which polluters take advantage of the potential to use "offsets" – emission reductions that occur overseas or in segments of the U.S. economy that are not covered by the cap-and-trade program – in place of emission allowances. The EPA and the U.S. Department of Energy both project that facilities will take advantage of their potential to use international offsets and use an increasing number of domestic offsets as well.

As a result, the EPA projects that the ACES Act will reduce *domestic* emissions of global warming pollution by 12 to 14 percent below 2005 levels by 2020, by 16 to 21 percent by 2030, by 20 to 26 percent by 2040, and by 30 to 36 percent by 2050.[60] The U.S. Department of Energy, which examined the impact of the ACES Act only as far as 2030, projected that the program would reduce domestic global warming pollutant emissions by 5 percent below 2005 levels by 2020 and by 15 percent by 2030.[61] (See Figure 6.) These domestic emission reductions

would be an inadequate contribution to the goal of preventing the worst impacts of global warming.

Domestic emission reductions are only part of the story, however. The ACES Act also allows polluters to comply with the program using offsets generated domestically and overseas. Additional emission reductions will also be generated through efforts to reduce deforestation in developing countries. Should those projects deliver real emission reductions, the ACES Act will make a more significant contribution to addressing global warming.

Overall, the ACES Act – including offsets and investments in stopping tropical deforestation (and assuming all offsets are real, additional, and permanent) – drives emission reductions ranging from 25 to 38 percent (compared with 2005 emissions) by 2020 and from 40 to 46 percent by 2030. By 2050, according to the EPA's modeling, the ACES Act will deliver emission reductions equivalent to 58 to 66 percent of 2005 emissions (with the same caveat with regard to the integrity of the offsets).[64]

In the early years of the program, these emission reductions are roughly consistent with the minimum science suggests is necessary to prevent the worst impacts of global warming. Over the longer term, the United States will need to make deeper emission reductions. Moreover, there are serious questions regarding the ability of offsets to deliver real emission reductions (see page 32). If offset projects fail to deliver real emission reductions, the benefits of the ACES Act for addressing global warming will be much reduced.

In sum, the ACES Act takes an historic first step toward reducing America's contribution to global warming – and will likely deliver significant and real reductions in global warming pollution, both in the United States and abroad. But the bill's many loopholes fail to guarantee that the nation will make the emission reductions necessary to prevent the worst impacts of global warming.

Figure 6. Projected Emission Reductions from 2005 Levels Under ACES Act, Domestic Emissions Only[62]

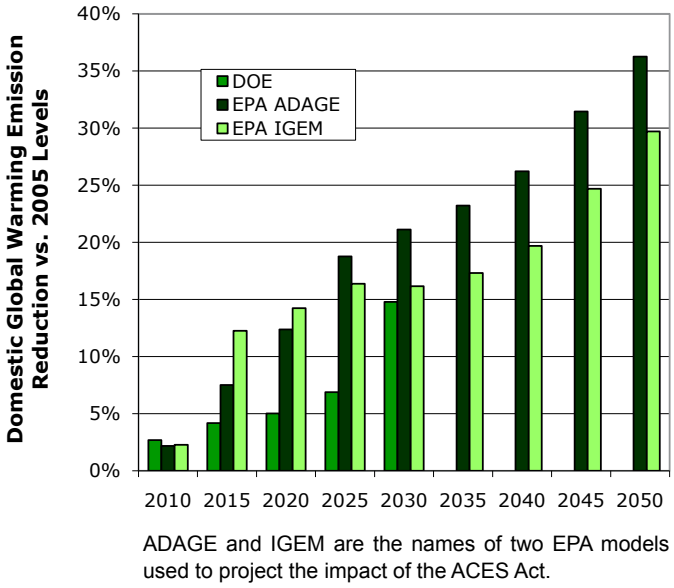
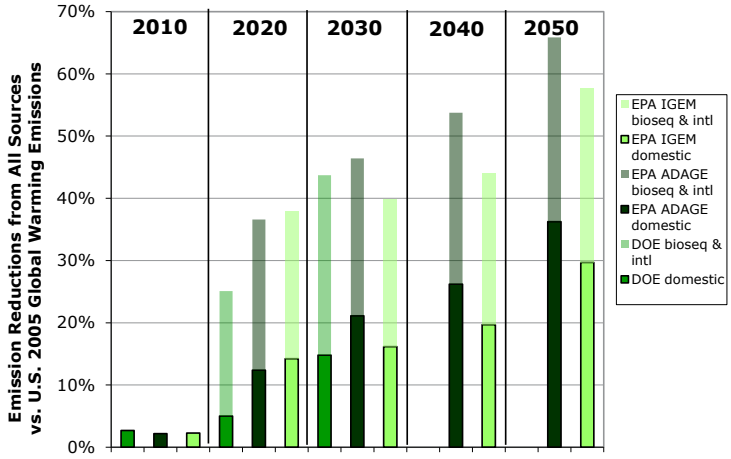


