



**TRANSATLANTIC PLATFORM FOR ACTION  
ON THE GLOBAL ENVIRONMENT (T-PAGE)<sup>1</sup>**

**Background Paper on US Actions on Climate Change and Energy**

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*Principal Author:*

Melanie Nakagawa, Attorney, International Program

*Contributors:*

S. Jacob Scherr, Director, International Program

George Peridas, Science Fellow, Climate Center

Geoff Fettus, Senior Attorney, Nuclear Program

Jim Presswood, Energy Advocate, Energy Program

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## **T-PAGE: Background Paper on US Climate Change and Energy Policies**

### **1. INTRODUCTION**

The discussion and debate in the US on climate and energy issues is changing very fast. Over the past year, there is greater recognition by the public in the United States of climate change and the need for action. While the Federal government is only now starting to move to develop comprehensive climate change policies, there has been significant progress at the regional, state and local levels. The 110th Congress, which began January 2007, has already stepped up consideration of climate change; and a number of bills establishing a cap-and-trade system for greenhouse gas emissions have been introduced.

There has also been increased consideration of energy technologies which would address climate change. Earlier this year, President Bush stated, “America is on the verge of technological breakthroughs that will enable us to live our lives less dependent on oil...they will help us to confront the serious challenge of global climate change.”<sup>2</sup> So far the Administration appears to be more focused on carbon capture and sequestration and nuclear power. While Federal support for renewable energy lags, there has been progress again at the regional, state, and local level where meaningful support for renewable energy is more commonly found.

NRDC has prepared this overview of a range of current US policy discussions on climate change and energy to provide background for a transatlantic dialogue that we are co-organizing with the Institute for European Environmental Policy. The paper is not an NRDC policy document; and the views expressed or implied herein do not necessarily conform to the position taken by NRDC on any particular issue. This document, along with a companion review of EU policies prepared by IEEP, is being provided to participants in our initial teleconference on April 24, 2007. The goal of the dialogue is to enable environmental leaders in the US and Europe to identify, discuss, and analyze key climate change and energy issues of mutual interest and then to develop recommendations for action on both sides of the Atlantic.

### **2. CLIMATE POLICIES**

#### **a. Federal vs. State**

The recent political shift in the US Congress has moved what was previously a state level discussion on climate change to a Federal level debate with a real opportunity for effective Federal action to reduce US greenhouse gas emissions by enacting caps on carbon.

While internationally the US remains outside key climate negotiations such as the Kyoto Protocol, this US position may be changing. Although difficult to gauge whether the next two years will usher in a new international climate treaty where the US is a participant, the new Congress is spearheading calls for international participation. The Senate is discussing a resolution calling for US participation in negotiations under the United Nations Framework

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<sup>2</sup> President George W. Bush on January 23, 2007, cited in “Open Letter on the President’s Position on Climate Change,” February 7, 2007, <http://www.whitehouse.gov/news/releases/2007/02/20070207-5.html>.

Convention on Climate Change leading to agreements that will commit all nations which are major emitters of greenhouse gases to significant long term reductions.<sup>3</sup>

This section examines the progress on climate policies and initiatives at a Federal, regional, and state level. At the Federal level, a priority is being placed on establishing a system of cap-and-trade. In conjunction with this effort, numerous policy tools are also being discussed to help drive the emissions reduction required under such a system. Some of these policies include promoting cleaner fuels in the transportation sector, energy efficiency, performance standards, and incentives for renewable energy which will be addressed throughout this paper.

### **b. Cap-and-Trade Systems**

Emissions trading, or cap-and-trade systems, requires a series of climate policies aimed at reducing the release of harmful gases including those that contribute to global climate change. Within a cap-and-trade system, the participants involved, such as power plants, are given a cap on their emissions. Permits, allowances, or credits are then allocated to these participants, which allow them to pollute a certain amount. In the US, cap-and-trade systems are favorable policy mechanisms that allow the free-market to reduce greenhouse gas emissions in a way that is flexible for those companies or power plants involved. This flexible, market-based scheme permits those participants who emit less to sell their credits and profit from those who must buy permits in order to pollute more.<sup>4</sup>

In some cap and trade schemes **offsets**, which are emission reductions generated by projects in sectors that are not capped, can be used in place of allowances for regulatory compliance. In the US debate is surfacing over the use of offsets as a supplementary compliance mechanism in some types of cap-and-trade systems. While, offsets can provide an incentive for broader emission reductions, help spur innovation, and may reduce compliance cost, there are concerns regarding how to ensure that they produce actual emission reductions. With offsets, there is a challenge in selecting the appropriate criteria and conditions for them because often the impact of offsets cannot be measured directly, but must be estimated based on hypothetical approximations. Similarly, heavy reliance on offsets could create perverse incentives for developing countries to build carbon intensive plants in order to create a market for capital flows to improve them. Given a lack of clear guidelines for how to distribute these offsets coupled with a heavy reliance on them, could allow a rich developed country, such as the US, to make no changes to its' domestic emissions path. In the US, more thought is needed on the topic of offsets, particularly in light of how to ensure actual overall emission reductions where a cap on emissions is enforced. However, the topic of cap-and-trade as it could be applied in Federal legislation is where the bulk of the Federal climate and energy dialogue is taking place.

