

Center for American Progress



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Cutting the Cost of Clean Energy 1.0

Toward a Clean Energy Deployment Plan For Jobs, Security, and
Broad-based Economic Growth in 2011

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Introduction and summary

Members of the incoming 112th Congress will face very different political and economic circumstances when they take their seats in January. Any energy legislation the new Congress considers will require a fresh approach to match these new realities. Energy legislation proposed in the 111th Congress was tailored to an economic climate informed by the following facts *that are now superseded by new considerations*:

- Natural gas was \$10 per thousand cubic feet. *Natural gas is now at \$4 per thousand cubic feet*
- Gasoline at the pump was \$4 per gallon. *Now gas costs 33 percent less*
- Demand for electricity was growing on an average of 2 percent to 2.2 percent, compounded annually. *Now electricity demand is lower because of the state of the economy*
- The unemployment rate was 5 percent. *Unemployment now stands at 9.6 percent*
- China and the United States were both primed to be major industry competitors in a worldwide clean energy economy. *Now, China holds the commanding heights because its government ensures stable demand for clean energy and facilitates investments in the sector through the deployment of low-cost finance*

The political landscape has shifted as well. In the most recent congressional midterm elections, states where unemployment rates were oppressively high demanded immediate action on job creation. Across the American heartland, these states sent fresh faces to Congress and statehouses in droves, charging them with a simple mission: Solve the unemployment crisis.

It is time to respond to these new realities, not revisit the battles of the past.

Domestic American clean energy businesses, from solar to wind to nuclear to energy efficiency and everything in between, are currently plagued by:

- Unpredictable demand in their respective markets
- A lack of certainty in both the tax code and policy incentives
- Unavailable long-term, low-cost capital

Businesses need the new Congress to respond early next year to the challenges in all three of these areas. This paper provides a framework for further discussions to address these issues, putting several new policy proposals into play in the debate. Our paper is organized around three key pillars for a private sector-led investment policy in clean energy:

- **Financing and other policy incentives to lower the cost of clean energy.** This can be done by expanding access to low-cost financing to increase investment and reduce the cost of deployment, and through measures such as establishing a new Energy Independence Trust. The trust would be able to borrow from the U.S. Treasury Department—at no risk to taxpayers—to enable the private sector to help solve the capital-related issues that weigh down American clean energy businesses today relative to their Chinese counterparts.
- **Regulatory reform to create jobs and markets.** This should be done to spark increased demand for clean energy and energy efficiency, and provide greater certainty to investors and project developers through measures such as renewable energy targets and regulatory restructuring.
- **New competitive regional infrastructure to ensure sustained economic development.** This can be done by accelerating the deployment of strategic clean energy development and transmission infrastructure through improved policy and planning coordination across federal and state government and the private sector, and through tools such as accelerated depreciation for investments that build this strategic infrastructure.

Together, these three pillars of a new clean energy investment strategy for 2011 will prioritize the rapid deployment of existing advanced clean energy technologies, which will help our construction sector rebound from the ravages of the housing crisis and the Great Recession. By encouraging private investment and reforming the energy marketplace, Congress can immediately take action to drive down the cost of clean energy innovation for consumers, while improving American manufacturing competitiveness and technology leadership.

Further, this strategy does not depend on implementing a cap on carbon-based pollution, and places minimal additional strain on the federal budget through new direct appropriations. In short, such a deployment-based clean energy plan can help build a dramatically more prosperous, productive, dynamic, and efficient economy at a time when fiscal constraints are likely to limit public spending, and private investment will be paramount to sustain economic growth.

While a long-term research-and-development investment plan must be sustained as a foundation for innovation. This paper begins a national discussion to lay out a near-term deployment plan designed to bring this new clean energy technology to scale across our country. More detailed long-term proposals will be published in a separate report and in subsequent reports by the Coalition for Green Capital, with the expert assistance of its three pro-bono law firms: Skadden Arps, Covington & Burling, and Latham & Watkins.

Consequently, our proposals in this paper should all be designed to sunset after 10 years, along with other subsidies for mature energy industries. By that time, American ingenuity, backed by strong private-sector investment, will have brought new energy technologies to commercial scale, enabling America to move to the next level of clean and domestic-led energy generation.

In a decade, commodity prices will have shifted yet again, and the political landscape will have moved on to grapple with new concerns. Today, however, timely and efficient energy policies to promote rapid deployment of new clean energy and energy efficiency technologies can drive job creation and economic growth. In short, they are essential to enabling American businesses to successfully navigate this transition to a new energy future.

Our strategy and recommendations

In the main section of this report, we present a detailed framework for deploying clean energy across our country by transforming the energy marketplace. Here, though, we briefly sketch out our reasons for doing so and our broad recommendations.

Congress must move immediately to reduce the cost of clean energy and remove infrastructure and regulatory barriers to its deployment so that the private sector can invest with confidence in this critical sector of our economy. Faster, better, cheaper is a familiar rallying cry for entrepreneurial activity. We can't make electricity travel faster, but we can expedite the creation of new business models by lowering the cost

of capital for the production and distribution of clean energy coupled with sound tax policy and the use of federal power to rationalize and simplify regulation across regional energy markets. These steps would encourage businesses to provide clean energy for electricity generation and transportation.

Over the past several years, debate on energy innovation focused principally on increasing the costs of pollution through a carbon tax or carbon cap-and-trade system. The aim was to account for the costs of fossil fuels to our environment and energy security. At the same time, new federal investments were mobilized to boost early stage R&D and to subsidize the costs of clean energy projects. The incoming 112th Congress, however, is unlikely to embrace any legislation that makes current energy production more costly, due to fears about the strength of the nascent economic recovery. What's more, efforts to begin tackling the federal budget deficit mean that there will likely be little or no new federal dollars spent on clean energy, except perhaps for limited infrastructure repair.

Yet members of the incoming Congress will have an opportunity in 2011 to pass legislation that addresses deeply held industry concerns over the current state of energy policy in the United States while protecting consumers and taxpayers alike. The energy sector is seeking new venues for investment and expansion right now, but realizing the staggering growth opportunity of serving the potential domestic and global markets for clean energy depends on providing the U.S. energy market with strong and consistent financing, greater predictability in energy regulation, and improved certainty for investors in clean energy projects.