Figure 7. Projected Global Warming Emission Reductions from ACES Act Including Overseas Reductions and Reductions from Domestic Biological Sequestration[63]



The ACES Act: Moving America Toward a Clean Energy Future

The American Clean Energy and Security Act moves America one large step closer to a future powered by clean energy. Under the ACES Act, America will consume less energy than we otherwise would, get a larger share of our electricity from renewable energy, reduce our dependence on oil, and create large numbers of green jobs. We will also significantly reduce emissions of the pollutants that contribute to global warming.

The ACES Act also includes provisions, however, that work at cross-purposes with the rest of the bill. Revising those provisions in the Senate, and then winning passage of comprehensive clean energy legislation in both houses, are vital steps in the drive to achieve a new energy future for the nation.

The ACES Act Gets Some Important Things Wrong … But Passing It Is a Critical Step Forward for Clean Energy

The American Clean Energy and Security Act will make a meaningful contribution toward moving America to a clean energy future. But the legislation has important flaws that should be fixed in the Senate.

Winning passage of the ACES Act in its current form or better – compromised though the legislation may be – is a critical step, in ways that go well beyond the number of barrels of oil that will be saved and number of tons of pollution that will be averted. Enactment of the ACES Act would be a political breakthrough, would create a framework for further action, and would make it more likely, rather than less likely, that the nation will continue its long-term momentum toward a clean energy future.

Key Flaws in the ACES Act

The ACES Act includes several major flaws that should be rectified as the legislation passes through the Senate.

Allows Old Coal-Fired Power Plants to Keep Running

Americans understand that moving toward a new energy future means leaving old, inefficient, dirty technologies behind. Just ask the thousands of Americans who seized the opportunity to finally rid themselves of inefficient "clunker" vehicles in exchange for new, energy-efficient cars during the government's "cash for clunkers" program.

The same factors that keep people driving clunker automobiles have kept the nation reliant on clunker power plants – aging, coal-fired plants, many of them 40 to 50 years old, that rely on outdated technology and are responsible for vast amounts of carbon dioxide pollution. Most of these power plants, like the aging gas-guzzler in the driveway, are paid off, and therefore cheap to run, even though they impose major costs on the environment and public health.

America should be doing everything we can to retire or clean up these old,

Aging coal-fired power plants are a leading source of global warming pollution. The EPA should have the power to limit global warming pollution from these plants. *Photo: istockphoto.com, Andy Olsen*

polluting power plants and replace them with clean technologies. At the very least, coal-fired power plants – both young and old – should be required to meet the same modern emission standards for carbon dioxide.

The ACES Act, however, removes the tools the EPA has to require the cleanup of existing coal-fired power plants. Under the bill, a power company that chooses to build a new coal-fired power plant must meet standards limiting the plant's production of carbon dioxide. However, under the bill the EPA will lose the authority to impose such standards on existing plants, and companies that choose to expand capacity at existing plants – and increase carbon dioxide emissions – would avoid those limits.

When it comes to shifting America to a new energy future, the effect of these changes is like pressing down the accelerator of a car while simultaneously riding the brake. The ACES Act includes powerful incentives for shifting to clean energy technologies, but it also will allow – and even perversely encourage – companies to keep their oldest and dirtiest power plants operating for years, if not decades, to come.