As previously noted, there is a real opportunity to pass Federal legislation in the 110<sup>th</sup> Congress that would apply a long term vision to reducing emissions looking beyond the next five years and at significant emissions reduction. The 110<sup>th</sup> Congress introduced six bills targeting climate

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<sup>3</sup> For example, the Biden-Lugar Resolution (S.Res.30), may be one mechanism to catalyze US involvement in international negotiations, if introduced and passed.

<sup>4</sup> "Cap-and-Trade Systems", Catalyst Volume 4 Number 1, 2005, [Union of Concerned Scientists, http://www.ucsus.org/publications/catalyst/page.jsp?itemID=27226959.](http://www.ucsus.org/publications/catalyst/page.jsp?itemID=27226959)

reductions through a cap within its' first three months. The importance of these bills and the others to follow is that they lay the foundation for consensus building while also marking the starting point for where the next Congress and next US President will begin, irrespective of whether a bill passes in the 110th. The six introduced bills are:<sup>5</sup>

**Global Warming Pollution Reduction Act: Sanders-Boxer (S. 309)**

Multi-sector; Declining cap on emissions with a goal of a 14% reduction by 2020 and 83% reduction by 2050.

**Electric Utility Cap and Trade: Feinstein (S. 317)**

Electric sector; Declining cap on emissions with a goal of 8% reduction by 2020 and 42% reduction by 2050 (unless adjusted by EPA).

**Climate Stewardship Act: Olver-Gilchrest (H.R. 620)**

Multi-sector; Declining cap on emissions with a goal of a 14% reduction by 2020 and 76% reduction by 2050.

**Climate Stewardship and Innovation Act: Lieberman-McCain (S. 250)**

Multi-sector; Declining cap on emissions with a goal of a 14% reduction by 2020 and 65% reduction by 2050.

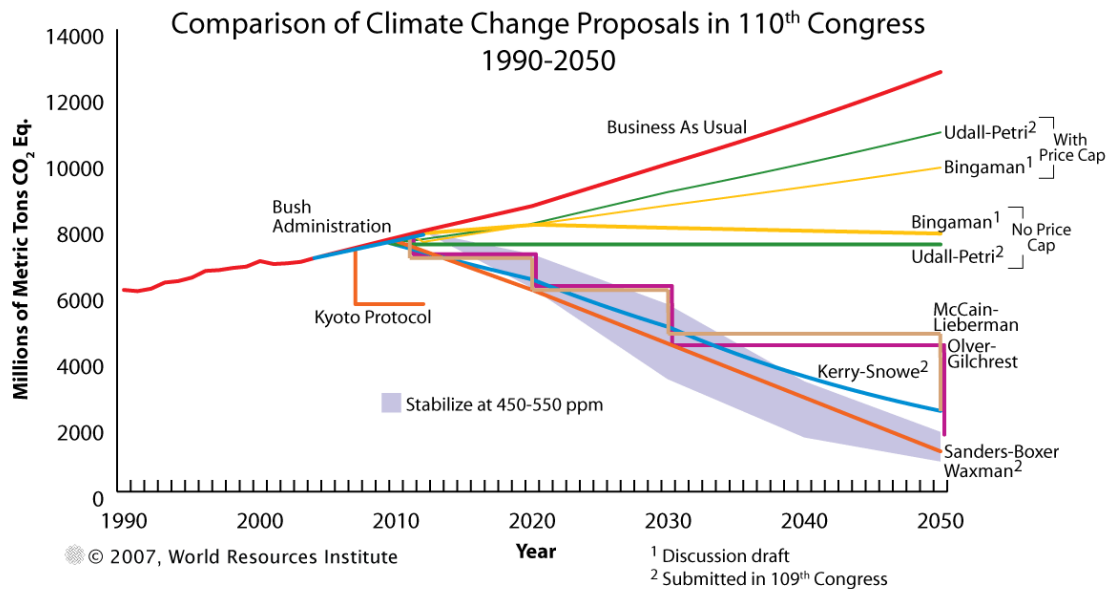
**Global Warming Reduction Act: Kerry-Snowe (S. 485)**

Multi-sector; Declining cap on emissions with a goal of a 14% reduction by 2020 and 67% reduction by 2050.