Making clean energy markets more predictable can be highly effective in increasing private-sector investment in new technologies to drive down costs and speed deployment. Limited policy innovations that do not draw heavily on the federal budget may also prove acceptable to members of Congress on both sides of the aisle. For these reasons, our principal proposal for a new "Energy Independence Trust," which could borrow from the federal treasury to provide low-cost financing to private-sector investments in clean energy, are more likely to meet with bipartisan support.

Our proposed Energy Independence Trust would hold sufficient reserves to protect the Treasury from loan losses, and would be able to offer a variety of debt- and equity-based financial instruments, loan guarantees, and tax incentives to draw a wave of private capital into the clean energy sector. Linking a low-cost financing vehicle with efforts to rationalize and simplify federal and state energy regulations and increase demand through bold clean energy standards could help to organize the broader energy market to increase demand and drive down costs for businesses and consumers.

Moreover, an investment-led strategy for upgrading America's energy infrastructure can align interests across industries and party lines so our nation can get on with the business of rebuilding our economy on a foundation of efficient, clean, and innovative technology.

The policy proposals outlined in this paper represent key elements of a strategy to begin immediately rebuilding the U.S. economy on a foundation of clean and efficient energy. This framework is not a replacement for comprehensive climate legislation, which we believe is still necessary for Congress to pass to meet our international obligations and protect the global environment. Instead, our proposal is designed to jump-start the growth of a new industry, fueled by private-sector investment in clean energy, to move our economy onto a new, more innovative and efficient footing.

The politics and economics of 2011 are aligned to pass an energy bill

There will no doubt be skeptics in Washington and around the country who will argue that any kind of energy legislation is unlikely to emerge from the 112th Congress. Yet as we demonstrate in this report, there is a precedent for this kind of bipartisan legislation moving through Congress to the desk of the president even amid bitter partisan rancor—the Telecommunications Act of 1996, which became law two years after the Republican Party swept to power in Congress during the Clinton administration.

We begin our analysis with a look at how telecommunications reform in the 1990s can offer a model that Congress can emulate today for clean energy reform—a model built on the three pillars of private sector-led investment presented above, and one that can address a broader range of strategic concerns for legislation. We then offer a template for how such a legislative proposal can be assembled today through broader bipartisan negotiation in Congress to craft a national clean energy innovation act.

Our goal is not to provide final answers on policy details, but rather launch a national discussion on swift clean energy deployment. This is our framework proposal.

This approach to energy market reform offers an efficient and effective way to attract significant private capital into expanding this key new sector of our economy, putting America back to work meeting our pressing energy and economic challenges. It is what Congress needs to do in 2011.

The Telecommunications Act of 1996

In 1973, well before anyone was thinking about telecommunications deregulation, Motorola Inc. demonstrated the world's first cell phone, which weighed in at close to 4½ pounds. After slow growth at first, over the course of just 10 years the total number of mobile phone subscriptions served nearly half the world's inhabitants in 2007, up from 8 percent in 1997. By the close of 2009, the number of cellular phone users had grown still further to 4.6 billion in a world of 6.8 billion people.

Today, universal access to information through cellular telecommunications technology is transforming service delivery in areas as diverse as health care and banking. Mobile phones are allowing developing countries to leapfrog a generation of infrastructure, while unleashing innovation, new markets, and economic development the world over.

The question of how to cultivate and harness this sort of technological change for competitive advantage in other industries is of more than academic interest in the United States today. Innovation-led development and commercialization of new technologies alongside sweeping upgrades to our infrastructure offer the promise of a more efficient, productive, and globally competitive economy through better use of both information and physical resources. Nowhere is this opportunity more apparent and urgent than in our generation and use of energy. What's more, overhauling our energy sector to meet the demands of the 21st century will:

- Enable us to maintain our domestic manufacturing base and create jobs
- Match rising global demand for energy with a diverse set of clean energy sources
- Reduce national security pressures due to our current dependence on foreign oil
- Combat the destructive environmental consequences of our over-reliance on fossil fuels

Innovative energy solutions can focus on all four of these issues directly, creating an economy that boasts more domestic production that is less polluting and radically more efficient. To date, however, the United States has been far less effective than our Asian and European competitors at deploying existing clean energy technology or commercializing energy innovations broadly across our economy.

A precedent from America's recent past for clean energy reform in 2011

Recent experiences with the revolution in information and communications technologies over the past 15 years provide important lessons about how a range of public policies can drive growth in private markets, and increase private capital investment. Innovation in our information and communications and technologies, or ITC, infrastructure created dramatic new efficiencies and economic growth. But changes in our communications infrastructure did not happen by accident. They were facilitated by smart policy to drive innovation and investment. The Telecommunications Act of 1996 provides a highly relevant precedent for meeting our energy challenges today.

In 1994, Congress considered a telecommunications bill to modernize industry regulations originally put in place in 1934. That bill passed the House but failed to gain consensus across party lines. Two years later, after the composition of Congress changed dramatically, with both chambers of Congress shifting to Republican control, the Telecommunications Act of 1996 was passed by Congress and signed into law by President Clinton.

The new bill contained roughly three-quarters of the same content as the 1994 bill, but was forged through consensus across party lines and good-faith negotiation between business and consumer interests seeking to influence the contents of the final bill. While some may criticize aspects of the 1996 telecom bill, its impact on the growth of an industry is beyond dispute.

A new consensus was possible in this arena at that time because businesses needed regulatory reform to grow. The Telecom Act provided a policy framework that both reduced the cost of new technology and infrastructure deployment, and eliminated regulatory and infrastructure barriers to bringing new products and services to market. It is useful to recognize key features of this legislation because we believe they are broadly applicable today in the clean energy arena. Specifically, the 1996 Telecom Act:

- Provided for no direct appropriations by the federal government while encouraging the private sector to invest in new infrastructure
- Removed regulatory barriers that fragmented the telecom market and impeded new investments

A new consensus was possible in this arena at that time because businesses needed regulatory reform to grow.