Preventing the EPA from requiring improvements to the most-polluting existing power plants will needlessly delay America's transition to a clean energy future. That's particularly important since the nation will *need* to close down or clean up the most polluting power plants within the next few decades to achieve the ever more stringent emission reductions we will need to achieve in the years to come. Instead of encouraging power companies to invest even more money in their oldest power plants, the ACES Act should unambiguously encourage power companies to invest in renewable energy and energy efficiency. Otherwise, the nation will find itself ill prepared to make the steep reductions in emissions required in 2030 and beyond.

The Senate should provide the EPA equivalent new authority or restore the EPA's current authority to regulate existing power plants for their emissions of carbon dioxide, including when power companies expand the capacity of those plants to produce electricity. By doing so, the Senate can ensure that the EPA can crack down on carbon dioxide emissions from coal-fired power plants and move America to cleaner electricity sources.

Leaves Too Much to Chance on Global Warming

Decades of inaction have left the world with a narrowing window of opportunity to prevent the worst impacts of global warming. As important as taking action against global warming is being able to predict the results of that action. At this

late stage of the game, we cannot afford to think we are on track to make significant reductions in emissions, only to have those reductions fail to materialize a decade or more down the road.

Unfortunately, the ACES Act has several loopholes that threaten to reduce the amount of real emission reductions it generates. The two most problematic loopholes are those related to the use of "offsets" and to the accounting of emissions from biomass.

Offsets

An offset is an action taken to reduce emissions in areas not covered by the cap-and-trade program. Offsets can be domestic – for example, changing farm practices to store more carbon in the soil – or can take place overseas. Under the ACES Act, a polluter can buy an offset and use it interchangeably with a pollution allowance.[65] If offsets can be obtained more cheaply than allowances, polluters will tend to use offsets – rather than pollution reductions at their own facilities – to achieve the emission cap.

The use of offsets, therefore, can reduce the cost of complying with a cap-and-trade program. But offsets also reduce the obligation to use cleaner technologies in the portions of the economy regulated under the cap. Because America's dependence on fossil fuels creates a range of problems – from price spikes to air and water pollution that affects human health and the health of critical ecosystems – reducing the need for emission reductions from fossil fuel use also reduces the benefits our communities receive from a transition to a clean energy economy. In addition, offsets produce less-certain reductions in pollution – reducing the possibility that the ACES Act will deliver the emission reductions it promises.

Offsets and allowances are fundamentally different. An allowance is a permit to release a unit of pollution, something that can be tracked and quantified. An offset, however, is a credit received for *not emitting* a unit of pollution or for removing a unit of pollution from the atmosphere. To have any value, an entity seeking to receive an offset must be required to demonstrate that the pollution either *would have been emitted* but was not or has been *permanently removed* from the atmosphere – and that it was the offset payment that was responsible for the emission reduction.

In practice, ensuring that offsets deliver **real, additional, verifiable, enforceable and permanent** emission reductions is difficult. The U.S. Government Accountability Office, the investigative arm of Congress, noted in a recent report that "offsets can compromise the integrity of programs designed to reduce greenhouse gas emissions" and that "it is nearly impossible to demonstrate project additionality with certainty."[66]

The European Union, which has a cap-and-trade program similar to that in the ACES Act, has long allowed polluters to comply by purchasing offsets generated in developing countries and certified through the United Nations' Clean Development Mechanism (CDM). Despite procedural safeguards intended to ensure that CDM projects deliver real emission reductions, a 2008 paper by researchers at Stanford University concluded that "much of the current CDM market does not reflect actual reductions in emissions."[67] The CDM's problems include:

- The suspension of at least two third-party offset validators amid allegations that they failed to properly audit offset projects;[68]
- The generation of offset credits by projects that would have occurred anyway. One recent study estimated that as many as 40 percent of CDM

projects deliver emission reductions whose additionality is questionable or unlikely;[69]

- A high proportion of offsets generated from "low-hanging fruit" projects (such as the destruction of high global warming potential gases) that achieve little in promoting sustainable development and provide windfall profits to industry.[70]

The experience of the CDM shows that it can be devilishly hard to devise a system of accrediting and verifying offsets that forecloses the potential for gaming the system.

The ACES Act addresses the issue of offset quality in several ways: establishing a process for assessing the additionality of offset projects and taking the extra step of requiring facilities using international offsets to provide 1.25 offsets for every allowance they retire, starting in 2018 – a provision intended to deliver additional environmental benefits from the use of offsets.