**Safe Climate Act: Waxman (H.R. 1590)**

Multi-sector; Declining cap on emissions with a goal of a 14% reduction by 2020 and 83% reduction by 2050.

While these bills are seemingly similar, the chart below depicts the level of variation among them in terms of the emission reductions they hope to achieve.



<sup>5</sup> This information can be found in the NRDC Fact Sheet on Global Warming Legislation: [http://www.nrdc.org/legislation/factsheets/leg\\_07032601A.pdf](http://www.nrdc.org/legislation/factsheets/leg_07032601A.pdf), for more detailed analysis see NRDC's index on Global Warming: <http://www.nrdc.org/globalWarming/leg/leginx.asp>.

At the regional level, the **Regional Greenhouse Gas Initiative**<sup>6</sup> is a multi-state effort to discuss the creation of a regional cap-and-trade program among states in the Northeast and Mid-Atlantic portions of the US. It is the first mandatory CO<sub>2</sub> emissions trading program in US history. Initiated by New York Governor George E. Pataki, the program includes three phases as developed by the “RGGI Staff Working Group” and described in their action plan. The first phase, a learning phase, includes discussion of previous efforts by individual states and of the legal mechanisms required to achieve further goals. The second phase, or first development phase, covers CO<sub>2</sub> emissions trading for the regional power sector. As planned, the second development phase will explore offset mechanisms to reduce greenhouse gas emissions outside of the electricity sector. Current participants include Connecticut, Delaware, Maine, New Hampshire, New Jersey, New York, and Vermont in addition to Maryland, which will become a full participant by June 2007. The District of Columbia, Massachusetts, Pennsylvania, Rhode Island, the East Canadian Provinces, and New Brunswick act as observers.

As a supportive regional network, RGGI creates a cap-and-trade program at the regional level that does not conflict with pre-existing emissions policies at the national, state and local level. It is a cautious program without a strict standard or timetable on emissions cuts for the region as a whole. It is also a flexible program that allows new participants to join the initiative within their own timetable and allows individual states to achieve greater emission reductions with an increase in options for compliance and it supports a market for cleaner and more efficient energy technologies.

In February 2007, Governor Bill Richardson and the governors of Arizona, California, Oregon and Washington announced the **Western Regional Climate Action Initiative**.<sup>7</sup> Richardson and Governors Chris Gregoire, Ted Kulongoski, Janet Napolitano and Arnold Schwarzenegger signed an agreement that directs their respective states to develop a regional target for reducing greenhouse gases and a market-based program, such as a load-based cap and trade program, to reach the target. The five states agreed to participate in a multi-state registry to track and manage greenhouse gas emissions in their region. The initiative builds on existing greenhouse reduction efforts in the individual states as well as two existing regional efforts, the West Coast Global Warming Initiative formed in 2003 by California, Oregon and Washington and the Southwest Climate Change Initiative launched in 2006 by Arizona and New Mexico.

On a state level, California is again stepping up as an environmental leader in US. As the 12<sup>th</sup> largest emitter of global warming pollution in the world, California was the first state to limit global warming pollution from cars in 2002. Ten other states<sup>8</sup> and Canada—more than one-third of the North American car market—have followed California’s lead and adopted California’s standards.<sup>9</sup> While other states have pledged to curb their global warming emissions, in September 2006, California’s **Global Warming Solutions Act**<sup>10</sup> became the first progressive

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<sup>6</sup> Regional Greenhouse Gas Initiative Website: [www.rggi.com](http://www.rggi.com).

<sup>7</sup> <http://governor.oregon.gov/Gov/pdf/letters/022607NGA.pdf>

<sup>8</sup> Connecticut, Maine, Massachusetts, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, Vermont and Washington.

<sup>9</sup> NRDC Global Warming, “California Signs Landmark Global Warming Legislation,” (Last revised November 7, 2006), <http://www.nrdc.org/globalWarming/ncalifornia.asp>

<sup>10</sup> Assembly Bill No. 32, [http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab\\_0001-0050/ab\\_32\\_bill\\_20060927\\_chaptered.pdf](http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab_0001-0050/ab_32_bill_20060927_chaptered.pdf)

and stringent action setting concrete limits on statewide global warming pollution. California's new law requires that the state's global warming emissions be reduced to 1990 levels by 2020. The reduction will be accomplished through an enforceable statewide cap on global warming emissions that will be phased in starting in 2012, with a goal of cutting the state's pollution 25 percent by 2020. This law requires all sectors to make substantial reductions. Because California currently sends \$30 billion out of the state every year to buy fossil fuels, these pollution limits are expected to curb spending on imported energy and spur the development of clean technology.