- Opened markets to adjacent market entry, including allowing mergers across state lines—remember, our telecoms market at the time was controlled by separate regional “Baby Bells” after the breakup of “Ma Bell,” the American Bell Telephone Company, in 1984—and within horizontal markets such as in the radio and television broadcast industry
- Established common methods nationally for calculating rates while empowering states to determine prices based on local market conditions
- Created regulatory certainty that used regulations to encourage investment and competition.
- Created transparency for end users

Between 1997 and 2007, more than \$850 billion in private capital was invested in communications networks in the United States—none of it by taxpayers. This investment helped produce a balanced budget in the 1990s as these businesses grew their operations and their profits, and enabled complementary information technology companies to do the same. All this private sector investment produced robust job growth, productivity gains, and income growth for Americans across our nation in the 1990s. It also positioned the United States to be the leading country in the global ICT market, created American success stories from Google Inc. to Cisco Systems Inc. to Facebook Inc., and radically reshaped the American economy.

Why we need a “Telecom Act” for clean energy

The telecom revolution is not the only example from American history of technology change enhanced through smart policy. It is only the most recent. Similar legislative efforts to draw private capital into the business of building America fueled the construction of first canals and then the transcontinental railroads. The private sector responded to smart government policies, connected Americans first by telegraph, then telephone, and more recently the Internet. This is how we first electrified rural America, and then launched a nuclear energy industry.

Indeed, public investments in research, technology, and infrastructure paved the way for new commercial industries in biotechnology and computer chip design and manufacturing, new advanced materials, and nanotechnology. But while

direct public investment was essential for early phases of research and technology development, it was private capital investment that brought these technologies to scale, building entirely new industries.

Yet private capital did not act in isolation. Rather, careful regulatory policies and well-crafted incentives unleashed American ingenuity and industry and the power of private capital markets to erect a more durable foundation for jobs, economic growth, and enduring prosperity. This is how the private sector built and operates the vast majority of America's electricity system today—a system that many consider the greatest invention of the 20th century. Federal policies encouraged broad deployment through private investment.

Today, the private sector can once again build and operate a renewed electricity system for the 21st century. But to unleash a new wave of private investment, informed public policies are again necessary. This clean energy deployment agenda goes well beyond support for basic R&D. Policymakers in Congress need to provide federal catalysts so that private capital can be put to work investing in our nascent economic recovery. Congress needs to establish market certainty for long-term decision-making by private investors in clean energy production and deployment, and to support industrial innovation with long-term deployment. In the next section of this paper we will present a framework for doing this akin to the Telecommunications Act of 1996.

Clean energy and American jobs

In the recession environment, unemployment is a serious concern. Stalling on clean energy development is only making matters worse. The AFL-CIO found that in 2010 our nation's trade deficit with China in clean energy industry products doubled, resulting in the loss of more than 8,000 jobs at home. An emphasis on clean energy development can generate new jobs for the American economy and keep jobs from going overseas.

There are three distinct proposals in our paper that, like the investment of new communications networks in 1997-2007, will produce millions of new jobs in the United States, with special opportunities for rural communities. They are:

- Energy efficiency upgrades of residential and commercial buildings across the United States.
- The conversion of electricity generation to long-term sustainable clean or cleaner energy sources, such as wind, gas, nuclear, biomass, sun, and coal (when using carbon capture-and-storage technologies to clean this fossil fuel).
- Electrification of transportation networks that can handle electricity generated from clean energy, in order to decrease dependence of foreign oil and increase demand for new forms of electricity generation.

Maximizing job creation will require a comprehensive approach. The Department of Energy has its role, focusing on basic research and development as well as encouraging the commercial deployment of clean energy technologies and energy efficiency solutions for our residential and commercial buildings. DOE also boasts an obvious role in nuclear technology issues, including spent fuel disposal. The Department of Housing and Urban Development also has a role to play in small-scale energy efficiency, providing grants and energy efficient mortgages to homeowners.

But we believe our proposed Energy Investment Trust is a linchpin that would connect all of these programs with the financial tools needed to encourage the private sector to put people to work transforming our infrastructure. Private investment is needed to rebuild some sectors of our nation's energy sectors. Our plan is to use finance, tax, and regulatory policies to shape at least three sectors of the private economy—construction, energy, and transportation—so that new investments can be made on a 10-year time horizon.

Congress and the White House also have roles to play. Together, they need to develop and implement the tax incentives needed to supplement the Energy Investment Trust's low-cost financing support for the private sector, and to remove the market, infrastructure, and regulatory barriers that hold the private sector back from deploying clean energy and energy efficiency projects.

Toward a clean energy deployment plan in 2011

Making clean energy cheaper and clean energy markets more predictable can effectively create jobs, harness technology, drive innovation, protect the environment, and stimulate economic growth. Yet to garner the economic benefits of energy and infrastructure investment will require sustained commitment over the course of a decade-long transition. Indeed, the 112 th Congress can pass a clean energy innovation bill that launches this market transformation by addressing a number of core goals, among them:

- Reduce costs to taxpayers
- Encourage private capital investment
- Rationalize regulation and reduce barriers
- Increase economic and energy efficiency
- Improve energy security
- Strengthen domestic industries
- Embrace differences in regional markets
- Encourage “races to the top” by regional clean energy consortiums
- Use standards to create open and well-structured markets

In charting the path to new clean energy legislation in 2011 that seeks to increase jobs and growth, these nine key goals should shape the coming debate and serve as important design criteria for a shared national strategy for moving forward. So let’s look at each in more detail.

Reduce costs for taxpayers

New energy legislation along the lines we propose in this paper will give the 112th Congress a great opportunity to set the conditions for new job creation without major new federal appropriations, while stabilizing energy costs for consumers. The reason: Accelerating growth in the commercial market drives investment without burdening taxpayers.

Many of the provisions explored here have a “zero score” to the federal budget, which is budget-speak for no cost to taxpayers, while those that do involve public investment primarily focus on use of the tax code to drive private investment. We have not attempted in this paper to score these so-called tax expenditure provisions, but it is worth noting that they will have budget implications. Nonetheless, the measures recommended here are consistent with the political priorities of both Democratic and Republican legislators to encourage growth while managing direct public spending.