However, the ACES Act also raises serious questions about who will be responsible for enforcing the domestic portion of the offset program. During the final negotiations on the bill in the House, Energy Committee Chair Henry Waxman and Agriculture Committee Chair Collin Peterson failed to resolve the roles that the EPA and the U.S. Department of Agriculture (USDA) would have in writing the rules for and enforcing agricultural and forestry offsets – the vast majority of potentially available domestic offsets. The two chairmen formally asked President Obama for recommendations on the appropriate roles for the EPA and the USDA in developing and implementing the domestic offsets program. For the purposes of House action, the chairmen gave responsibility exclusively to the USDA for domestic agriculture and forestry offsets, with the intention of resolving the issue as the bill moves through the legislative process. As a result, the bill creates two offset programs, one administered by the EPA and the other by the USDA.

The problem is that the USDA, for all its strengths, is not an environmental agency. The USDA should have an important role in developing and implementing the domestic offsets program, but the agency is poorly equipped to judge whether the offsets generated under the program meet environmental goals.

Ensuring a strong program to assure the quality of offset projects is imperative, particularly because of the number of offsets that can be used to substitute for emission reductions under the cap-and-trade program. Rather than taking a cautious approach to incorporating offsets, the ACES Act allows the use of 2 billion tons of offsets per year, split evenly between domestic and international offsets, with the potential for further increases in international offsets if insufficient domestic ones are available. Two billion tons of offsets is more than the emission reductions required annually under the ACES Act until nearly 2040 – meaning that facilities could technically increase their emissions, purchase offsets, and still comply with the requirements.

Because the ACES Act allows so many offsets, practically the entire fate of the program depends on how the offsets provisions of cap-and-trade are handled. Every offset given to a project that does not deliver true emission reductions will be one more hurdle to the adoption of clean energy technology here in America and the avoidance of the worst impacts of global warming.

Biomass

The ACES Act also includes troubling policies related to the use of biomass en-

ergy – energy from trees, crops and other plant materials and wastes.

The use of domestically produced biomass can be an important part of a clean energy economy, but it can also cause harm. Harvesting trees and crops for energy production can, if handled poorly, pollute waterways, threaten wildlife, and reduce biodiversity. Using biomass for energy can even result in an increase in global warming pollution if the emissions resulting from consumption of the biomass, the release of carbon stored in the soil, and indirect land-use impacts of increased biomass production outweigh the amount of carbon dioxide that would otherwise be emitted from consuming fossil fuels and the amount of carbon that will be removed from the atmosphere by new plantings.

As a result, it is critical that public policies related to biomass reflect the complex effects its production and use can have on the environment – both for good and for ill. Unfortunately, the ACES Act as currently drafted turns a blind eye toward many of the potential problems with biomass. It gives energy companies a pass from having to hold pollution allowances for the net global warming pollution that results from consumption of "renewable" biomass (even if the production and consumption of this biomass leads to an increase in global warming pollution), reverses existing public policy designed to ensure that ethanol and other biofuels deliver real reductions in global warming pollution, and weakens safeguards designed to protect federal lands, sensitive ecosystems and wildlife.[71]

To ensure that the ACES Act delivers on its emission reduction promises, the Senate should close the biomass loophole by ensuring that emissions from biomass energy consumption – including the use of ethanol and other biofuels in vehicles and biomass at power plants – reflect the full impact on global warming. The Senate should also include strong safeguards to ensure that increased use of biomass does not harm public lands, wildlife or sensitive ecosystems. Closing the biomass loophole would help ensure that biomass consumption occurs in a responsible way that contributes to real emission reductions.

Misses Critical Opportunities to Promote Renewable Energy

As noted above, the ACES Act takes important steps to promote renewable energy, but fails to deliver on America's full potential for clean energy innovation. The federal renewable electricity standard (RES) in the bill is a particular disappointment, as it is unlikely to create any new renewable energy. And while other provisions of the bill will help spur some increases in renewable energy, the bill still fails to take advantage of the nation's clean energy potential.