On January 18, 2007, as a first step to achieve the reductions set out in the new law, the Governor of California signed an Executive Order establishing the world's first greenhouse gas standard for transportation fuels - the **Low Carbon Fuel Standard**.<sup>11</sup> The Executive Order states, a statewide goal shall be established to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020 because greenhouse gas emissions "pose a serious threat to the health of California's citizens and the quality of the environment." At the signing of the Order, Governor Schwarzenegger said,

"...like the rest of the nation, California relies excessively on oil to meet its transportation needs. . . In fact, 96 percent of our transportation fuel is oil. And that means our transportation fuels are responsible for more than 40 percent of California's greenhouse gas emissions. Reducing the carbon content of transportation fuels sold in California by just 10 percent means we will replace 20 percent of our gasoline consumption with lower-carbon fuels, more than triple the size of the state's renewable fuels market, and add seven million alternative fuel vehicles to our roads."<sup>12</sup>

This standard requires passenger cars and light trucks (beginning with model year 2009) to have lower emissions of CO<sub>2</sub> and other global warming pollutants.<sup>13</sup> It is expected to reduce GHG emissions from new passenger vehicles by approximately 30 percent by 2016, saving consumers more than \$4 billion by 2020.<sup>14</sup>

### c. Other Approaches

There are other approaches to climate and energy policy in the US that are aimed at emission reductions. These include calls to action from non-traditional allies and voluntary carbon markets.

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<sup>11</sup> Executive Order S-01-07 by the Governor of the State of California, <http://gov.ca.gov/executive-order/5172/>

<sup>12</sup> Office of the Governor, Press Release, Gov. Schwarzenegger Signs Executive Order Establishing World's First Low Carbon Standard for Transportation Fuels (January 18, 2007) <http://gov.ca.gov/index.php?/press-release/5174/>.

<sup>13</sup> AB 1493 (Pavley, 2002) directed CARB to establish motor vehicle standards to limit GHG emissions from passenger cars and light trucks. CARB unanimously approved their standards in September 2004.

<sup>14</sup> As compared to business as usual. California Environmental Protection Agency Air Resources Board, Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider Adoption of Regulations to Control Greenhouse Gas Emissions from Motor Vehicles, August 6, 2004, p. 39. California Air Resources Board, Addendum Presenting and Describing Revisions to: Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider Adoption of Regulations to Control Greenhouse Gas Emissions from Motor Vehicles, September 10, 2004.

The **Chicago Climate Exchange (CCX)**<sup>15</sup> is the world's first voluntary, rules-based greenhouse gas reduction and trading system and North America's only program. CCX members who want to participate must agree to reduce their greenhouse gas emissions by a certain percent below their calculated baseline each year beginning in 2003. These goals are to be accomplished through eligible emission offset projects recorded in the CCX Registry, like landfill and agricultural methane, sequestration in soils, and forest biomass. CCX members include private companies, manufacturing corporations, municipalities, and universities. Although the aim of this system is emissions reduction, critics of the CCX question whether this market will result in real reductions or if members could be in compliance without making actual reductions. Similarly, CCX is criticized for its ability to be a private enterprise for the public good where there lacks public oversight or Federal legislation providing oversight criteria or regulations found in other types of markets, e.g. the New York Stock Exchange.

In January 2007, US-based businesses and environmental groups in alliance called on the Federal government to quickly enact strong legislation to achieve significant reductions in greenhouse gas emissions. This unique cooperative effort, called the **US Climate Action Partnership (USCAP)**, consists of market leaders Alcoa, BP America, Caterpillar, Duke Energy, DuPont, FPL Group, General Electric, Lehman Brothers, PG&E, and PNM Resources, along with four leading non-governmental organizations -- Environmental Defense, Natural Resources Defense Council, Pew Center on Global Climate Change, and World Resources Institute.<sup>16</sup> USCAP has laid out principles and recommendations in a solutions-based report, [A Call for Action](#), a blueprint for a mandatory economy-wide, market-driven approach to climate protection.<sup>17</sup> USCAP urges policy makers to enact a policy framework for mandatory reductions of GHG emissions from major emitting sectors, including large stationary sources and transportation, and energy use in commercial and residential buildings. The cornerstone of this approach would be a cap-and-trade program and recommends Congress to provide leadership and establish short- and mid-term emission reduction targets; a national program to accelerate technology research, development and deployment; and approaches to encourage action by other countries, including those in the developing world.