Encourage private capital investment

Utilities, merchant energy companies, and financial investors in the United States are all poised to make substantial capital investments in new energy production and transmission projects to replace existing and aging facilities and to modernize our energy infrastructure and maintain reliable service. Yet, with the ending of recovery act spending, and tremendous regulatory uncertainty in energy markets, they continue to hold back on capital spending.

These sectors are hungry for long-term policy guidance. Federal policy can facilitate these private investments through better incentives, smarter rules, and clear strategic planning.

Rationalize regulation and reduce barriers

Policy choices can be made to overcome artificial financial and regulatory barriers that stand in the way of deploying these new clean energy technologies. With the proper mix of policies and incentives, proven clean energy such as wind, solar, and geothermal can deliver substantial electricity to consumers in much of the country at a price competitive with, or close to, the current marginal cost of delivering conventional electricity services. Bringing that energy on line requires a clear regulatory framework, committing to clean energy, and facilitating its deployment by siting projects and ensuring access to the grid.

Increase economic and energy efficiency

There are roughly 110 million households in the United States, and almost 5 million commercial buildings. More than 40 percent of all of the energy generated in the United States is used to heat and cool these buildings. Efficiency is the cheapest, cleanest, and most abundant energy source available. Sound policies can remove market barriers to the financing and deployment of clean energy technologies in our residential and commercial buildings and allow consumers and businesses to share the economic benefits of energy conservation.

Stronger financial incentives and regulatory reforms, for instance, can unleash more than \$1.2 trillion that is currently wasted each year in U.S. energy bills for more productive investments. Smart grid infrastructure and management of energy information represents a new industry focused on capturing inefficiency and increasing the economic productivity of energy investments. And improving the energy efficiency of buildings can improve property values in a sagging real estate market, save money for consumers, drive demand for advanced technology and construction jobs, and improve the overall efficiency of the American economy.

Stronger financial incentives and regulatory reforms can unleash more than \$1.2 trillion that is currently wasted each year in U.S. energy bills for more productive investments.

Improve energy security

To reduce the risks to our national security posed by our dependence on imported oil, smart policies can increase investment in the electrification of our transportation infrastructure. Similarly, federal policies can promote the use of abundant and domestic natural gas and renewable energy as a national security asset through a mix of policy incentives and strategic infrastructure planning. Further, the development of less centralized renewable energy assets connected through a smart energy and information grid will improve the stability, reliability, and security of our energy infrastructure.

Strengthen domestic industries

Building domestic clean energy markets will reduce the balance-of-trade deficit in energy, which in turn improves our broader economy and lowers the cost of borrowing for businesses. What's more, promoting technology innovation, regional economic development, and more modern infrastructure in clean energy will increase demand for construction jobs, create new manufacturing and service industries here in the United States, and stimulate new domestic investment.

Embrace regional differences

Electricity market structures and regional resources vary widely between regions of our country. Federal policy must take into account these state and regional economic differences and energy preferences, and engage with states as implementation partners in deploying alternative energy. To rapidly build a national clean energy market, federal strategy should rest on the foundation of existing infrastructure, rules, and markets, especially where state, local, or voluntary industry programs are already in place. This can be done by encouraging a “race to the top” among regional clean energy consortiums through positive federal incentives, and by allowing regional flexibility in how policies are implemented.

Encourage “races to the top”

Streamlining and harmonizing federal investments and policies can encourage a race to the top by providing incentives for states, utilities, and industries to act. This strategy has been employed effectively by the Department of Education, which faces a similar challenge of managing a national strategy within a complex federal framework of state and local authorities.

Similarly, the Department of Energy has led in the development of Energy Regional Innovation Clusters that organize federal investments more effectively to promote the growth of regional economies, with the first so-called E-RIC grant focused on energy efficiency technologies and deployment. The federal government can play a beneficial role in encouraging coordinated planning across regions, providing broadly accessible data resources, harmonizing incentives and standards, and job-training programs, streamlining and integrating what is currently a fragmented and inefficient marketplace for energy.

Use standards to create open and well-structured markets

Just as the conventions of openness and universal access shaped the development of the Internet and the online economy, so too will coming changes to energy regulation and emerging clean energy markets have far-reaching implications for consumers. It will be important in considering regulatory reform to address up front key concerns related to privacy, security and reliability, data ownership, consumer protection, and open access to distribution networks for innovative technologies and new market entrants.

The basic rules and protections should be written proactively into the design of new markets, rather than addressed after problems arise. Further, where incentives and subsidies are needed to encourage early commercialization, these must wind down as technologies and markets become mature, in order to avoid market distortions and impediments to further innovation.

Focusing on all of these core concerns in concert will require well-crafted legislation that addresses the complex interactions evident in our nation's broad energy markets in general and our clean energy markets in particular. In the next section, we detail how to make that complexity more understandable in order to get the needed legislation right.

Economic competitiveness and security

The new Congress needs to pass a clean energy bill for economic and national security reasons. There are three specific reasons for Congress to do so.

First, the Chinese government views clean energy as an engine of its economy, and is willing to invest enormous, economy-sustaining levels of capital. The Chinese government's National Energy Administration, for example, boasts a plan that outlines direct investments totaling RMB 5 trillion (\$746 billion) in clean energy development and deployment over the next 10 years. These are hard numbers, not rumors.

This investment will pull the innovations paid for by U.S. research and development expenditures into Chinese manufacturing plants. Our own spending through the American Recovery and Reinvestment Act of 2009 will benefit China more than the United States if we do not act with equal ambition and create more demand for clean energy technologies in the United States. We need to ensure continued innovation in industrial processes by building our own clean energy market, phasing out outdated and polluting electricity, and substituting advanced clean energy technologies and modern infrastructure.

Second, existing U.S. firms are now moving to close American operations and focus on China and other Asian countries. The Council on Foreign Relations estimates that since 1983 the United States has lost 2 million jobs because companies outsourced to foreign countries,

and from 2001 to 2008, 26 percent of U.S. technology jobs were sent to other countries.