The Senate can take several steps to boost the bill's level of support for renewable energy. The most direct way to do so would be to strengthen the RES to require at least 25 percent new renewable energy by 2025. Another way would be to increase the amount of allowances devoted to renewable energy projects by reducing the number of allowances given to polluters for free. Using the allowances currently directed toward oil refiners, merchant coal-fired power plants and other polluters to instead encourage the deployment of renewable energy would provide an important boost to clean energy in the United States.

Why Fight for the ACES Act?

Given these flaws – and the fact that the ACES Act represents an incremental, rather than transformative step toward a clean energy future – why is passage of the bill so important?

A Clear Step in the Right Direction

The ACES Act is a clear and significant step toward a new energy future for America. The energy efficiency provisions in the bill, while they can still be improved and expanded upon, would make a significant dent in the nation's energy use, and some of those provisions – particularly the bill's embrace of aggressive building energy codes – are potentially transformative. The bill also places a price on emissions of global warming pollution (which will drive continued innovation and encourage deployment of clean energy technologies), encourages research and development of new technologies, and will create large numbers of new, clean energy jobs.

As the analyses of the bill by the DOE, the EPA, and others show, passage of the ACES Act would lead to measurable reductions in energy consumption, oil dependence and global warming pollution, along with a significant increase in renewable energy production. The ACES Act does not go as far toward a clean energy future as it could or should, but it still represents major progress.

A Political Breakthrough

Just a dozen years ago, the United States Senate voted 95 to 0 in opposition to the U.S. signing the Kyoto Protocol. Just six years ago, a majority of senators voted against the far weaker McCain-Lieberman Climate Stewardship Act of 2003, which merely pledged to cap, not reduce, emissions of global warming pollution. Prior to the House approval of the ACES Act in June, neither branch of the U.S. Congress had ever adopted mandatory limits on global warming pollution from any sector of the U.S. economy. Much as the relatively weak 1957 Civil Rights Act – the first civil rights bill adopted by the U.S. Congress since Reconstruction – ultimately paved the way for the more significant civil rights legislation of the 1960s, enactment of the ACES Act could lower the political barriers to more aggressive clean energy legislation in the years to come.

The recent experience with clean energy laws in the states validates the notion that initial adoption of clean energy legislation can lead to further improvements in that legislation as the years go on. As noted earlier, 29 states and the District of Columbia have adopted renewable electricity standards. Of those 29 states, 17 – more than half – have increased their renewable electricity target or accelerated the timeline after adoption of their original RES. Seven states have revised their goals more than once.[72]

Includes Provisions for Strengthening

The ACES Act includes provisions that allow for review and possible strengthening over time. Under the bill, the EPA and the National Academies of Sciences (NAS) each must issue reports every four years reviewing the latest climate science, assessing our progress in avoiding catastrophic global warming, and making recommendations about additional action that may be needed. The bill then requires the president to direct relevant federal agencies to use existing authority to take additional actions identified in the EPA and NAS reports. In addition, if a report from either the EPA or the NAS concludes that the United States will not achieve the necessary domestic reductions or that global actions will not maintain safe global average surface temperatures and atmospheric greenhouse gas concentration thresholds, the bill requires the president to submit to Congress a plan identifying domestic and international actions to achieve nec-

essary additional reductions, including any legislative recommendations. There is no guarantee that those actions will be implemented, but the ACES Act ensures that the U.S. government will ask the right questions about global warming in the years to come, and it creates a process for the nation to act on the answers.

A Strong Message to the Rest of the World

Enactment of the ACES Act would send a message to the rest of the world that the United States is serious about a transition to a clean energy future. With world leaders meeting in Copenhagen in December to negotiate a successor agreement to the Kyoto Protocol, there is no more important time for America to break its long legacy of inaction on global warming. The ACES Act, while it falls short of what is necessary to prevent the worst impacts of global warming, would represent a strong commitment from the United States to significant reductions in global warming emissions. Absent such a commitment, the chances for a meaningful international agreement to reduce global warming pollution are more dire. And with every year the world waits to take action on global warming, the costs of inaction grow higher. Passage of the ACES Act, therefore, would not just put America on a course to a cleaner energy future, but it would help put the world on course to a better future as well.