US companies are increasingly aware and in some cases active in addressing greenhouse gas emission reductions. One such mechanism is the **Clean Development Mechanism (CDM)** as a way for these companies to secure a supply of carbon credits for their own compliance requirements. For example, in 2006 AES Corporation, a global power company which has generation facilities around the world announced plans to invest approximately \$1 billion over three years to expand the company's alternative energy business and bring to market new projects and technologies to reduce or offset greenhouse gas emissions under the CDM. The CDM is evolving as a way for companies who are or want to be more diversified. CDM is seen as an opportunity to make returns on capital that they put in today. There is some frustration with the current CDM process given that it is highly bureaucratic and needs reforms, e.g. reforms to speed up the process, navigate through the bureaucracy, adjustments to the scope of the CDM to incorporate projects not currently eligible for CDM, such as gas flaring. The US, has an

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<sup>15</sup> Chicago Climate Exchange, [www.chicagoclimatex.com](http://www.chicagoclimatex.com).

<sup>16</sup> USCAP webpage, <http://www.us-cap.org/about/index.asp>

<sup>17</sup> United States Climate Action Partnership, [A Call for Action](http://www.us-cap.org/ClimateReport.pdf), <http://www.us-cap.org/ClimateReport.pdf>.



opportunity to make a more effective CDM, therefore companies are beginning to see merit in participating now to learn by doing as others look to develop a new mechanism or streamline the CDM.

## 2. Energy Technologies

In the US there is a significant emphasis placed on technology development as a way to address climate change and reduce US dependence on oil. In some areas, US energy policies are overshadowed by policies that encourage the research and development of new technologies. These technologies include carbon capture and sequestration, bioenergy, and nuclear and are coupled with measures to promote investments in renewable sources and energy efficiency. Investments in renewable energy and a renewable market that would lead to real reductions in US consumption of fossil fuels are happening at a regional, state, and local level with more marginal efforts at the Federal level. This section highlights these technologies and the policy mechanisms which are directed at promoting them.

### a. Carbon Capture and Storage (CCS)

In the US there is still a strong political and economic drive for fossil fuel use and coal in particular. Therefore, systems that capture and safely dispose of carbon dioxide are emerging quickly as a feasible option for decarbonizing these fuels and combating climate change. Carbon capture and sequestration (CCS) aims to sequester CO<sub>2</sub> in geological formations for hundreds or thousands of years, and can reduce the greenhouse impact from continued use of fossil fuels to the atmosphere. The feasibility of CCS is currently being explored and evaluated on international, federal, and regional levels in the US with excellent results. Deployment of the technology is slow, mainly because of economic, policy and regulatory reasons, as opposed to technological. At present, the US lacks the necessary policies, incentives and mechanisms to make greenhouse gas emissions reduction a priority and spread the cost of CCS projects, ensuring that they develop at a sufficient pace to curb growing emissions. Funding for CCS is a concern. Aside from the \$1 billion provided for the FutureGen initiative (described herein), there is the potential for acceleration of CCS technology through potential funding available in the Energy Policy Act of 2005 and Department of Energy's budget for research and development. There are also legislative measures being given serious consideration as CCS has become a topic of discussion as climate change legislation proposals move forward in 2007.

As part of the CCS conversation in the US, the issue of enhanced oil recovery (EOR) is also discussed. The US is a world leader in EOR engaging in this process for decades. As a result of years of experience in EOR and the CO<sub>2</sub> injection involved with this technology, the US has developed an extensive pipeline network to transport CO<sub>2</sub>, a precursor technology and infrastructure development related CCS techniques.

At a Federal level, research and development efforts are coordinated and funded by DOE. One such initiative, **Carbon Sequestration Regional Partnerships (CSRP)**<sup>18</sup>, announced in November 2002, creates a national network of public-private sector partnerships aimed at

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<sup>18</sup> Carbon Sequestration Regional Partnerships,  
<http://www.fossil.energy.gov/programs/sequestration/partnerships/index.html>

examining the political, economic, and social viability of carbon storage as a mode of mitigating CO<sub>2</sub> levels in different areas of the country. The selected seven regional partnerships are the West Coast Regional Carbon Sequestration Partnership, Southwest Regional Partnership for Carbon Sequestration, Big Sky Regional Carbon Sequestration Partnership, Plains CO<sub>2</sub> Reduction Partnership, Midwest (Illinois Basin) Geologic Sequestration Consortium; Southeast Regional Carbon Sequestration Partnership, and Midwest Regional Carbon Sequestration Partnership.