What's more, the McKinsey Global Institute estimates that 30 percent to 40 percent of white-collar jobs, such as engineers, chemists, research scientists, and architects—the very people who would be designing and producing clean energy technologies—will be lost to other countries over the next five years. The reason? That's where the markets are. Even before we watch the fruits of our research and development be picked by others, we are observing the slow, steady shrinkage of the American clean energy industry.

Third, our national security is being affected every day by our dependence on foreign oil. According to the Energy Information Administration, the United States imports about 57 percent of total oil consumed. The Natural Resources Defense Council has found that America spends more than \$200,000 per minute on foreign oil, and that one-fifth of our trade deficit is dedicated entirely to oil consumption.

To overcome this debilitating and potentially dangerous problem, we need to support the private sector in developing and deploying our own domestic sources of clean energy to be confident that we can meet the energy challenges of the future. We also need to take many measures, including supporting the deployment of the infrastructure needed for electric and hybrid-electric cars.

Three pillars for an investment-led strategy of clean energy deployment

Drawing on lessons learned from the Telecom Act precedent, we can identify several overarching features of a market-transforming policy agenda for clean energy. These major pillars should organize the efforts of Congress and the Obama administration in developing a coherent plan of action for financial and regulatory reform that builds new industries. This deployment plan rests on three core pillars of clean-energy transformation:

- Provide financing and incentives to lower the cost of clean energy
- Create jobs and markets through regulatory reform
- Deploy competitive regional infrastructure for economic development

Together, these strategies can provide the foundation for a coherent national clean energy deployment plan, that drives demand, lowers costs, and facilitates rapid adoption. Let's consider each in turn.

Provide financing and incentives to lower the cost of clean energy

Well-crafted federal policies can significantly reduce the cost of clean energy for businesses and boost job creation. The result would be an increase in the amount of private-sector investment flowing into energy efficiency and clean energy projects. New financial tools would reduce the cost of capital for developers, enabling more clean energy projects to become cost-competitive and reducing the overall cost of clean energy deployment for consumers.

Encouraging investments in research, development, and commercial deployment of new clean energy technologies can lower the cost of electricity. To date, clean energy projects have received support primarily in the form of tax credits, tax deductions, direct loans, loan guarantees, and other financial incentives that reduce the cost and increase the availability of investment capital. These programs must be renewed and strengthened by Congress when they take up energy legislation. Yet the current budget climate makes new spending difficult.

To transform the energy industry, and rebuild our nation's residential, commercial, and industrial buildings to save electricity, our proposal calls for the federal government to charter a new, independent, non-profit financial institution that would encourage the private sector to invest in clean energy projects. This new financial institution, which we call the Energy Independence Trust, would provide low-cost capital to the private sector for clean energy project finance at no cost to the federal government.

In addition, this proposal calls for a range of other tax, bond, and credit enhancement tools to further decrease clean energy project finance costs in order to increase investor interest in these projects while reducing risk, uncertainty, and the total cost of deployment. The Energy Independence Trust would be able to use these various tools to encourage sustained private-sector investments in clean energy.

Encouraging investments in research, development, and commercial deployment of new clean energy technologies can lower the cost of electricity.

Energy Independence Trust

This new non-profit, independent lending institution, the Energy Independence Trust, could provide low-cost funding to support near-term and widespread deployment of proven clean energy and energy-efficient technologies. EIT would be a federally chartered, independent entity that would not be an agency or instrumentality of the federal government. It would be authorized to borrow from the Treasury and to request additional borrowing as needed.

EIT would also be able to issue bonds and notes, to borrow money from private lenders, and to receive charitable gifts, grants, and contributions. The trust would be required to maintain adequate capital ratios and to establish a loss reserve financed by fees paid by borrowers. The trust would further be designed to score at zero or close to zero for federal budget purposes. EIT would provide low-cost loans, loan guarantees, and other forms of financing to:

- Enable the large-scale deployment of credit-worthy clean energy projects that require low-cost financing to be economically viable or which lack adequate low-priced financing from private credit markets
- Support directly and through state revolving funds manufacturing facilities across our country that produce clean energy or energy efficient products and integral components of clean energy technology
- Implement energy efficiency projects in homes, commercial, and industrial buildings by providing up to 100 percent of the cost of the project while limiting repayment to the amount of the energy savings. These energy efficiency loans would go to power companies, energy service companies, state energy efficiency programs, or companies implementing smart grid or energy efficiency projects
- Support the development of new transmission projects, retrofitting the bulk transmission system for smart grid capabilities, and development of electrification and grid infrastructure

Granting EIT these four broad mandates would immediately enable the private sector to invest and hire to produce and service clean energy industries and infrastructure.

Tax policies to increase investment in clean energy projects

In addition to establishing a new institution in the EIT to promote the availability of low-cost capital, it will be useful to draw private capital into the market directly through federal tax incentives that encourage capital investments in clean energy projects. Tax policy solutions are attractive to conservatives who believe that reducing tax burdens on industry unleash increased capital investment, and to progressives who want to bring to scale the deployment of clean energy projects and their associated manufacturing industries.

As with all tax policy, the long-term consequences on federal budget deficits should be managed prudently. Tax policy to accelerate and expand the deployment of clean efficient energy would include targeted, time-sensitive tax incentives that are now available for a significant period and can be monetized by investors.

Set forth here are a range of proposals that separately or together could reduce the after-tax cost of capital through long-term tax incentives and enable clean energy project developers to fully realize the tax incentives that apply to their projects. With the exception of the so-called Section 1603 program, which provides cash grants to clean energy developers and which should be extended for two years, all of the tax incentives described below would sunset 10 years after they go into effect.

Potential strategies that might be considered in a federal plan include the following ideas:

- **Equalize expense treatments.** Renewable energy projects require high up-front capital expenses that have to be depreciated and they have very low operating costs that are expensed. The opposite is true for fossil fuel projects. To more adequately take into account the life cycle tax treatment of these projects, and subsidize needed clean energy investments, clean energy projects could be allowed to expense 100 percent of their capital costs in their first year.
- **Create incentives for whole building retrofits.** Whole commercial building energy efficient retrofits receive a tax deduction of \$1.80 per square foot. To help bring this program to scale, the deduction could be increased to \$3 per square foot in order to provide greater incentive for building owners to make incremental investments to improve the energy efficiency of their buildings. Similarly, increasing and extending the new energy-efficient home tax credit would increase consumer energy awareness and benefits to energy ratings.