An Opportunity to Build Strength for Future Efforts

The ACES Act is not and was never envisioned to be the final step in the drive to repower America. The high-profile debate over the ACES Act provides an opportunity to convey the promise of a clean energy future to a broader audience, to educate the public and decision-makers at all levels of government, and to build political strength for the important battles yet to come.

The plain fact of the matter is that, in 2009, an energy bill that puts America on a path toward improved energy efficiency, expanded use of renewable energy and significant reductions in global warming pollution may be winnable in the U.S. Congress after a tough fight. The chances of winning a truly transformative energy bill, of the kind that will *guarantee* that America achieves a clean energy future, are much slimmer. Even winning the ACES Act in its current or better form will take one heck of a fight – one that will require supporters of clean energy to mobilize all of the support we can muster in the face of a massive, well-funded lobbying campaign by fossil fuel producers and their allies. The challenge is magnified by the institutional hurdles of the U.S. Senate, which gives small states – including some in which fossil fuel production is currently a cornerstone of the local economy – outsized influence over the final outcome of legislation.

The process of organizing a broad coalition of support around the ACES Act presents an opportunity to solidify and deepen the support of the American people for actions to achieve a clean energy future and reduce our impact on the global climate. Americans already broadly support a transition to a clean energy economy – including actions to reduce global warming pollution such as adoption of a cap-and-trade system for global warming pollution.[73] Residents of states that have adopted clean energy policies are beginning to see the results of those actions in expanded economic opportunity and a cleaner environment, and more Americans will see similar benefits as the clean energy transition forwarded by the ACES Act gains momentum. Outreach and confidence-building is particularly important in states with coal fields, oil

patches, or heavy industry, where the economic promise of a clean energy economy is a harder sell.

Just as years of organizing, outreach, and innovative policy work at the state level have paved the way for the ACES Act – the emission reductions and clean energy investments in which would have been politically unthinkable just a few years ago – so too can continued organizing expand the range of political possibilities in the years to come.

That said, with scientists warning of the urgent necessity of dramatic emission reductions to prevent the worst impacts of global warming, legislation – even significant legislation – that falls short of meeting that challenge is difficult to swallow. It is not surprising that the ACES Act is perceived as a let-down by some of the grassroots environmentalists, clean energy business leaders, visionary elected officials, scientists and others who have done so much in recent years to raise the alarm about global warming and develop a vision for a clean energy future.

That is why it is so important that the ACES Act be understood by everyone involved in the debate as part of a longer-term strategy to achieve a new energy future for the nation – a strategy that builds momentum for stronger national legislation in the future, that works to secure strong, binding international agreements to address global warming, that continues to promote and harness the innovative energy of state and local initiatives, and that clearly communicates to the American people both the urgency of a clean energy transition and the benefits that transition would deliver for our environment, our economy, and our quality of life. The ACES Act, by itself, is not enough. But it can help lay the foundation for a clean energy future for America.

The Road to a New Energy Future: The ACES Act and What Comes Next

A cleaner energy future for America is within reach. Getting there, however, will require effort from all levels of government, business, key constituency groups and individual Americans. Winning passage of a strong version of the American Clean Energy and Security Act will be a good start, but even with the ACES Act, there will remain plenty of work to be done.

Winning the Battle Over the ACES Act

The first task in moving toward a clean energy future is winning a strong version of the ACES Act. "Victory" in the battle over the ACES Act means more than just winning enough votes in Congress to pass any energy bill – it means keeping the bill strong and fixing its biggest weaknesses.

Keeping the Bill Strong

The ACES Act, as it passed the House, is a bill worth fighting for – making significant gains in improving the energy efficiency of the American economy, cutting global warming pollution, reducing our dependence on oil, and encouraging clean energy. Any legislation adopted by the Senate should lock in those gains.