Also taking place at the Federal level is the **FutureGen**<sup>19</sup> initiative, a \$1 billion demonstration project sponsored by the US Department of Energy (DOE) to create the world's first near-zero-emissions fossil fuel energy facility. The FutureGen project plans to design, construct and operate a 275 megawatt prototype plant that produces both electricity and hydrogen with zero emissions. This public-private partnership involving DOE and an open Alliance of industrial coal producers, electric utilities, state governments and international participants plans to achieve its zero emissions goal through the development and/or integrated application of key cutting edge technologies such as CCS. The size of the plant is driven by the need for producing technically and commercially relevant data, including the requirement for producing 1-2 million metric tons per year of CO<sub>2</sub> and the plant is expected to be on-line around the 2012 timeframe.<sup>20</sup>

#### **b. Biofuels**

Biofuels has emerged as a popular and rapidly growing field in the US with significant potential to advance US environmental and energy security goals provided adequate guidelines are implemented. As a relatively new technology, reactions and responses to the concept of biofuels are largely positive. There are a range of reasons for the support biofuels receive ranging from energy security and climate change to economic potential and the benefit to US farmers. In particular, ethanol is generally considered a renewable, non-toxic and environmentally-friendly energy source so long as the appropriate guidelines and regulations are put in place.

However, some debate concerns the production process in that it may take more energy to turn crops such as soybeans, corn, and sunflowers into ethanol or biodiesel than is generated by the fuel; how much biofuels can be produced from local sources; and whether development of this industry will compromise domestic food production. Similarly, without adequate guidelines, biofuels production poses a threat to environment, public health and climate and there is concern with the efficiency and large-scale implementation of this technology.

Notwithstanding these concerns, and evidenced by Congressional actions, biofuels have received overwhelming support on the national stage. Excitement about biofuels has also emerged from the White House where President Bush's 2007 State of the Union address include a call to, "...expand the use of clean diesel vehicles and biodiesel fuel. We must continue investing in new

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<sup>19</sup> FutureGen webpage, <http://www.fossil.energy.gov/programs/powersystems/futuregen/>

<sup>20</sup> FutureGen Project Update (December 2006), [http://www.fossil.energy.gov/programs/powersystems/futuregen/Futuregen\\_ProjectUpdate\\_December2006.pdf](http://www.fossil.energy.gov/programs/powersystems/futuregen/Futuregen_ProjectUpdate_December2006.pdf)

methods of producing ethanol—using everything from wood chips to grasses, to agricultural wastes.”<sup>21</sup>

At a Federal level, the **Energy Policy Act of 2005** addressed biofuels policy through the **Renewable Fuels Standard (RFS)**, which requires refineries to increase the volume of ethanol produced from the current 4 billion gallons per year 7.5 billion by 2012. The RFS requires that 250 million gallons per year has to come from bio-ethanol by 2013. In the meantime, refiners can get a 2.5 gallon credit towards their RFS requirement for each gallon of bio-ethanol they produce. The 2.5 to 1 credit continues through 2013, but does not apply towards the 250 million gallons per year bio-ethanol requirement. The 2005 Act also directs fuel producers to nearly double sales of ethanol-blend fuel from 2006 to 2012<sup>22</sup> while also providing fueling stations eligibility to claim a 30% tax credit for the cost of installing E85 ethanol pumping stations. Support for biofuels is also apparent in the 110<sup>th</sup> Congress with the introduction of bills to increase and encourage the production of fuels such as biodiesel and ethanol.<sup>23</sup>

At a regional scale, there are partnerships like the **Governors’ Ethanol Coalition**, consisting of 36 member states plus international representatives from Brazil, Canada, Mexico, Queensland, Australia, Sweden and Thailand who share the common goal of increasing ethanol production.<sup>24</sup> The Coalition seeks to increase ethanol production from corn or other domestic, renewable resources using sustainable agricultural methods and encourages its use in environmentally acceptable applications.<sup>25</sup> In 2005, the Coalition issued “Ethanol from Biomass: America’s 21st Century Transportation Fuel”<sup>26</sup> which called for the creation of three national policy recommendations: a renewable fuels standard with a cellulosic component; increased ethanol research and development; and incentives for cellulosic derived ethanol production. The three recommendations were incorporated into the Energy Policy Act of 2005.

Support for biofuels is also strong among the states. A report by the **National Biodiesel Board** provides highlights of 53 pieces of biodiesel or biofuel-related legislation passed at the state level through September 30, 2006. Policy mechanisms utilized within these laws include incentives, use requirements, point of taxation clarification, authorization of studies, state fleet use requirements, biodiesel promotion, and numerous others.<sup>27</sup> Presently, the policy focus in

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<sup>21</sup> President George W. Bush, “State of the Union 2007”, <http://www.whitehouse.gov/news/releases/2007/01/20070123-2.html>.