- **Extend the 1603 Treasury Cash Grant program through 2012.** The highly successful grant program established under section 1603 of the American Recovery and Reinvestment Act of 2009 requires grantees to begin construction of their projects by September 2011. Many qualifying companies will not be able to meet that deadline. A two-year extension of the grant program through the end of 2012 would allow developers to obtain the requisite capital and build clean energy projects that otherwise might not proceed.
- **Extend and expand both the Investment Tax Credit and Production Tax Credit through 2021.** Both the ITC and PTC could be extended through 2021 for all clean energy projects, and the ITC could be expanded to cover offshore wind facilities, renewable energy integration, energy storage on a technology neutral basis, and alternative fuels. A long-term expansion and extension of these credits would provide certainty for investors over a meaningful time horizon and allow clean energy projects to attract needed capital.
- **Extend the 48(c) manufacturing tax credit for U.S. Clean Energy Manufacturing.** This section of the law could be amended to provide an additional \$5 billion in tax credits for qualifying advanced-energy manufacturing projects that re-equip, expand, or establish manufacturing facilities to produce renewable resources, reduce greenhouse gas emissions, or conserve energy. Without this and similar support for the U.S. manufacturing industry, we likely will see continued migration of quality manufacturing jobs outside of our borders.

Effectively utilize tax incentives

Tax incentives lose value if they cannot be fully utilized. To ensure that project developers can utilize their applicable tax incentives, the following measures should be considered:

- **Allow master limited partnership structures to be used for clean power generation.** Master limited partnerships enable tax incentives to be used in a way that enables project developers to obtain cheaper equity financing, thereby lowering the overall cost of capital for clean energy projects. Currently, fossil fuels can use this structure while clean energy cannot. The Internal Revenue Code should be amended to provide the same tax treatment to clean energy projects that is provided to fossil fuel projects.

- **Make clean energy tax credits refundable.** Both the ITC and the PTC could be made refundable to create a strong incentive and ensure that investors and small businesses can realize the benefits of such incentives.
- **Provide bond financing for clean energy projects.** States are struggling to encourage development of green jobs and to create projects during times of very tight budgets. Allowing states and local governments to issue Build America Bonds to finance clean energy projects and exempting these from the statewide volume cap would expand the amount of low-cost private capital available for clean energy projects and hasten their development. The bonds would be repaid by the clean energy projects and would lower the cost of clean energy and efficiency projects. The federal government helps state and local governments to cover the interest costs on these bonds.
- **Incentivize alternative fuel vehicles.** Tax credits could be considered to support the conversion and development of alternative fuel vehicles and for qualified electric vehicle refueling property bonds.

The innovation process and public-private partnerships

America in the 20th century historically led the world in technological innovation, which has played a large role in driving the American economy toward global preeminence. While a good deal of funding is dedicated toward innovative technologies today, serious financing gaps exist that are preventing large-scale deployment of key technologies, and preventing the United States from becoming the leading clean energy economy.

All phases of the innovation cycle must be adequately funded in order to turn a clean energy technology idea into an actual clean energy product. When advising on information technologies, the President's Council of Advisors on Science and Technology defines the phases of the innovation cycle as:

- Invention
- Translation to new and better products and services
- Adoption, or the initial use in the marketplace
- Diffusion, or adoption at scale across the economy

Likewise, for clean technology innovation, this proposal considers similar phases of the innovation lifecycle including:

- **Research and Development**—researching a basic idea or scientific principle and developing it into a functional technology, often funded by government grants to universities or federal labs
- **Demonstration**—finalizing prototypes and testing them under real-world conditions to assess operability, technical performance, profitability, and in some cases even regulatory issues, because technologies often fall victim to the “valley of death” at this phase, since private investors often see no profit here. Public funding like that of the Advanced Research Projects Agency-Energy, or ARPA-E, is necessary at this stage

- **Commercialization**—bringing new technologies to the market. The “valley of death” private financing problem is acute at this stage too, as new funding is critical to this cash-intensive and often capital-intensive phase of the innovation cycle. Public funding like that of Sen. Bingaman's Clean Energy Deployment Administration is necessary here
- **Deployment**—new technologies graduate from niche to mainstream markets by scaling up manufacturing, gaining market share, increasing efficiency, and showing that they can compete on cost with incumbent technologies. This is a risky but vital stage of the cycle that private investors might be reluctant to fund despite promise of potential profit. These investors need to be incentivized to put capital here

The focus of this proposal is to fill in the funding gaps in the clean technology innovation lifecycle, particularly at the deployment stage, where projects need significant funding to make it to market. Public funds have a large role to play in the first three phases, and are typically under-resourced. But in order to deploy across the economy on a larger scale, Congress must pass legislation that incentivizes private capital toward scaling up innovative projects.

Our proposal presents the Energy Independence Trust as a tool to overcome financial barriers to deployment at scale by incentivizing investors to direct more capital toward projects ready to deploy. EIT will help more projects complete the innovation life cycle and make clean energy technology increasingly widespread and inexpensive.

Create jobs and markets through regulatory reform

Federal and state policies shape perceptions of risk, with major consequences for investor behavior. Even in competitive electricity markets, the generation, transmission, and distribution of electricity is significantly affected by policy, regulation, and administrative actions on everything from rate setting for wholesale prices to the so called “dispatch order” of power on the grid.

Removing regulatory barriers to the deployment of clean energy, and providing market certainty through well-crafted utility policies to create predictable demand for clean energy generation, are essential for expanding energy markets for new products and services. There are many steps that could be taken to streamline regulatory processes and thus lower the cost of clean energy projects without reducing utility customer protections or environmental standards.

It is more urgent than ever to analyze these issues and propose solutions. These efforts can also be developed in a way that provides federal support and technical assistance while honoring the traditional powers that state energy regulatory agencies exercise over regional, state, and local energy markets. Further, utility policies and standards can help structure predictable market demand for clean and efficient energy, making projects easier to finance at a lower cost to consumers.