A key part of keeping the ACES Act strong is ensuring that it delivers emission reductions in the most cost-effective and environmentally sound way possible. The House-passed version of the ACES Act provides support to a variety of clean technologies that can make a contribution to reducing global warming pollution. The Senate should resist the temptation to invest vast amounts of money in technologies with extremely high start-up costs and negative impacts on the environment – particularly nuclear power. Because of the long lead time

for the construction of nuclear reactors, nuclear power is incapable of making a meaningful contribution to achieving the nation's short-term emission reduction goals (i.e., those that must be achieved by 2020). And because nuclear power plants are more expensive than many clean energy technologies, a massive investment in nuclear power could actually set the nation back in achieving long-term emission reductions.[74]

The public must continue to reevaluate the bill as it makes its way through the Senate to ensure that it remains, on balance, a step in the right direction. And as always, supporters of the House bill should reserve the right to oppose the Senate version if that bill no longer meets the test of making meaningful progress toward a clean energy future.

Fix the Biggest Weaknesses

The Senate should also fix the biggest weaknesses in the version of the ACES Act that passed the House. Specifically, the Senate should:

- Provide the EPA with equivalent new authority or restore the EPA's current authority to regulate existing power plants for their emissions of carbon dioxide, including when power companies expand the capacity of those plants to produce electricity.
- Ensure that offsets used under the bill's cap-and-trade program deliver real emission reductions and clarify that the EPA should have ultimate authority for developing and enforcing the program.
- Ensure that companies using renewable biomass energy are held responsible for its full global warming impacts – including contributions to global warming through direct and indirect changes in land use.
- Reduce the amount of valuable pollution allowances given away for free to polluters and instead invest the revenue from those allowances in renewable energy, energy efficiency, and measures that reduce the cost of the program to consumers.

The Next Steps

Even with passage of a strong ACES Act, the journey to repower America will be closer to its beginning than its end. There are dozens of important steps the nation can take to achieve the vision of a new energy future. A few of the most important steps are highlighted below.

Renewable Electricity Standard

States with renewable electricity standards are leading the nation in taking advantage of America's ample clean energy potential. The weak renewable electricity standard in the ACES Act should be augmented or replaced by one that requires that at least 25 percent of America's electricity come from new renewable energy sources by 2025. Achieving that target would put the nation well on its way to the goal of getting all of America's electricity from clean, renewable sources.

Energy Efficiency Resource Standard

America has vast potential to use energy more efficiently. To take advantage of that potential, the nation should adopt an energy efficiency resource standard (EERS) similar to those adopted by leading states across the country. Such a standard would set a concrete goal for improved energy efficiency and unleash the resources needed to achieve that goal. A federal EERS should seek to reduce electricity demand by 15 percent

by 2020 and natural gas demand by 10 percent, with more ambitious goals in later years.

Low-Carbon Fuel Standard

To encourage a shift toward less polluting vehicle fuels, the nation should adopt a low-carbon fuel standard with a goal of reducing the carbon content of fuels by 10 percent by 2020. A low-carbon fuel standard would help America break its dependence on oil by encouraging cleaner alternatives to gasoline, including the use of electricity in electric vehicles and plug-in hybrids and the use of biofuels that meet rigorous standards for reducing global warming pollution and protecting the environment.

Expanding Transportation Choices

With Congress scheduled to reauthorize the main federal transportation law soon, the nation has a golden opportunity to expand Americans' access to clean transportation choices. The next federal transportation bill should focus resources on restoring our existing transportation infrastructure, expanding access to modern public transportation, creating a high-speed rail network to link cities across the country, and promoting other transportation policies that can help move America toward a new energy future, ranging from rail electrification to policies to promote walking and bicycling.

Continuing the Momentum to Address Global Warming

Congressional passage of the ACES Act is an important first step to address global warming, but it is only the beginning. The United States must ensure that the ACES Act delivers on its promises by making real reductions in global warming emissions. That means making sure that the program is implemented properly – especially those provisions, including the offset program, that have the potential to create loopholes and reduce the volume of emission reductions delivered by the program. In addition, the United States must use the momentum generated by passage of the ACES Act to take leadership in the effort to devise a strong successor agreement to the Kyoto Protocol when the world's leaders meet in Copenhagen in December.

State and Local Actions

State and local governments led the way in promoting clean energy policies for America over the last decade, and their continued innovation and leadership will be necessary in the future. That is why it is critical that Congress create a prominent role for the states and local governments in future policy-making by avoiding preemption of state regulations. For example, California should retain the right to establish stronger standards for global warming emissions from vehicles, and states should generally retain the ability to establish their own standards and limits on global warming pollution from other sources.

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