<sup>22</sup> EPACT requires refineries to add 7.5 billion gallons of ethanol by the year 2012 as an oxygenate to gasoline. See “H.R.6. Energy Policy Act of 2005 (Enrolled as Agreed to or Passed by Both House and Senate)”, *The Library of Congress*, <http://thomas.loc.gov/cgi-bin/query/D?c109:6:./temp/~c109hhotuI>.

<sup>23</sup> “American Fuels Act of 2007”, <http://thomas.loc.gov/cgi-bin/query/D?c110:1:./temp/~c110PtIurU>; “Biofuels Security Act of 2007”, requires the annual production of 60 billion gallons of biodiesel and ethanol by 2030, <http://thomas.loc.gov/cgi-bin/query/D?c110:1:./temp/~c110GHgnnM>; similarly to encourage the growth of bioenergy, Senate Agriculture Committee Chairman Tom Harkin (D-Iowa) has expressed a desire to create \$20 billion fund for farms and crops that contribute to the growth of biofuels, “Harkin Highlights Benefits of Biobased Products”, <http://harkin.senate.gov/currentevent/biobased.cfm>.

<sup>24</sup> Governors’ Ethanol Coalition, <http://www.ethanol-gec.org/>.

<sup>25</sup> Governors’ Ethanol Coalition Goals, <http://www.ethanol-gec.org/aboutus/goals.htm>.

<sup>26</sup> America’s 21st Century Transportation Fuel: Recommendations (April 2005), [http://www.ethanol-gec.org/GEC\\_biomass\\_rept\\_4-12-05.pdf](http://www.ethanol-gec.org/GEC_biomass_rept_4-12-05.pdf)

<sup>27</sup> “2006 State Legislation Highlights”, *National Biodiesel Board*, [http://www.biodiesel.org/resources/PR\\_supporting\\_docs/20060926\\_State\\_Legislation-Current.pdf](http://www.biodiesel.org/resources/PR_supporting_docs/20060926_State_Legislation-Current.pdf).

California is a low carbon fuel standard to encourage the use of alternative vehicles and non-traditional fuels.

US cities are also encouraging the use of biofuels. To meet the challenging requirements of the **US Mayors' Climate Protection Agreement**,<sup>28</sup> mayors are promoting alternatives to fossil fuels. For instance, the city of Seattle is increasing its use of biofuels to address climate change<sup>29</sup> and Mayor Chavez of Albuquerque, New Mexico initiated the use of biodiesel in the City fleet as well as ethanol blending requirements at fuel stations.<sup>30</sup> Similarly, the city of Cedar Rapids Iowa is beginning to use biodiesel to fuel its buses.<sup>31</sup>

### c. Renewable Sources

Environmental groups place a strong emphasis on renewable energy as a mode of decreasing the human impact on the environment, especially with respect to climate change. Although renewable energy was once considered expensive and technologically impractical, many renewable sources like solar and wind have become cost-competitive with technical advances and increasing consumer interest. However, some forms of renewable energy generation such as tidal and wave power continues to be surrounded by some skepticism and have yet to receive as much attention as other sources. In the US, many criticize the Federal government for its lack of adequate resources allocated towards the development of renewable energy. As Dan Arvizu, Director of the US Department of Energy's Colorado-based National Renewable Energy Laboratory, said in response to a question about government purchasing to stimulate the renewable market, "A few things are happening, but at the federal level, embarrassingly few things. . ."<sup>32</sup>

The US Federal government has attempted to facilitate the expansion of renewable energy sources through a provision in the **Energy Policy Act of 2005**, which provides revised renewable energy purchase goals. Although Federal initiatives to encourage the use of renewable sources have been infrequent, the Senate version of the 2005 Act included a **renewable portfolio standards** amendment which would insure 10% of the US's electricity from clean, renewable sources by 2020. Although the renewable portfolio standards amendment did not make it into the final version of the bill, the new political composition of the 110<sup>th</sup> Congress and its increasing support for these standards may signal a shift towards more adequate measures to promote renewable energy at the Federal level.