Industry requires long-term certainty in order to invest in job-creating manufacturing facilities or infrastructure projects that take years to repay. Regulatory reform can help build larger and more robust markets for clean energy, and create more certainty for project investors, in turn driving down costs for consumers, and establishing profitable domestic businesses.

This section of our paper outlines a series of forward-leaning policies that will drive strong private market growth. We propose several possible ways to use market rules to increase investment and consumer choice. This list is by no means comprehensive, but is offered as a starting point for further exploration.

Industry requires long-term certainty in order to invest in job-creating manufacturing facilities or infrastructure projects that take years to repay.

Establish a national standard for clean energy

More than 30 states have some form of requirement for utilities to plan for and develop renewable energy and efficiency projects. These targets range from 7.5 percent to 40 percent of total energy and span from several years to several decades. The wide diversity among state markets and energy resources translates to great regional diversity in renewables use nationally. Yet the absence of a clearly predictable, liquid, national market for our domestic renewable energy resources has slowed investment.

Establishing a national Renewable Electricity Standard is an essential foundation for ensuring predictable growth in market demand for clean energy. In the Senate, a bi-partisan Renewable Electricity Standard has been introduced by Sens. Jeff Bingaman (D-NM) and Sam Brownback (R-KS), S.3823, to ensure that 15 percent of U.S. electricity comes from renewable sources by 2021. Advocates of renewable energy stress that standards are essential to create predictable demand in clean energy markets. Yet some regions of the country, notably the Southeast, remain wary of their ability to cost-effectively pursue renewables.

There are several possible design considerations. One interesting option might be to explore a standard that is responsive to differences in regional electricity markets, even while ensuring a higher bar in overall national goals. A national Clean Energy Standard, for example, might embrace a broader range of technology to provide regional flexibility in exchange for setting a higher overall national target. Such a policy could set a goal of 25 percent clean energy by 2025, with an interim goal of 20 percent clean energy by 2020.

This 25 percent target might be met by a base of 15 percent renewable energy, with an additional 5 percent commitment from energy efficiency. The remaining 5 percent might then be designated for other regionally appropriate clean energy resources on a state-by-state basis by the Public Utility Commission, perhaps including new nuclear power, coal plants with carbon capture-and-storage capabilities, or other clean energy resources like additional carve-outs for solar, woody biomass, industrial co-generation, on incremental hydroelectric. Further, in states where significant difficulties meeting renewable goals cost effectively could be demonstrated, this regional target might be raised to 10 percent. In such a way, it should be possible to ensure a strong national target for the development of future renewable energy and efficiency markets, even while guaranteeing that states retain autonomy, flexibility, and control of their market structure.

Set standards for privacy and data ownership

Any new policy must set clear market rules and establish federal guidance on individual ownership of consumer utility data, privacy standards, setting new guidelines for personal user access, and protocols for individual consumers' ability to assign access to their utility and smart meter data to third-party vendors of demand management and energy efficiency services.

Promote best practices in managing variable energy resources

Additional federal policy should encourage Federal Energy Regulatory Commission guidance and increased technical assistance and collaboration among states in promoting best practices for standardizing approaches in managing variable electricity resources and maximizing demand reduction as an energy resource nationally. Encouraging the creation of virtual balancing areas, for example, might permit the efficient dispatch of resources and management of reserves over larger areas. Increasing the geographic footprint of balancing areas will also reduce the variability of renewable resources.

Incentives could be provided for states that on a voluntary basis develop best practices and streamline regulations to promote renewable energy and efficiency, by managing dispatch order and loading, in addition to setting effective guidelines for net metering, interconnection, and fair rate setting. Other measures that might encourage new deployment include establishing rules to guarantee access to utility poles and other infrastructure to qualified entities to ensure greater competition in the market from innovative technologies. So, too, will be expanded directives to use federal agency procurement investments to increase the role of federal funds in building state and local markets.

Develop energy efficiency as a "generation" resource

Market rules will directly affect what efficiency investments are profitable, and whether they are financed solely on the basis of savings to building owners, or with recognition of their larger benefit to the national energy grid. FERC could examine and provide guidance on market design, to promote the use of forward capacity markets to include cost-effective energy efficiency and demand side management measures on an equal basis with traditional generation within utility planning for meeting load growth.

Further, federal policy could update national building codes and improve energy codes and standards in building materials and appliances. Voluntary energy efficiency information could be incentivized within real estate markets to offer consumers improved choice and market transparency. Incentives could encourage public-private partnerships to create sustainable energy utilities, operating as non-profit developers of efficiency as an energy resource. National quality assurance standards for home retrofits modeled after whole home retrofit standards in the Home Star legislation could provide greater certainty to consumers on the reliability of energy savings. And, federal affordable housing and community development policies could be leveraged to promote energy and conservation retrofits, including accounting rules for utility payments, to promote long-term investments.

Integrate transportation into clean energy infrastructure

To promote an integrated national electric vehicle charging infrastructure, each state regulatory authority and each utility could be directed to require that electricity infrastructure complies with industry standards and is interoperable with products of all manufacturers. Protocols and standards for integrating electric drive vehicles into an electrical distribution system should be developed federally, providing for vehicles to be identified individually and to be associated with its owner's electric utility account.

Utilities and regulatory authorities could review their determinations on time-based metering and communications. Public utility policy could be amended to establish utilities for electric drive vehicle infrastructure. And, to make natural gas vehicles easier to come by and more widespread, the Environmental Protection Agency could streamline the certification process for natural gas vehicle retrofit kits.

Deploy competitive regional infrastructure for economic development

Revitalizing and reinvesting in the nation's electricity infrastructure to make it more energy efficient is essential for American industrial and economic competitiveness, for regional economic development, and our energy security. The lack of adequate infrastructure, or excessive fragmentation of regional markets, can significantly slow and even stop the development of a clean energy economy. In contrast, smart modern infrastructure reduces costs for business, customers, and state and local governments.

There are three critical areas of clean energy infrastructure that must be addressed in a comprehensive plan for clean energy deployment. These are:

- Investing in transmission lines required for large-scale generation of clean energy resources
- Upgrading distribution networks to operate as a smart grid that facilitates the flow of useful data as well as energy
- Placement of a charging infrastructure for hybrid and electric vehicles to integrate transportation effectively into our existing electricity grid, as well as fueling infrastructure for alternative fuel vehicles.

The challenges and barriers to development of this infrastructure should be thoughtfully addressed and pursued within a national strategy.

Infrastructure deployment will be facilitated through both the financial and regulatory tools outlined earlier in our set of recommendations, but because it provides an essential foundation for the development of regional markets, it deserves special consideration. In establishing a national program of infrastructure modernization, the federal government should work closely in partnership with states, cities, and private developers to build strong regional clean energy markets. Below are our recommendations in the infrastructure arena.

Assist states and communities in infrastructure coordination

In long-range infrastructure planning, the federal government can play a key role in fostering the development of regional plans for utilizing local clean energy resources. Under FERC rules (including the rule proposed under the FERC notice of proposed rulemaking related to transmission and cost allocation), entities would submit plans to FERC that reflect the short-, medium-, and long-term goals and implementation steps for increasing energy efficiency and promoting renewable energy, including plans for any new transmission capacity that would be needed to accommodate new renewable energy facilities.

These plans would be submitted after consultation with utilities, ratepayer advocates, industrial users, merchant providers, project developers, and other relevant stakeholders. FERC would be given additional backstop authority to site new transmission lines in any state that stem directly from a plan submitted pursuant to this requirement. Any federal strategy for clean energy deployment should prioritize a robust planning across jurisdictions, and build a national strategy from the foundation of strong state planning efforts to maximize clean energy resources.

Provide federal support for better defining regional clean energy resources

To support this process, FERC should work closely with state commissions to establish a methodology to identify relevant costs and benefits of renewable energy projects and energy efficiency projects, and the requirements of any applicable renewable energy standards to determine whether an investment is prudent and whether charges to end users are just and reasonable. In addition, the Energy Information Administration should work with states and regions to create a clean electricity availability and consumption map. This and other data resources will facilitate planning and measure progress of clean energy deployment efforts.

Further, rural communities should be guaranteed access to the benefits of the clean energy economy, by linking smart grid deployment to broadband infrastructure planning, and engaging the Rural Utility Service, rural cooperatives, and municipal and public power providers in deployment planning.

Develop state and regional plans for market structure innovations

In order to achieve scale in renewable energy and energy efficiency investments while preserving the integrity of regional energy markets, the federal government should work closely in consultation with the states to develop both national and regional clean energy strategies. This process should give thorough consideration of issues raised in setting and adjusting reasonable rates for recovery of costs in the rate base.

Further, this process should establish a framework of best-practice recommendations for grid- and power-distribution transparency to encourage the provision of retail and distribution services in a manner that promotes the development of clean energy and efficiency services in response to unique regional conditions. States could engage the Department of Justice in reviewing appropriate industry market structures for clean energy deployment. For a limited window of time, utilities could be granted a limited antitrust exemption to collaborate in discussions of alternative market structures, in partnership with regulators and consumer advocates, with proposals for alterations in existing market structures to be published and submitted to the U.S. Attorney General for review. Based on state and local guidance, FERC could make recommendations on issues of concern for future horizontal and vertical market structure in the energy industry.

Promote strategic planning for energy efficiency markets

The federal government should work with states and utilities to develop common planning measures, shared investment strategies, and joint public education and measurement strategies for energy savings. A national plan could be developed and sustained through the promotion of state plans that account for regional geographic energy, and climate disparities.

The plan should include federal funds to develop and disseminate through local agencies and the building trade any information on advanced building energy efficiency measures for new and existing buildings, model code provisions, and skills certification measures to provide credentials for workers. The new plan should draw on the experience of the federal government's Energy Regional Innovation Cluster grant program, which recently chose a regional consortium in the Philadelphia area to develop all of these guidelines and standards in a real-world regional environment.

A national plan could be developed and sustained through the promotion of state plans that account for regional geographic energy, and climate disparities.

Develop federal standards for smart grid data management and interoperability

Build upon the initiative of the Department of Commerce's National Institute of Standards and Technology to develop smart grid standards for smart grid data management, in partnership with regional market actors.

Promote deployment of plug-in and other electric drive-train vehicles

A national clean energy strategy should ensure that the federal government works in partnership with electric utilities and state regulators to develop plans to support electric drive-train vehicles and the deployment of the charging infrastructure or other infrastructure necessary to adequately support the use of electric drive vehicles. This will also enable the competitive installation, operation, and provision of electric drive vehicle charging services.

States should consider whether, and to what extent, to allow cost recovery for plans. Further, states should establish appropriate protocols and standards for integrating electric drive vehicles into an electric distribution system, smart grid systems and devices as described in Title XIII of the Energy Independence and Security Act of 2007. The federal government should require a specified percentage of vehicles acquired for the federal fleet to be such vehicles, and the Secretary of Energy to provide grants and loans to local governments for the installation of recharging facilities for such vehicles.

Build regional centers for manufacturing

The federal government should support public-private partnerships to launch regional centers of excellence and specialize in commercializing and deploying local clean energy resources, through national labs, the Cooperative Extension service, and land grant universities. Centers could coordinate with state manufacturing offices, state economic development agencies, and the Department of Commerce Manufacturing Extension Partnership. Investment in manufacturing conversion could be further facilitated using EIT loans.

Create a clean energy and energy efficiency “Race to the Top”

Increased incentives should be offered to states and regional consortiums that develop well-integrated clean energy deployment plans. This should include incentives designed to retire or retrofit older, inefficient, or carbon-intensive energy resources with new, efficient, and clean resources. Such programs would provide utilities with incentives to retire older-generation facilities that are not economic to retrofit to meet new emissions requirements.

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About the Coalition for Green Capital

The Coalition for Green Capital is a nonprofit organization based in Washington, D.C. CGC advocates for tax and finance policies that support investment in energy efficiency and clean energy. We pursue such policies at the national, state, and international level.

Skadden Arps, Latham & Watkins, and Covington & Burling serve as our pro bono counsel.



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