Despite the current lack of support within the Federal government for promoting renewable energy generation, individual states and cities are taking action. Numerous states have created a range of modest to encouraging incentives for the use of renewable energy sources such as wind, solar and biomass. In particular, state legislation includes inducements of tax credits, loans, grants, and other mechanisms. Typical programs cover a wide range of renewable measures and

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<sup>28</sup> Office of the Mayor, Seattle, US Mayors Climate Protection Agreement, [www.seattle.gov/mayor/climate](http://www.seattle.gov/mayor/climate)

<sup>29</sup> Seattle Climate Action Plan, September 2006, [http://www.seattle.gov/climate/docs/SeaCAP\\_plan.pdf](http://www.seattle.gov/climate/docs/SeaCAP_plan.pdf)

<sup>30</sup> "Alternative Fuels", City of Albuquerque, <http://www.cabq.gov/sustainability/green-goals/sustainability/green-goals/alternative-fuels/alternative-fuels>.

<sup>31</sup> "Five Seasons Transportation and Parking", US Department of Energy, [http://www.eere.energy.gov/afdc/progs/new\\_success\\_ddown.cgi?38](http://www.eere.energy.gov/afdc/progs/new_success_ddown.cgi?38).

<sup>32</sup> Harvard University Gazette, February 8, 2007, <http://www.news.harvard.edu/gazette/2007/02.08/09-energy.html>

technologies that are commonly grouped together in a single property tax exemption on equipment or tax credit on new installations.<sup>33</sup> In California, the **Climate Energy Action Plan** prioritizes renewable energy generation in California's energy sector. In the city of Seattle, starting in 2001, Seattle adopted a resolution that committed the local public utility, City Light, to becoming a zero net greenhouse gas emitter. As a result, the utility agreed over the next ten years to invest in non-hydro renewable energy sources for electricity production.<sup>34</sup>

#### d. Energy Efficiency

Energy efficiency efforts in the US target a variety of sectors, notably efficiency in vehicles, transportation fuels, buildings, homes and appliances. To promote energy efficiency, these efforts are typically discussed with complementary policy measures to incentivize efficiency, such as performance standards and tax incentives.

The transportation sector in the US presents a unique challenge and opportunity to integrate climate and energy issues. The call for energy security and a cap and trade system has spurred interest in vehicle standards, fuel sources and **Corporate Average Fuel Economy (CAFE)** standards. There is also interest in the 110<sup>th</sup> Congress for performance standards that help end-users use less oil as a necessary measure to produce meaningful reductions in oil use and greenhouse gas emissions. The 110<sup>th</sup> has an opportunity to cut America's oil dependence and address global warming by improving the fuel economy of new vehicles to levels that are technically and economically feasible.

The US Environmental Protection Agency and Department of Energy jointly created the **Energy Star** to promote energy efficient products and practices.<sup>35</sup> This national program encourages energy conservation and efficiency by providing information and helpful product ratings. The Energy Policy Act of 2005 required the federal procurement of Energy Star or FEMP-designated products and the update of federal green building standards with an emphasis on energy efficiency and sustainable design principles.<sup>36</sup>

The **Energy Policy Act of 2005** also contained several measures to promote energy efficiency. These included, but are not limited to: 1) new efficiency standards for residential and commercial products; 2) a permanent extension of agency authority to enter into Energy Savings Performance Contracts; 3) a requirement that federal buildings meet new advanced energy efficiency standards that the Department of Energy is directed to develop; and 4) a package of tax incentives for high efficiency buildings and products. Given that these incentives expire at the end of 2007 or 2008, the 110<sup>th</sup> Congress is looking to extend these incentives.<sup>37</sup>

At the state and city level, energy efficiency policies vary, but often include application standards, energy efficiency funds, building codes, transportation initiatives, public benefit

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<sup>33</sup> Further detail regarding incentives for renewable energy in specific states may be found through the Database for State Incentives for Renewable Energy, <http://www.dsireusa.org/>.

<sup>34</sup> "Low Carbon leader: Cities Oct. 2005," [The Climate Group](#).

<sup>35</sup> Energy Star, <http://www.energystar.gov/>.

<sup>36</sup> "H.R.6. Energy Policy Act of 2005 (Enrolled as Agreed to or Passed by Both House and Senate)", [The Library of Congress](#), <http://thomas.loc.gov/cgi-bin/query/D?c109:6:./temp/~c109hhotul>.

<sup>37</sup> Energy Efficiency Incentives Act of 2007 (EXTEND Act, S. 822/H.R. 1385).

funds, and tax incentives. A few states use an **Energy Efficiency Resource Standard (EERS)** as a market-based trading scheme used to promote more efficient generation of electricity and use of natural gas. The city of Seattle, for example, implemented measures such as increased use of waste material in industrial processes,<sup>38</sup> improved public transportation, expanded bicycling and pedestrian infrastructure, a new commercial parking tax, and plans for combined heat/power generation plants, efforts to create green urban neighborhoods, and improved average fuel efficiency.<sup>39</sup>

In general, energy efficiency is largely regarded as a step in the right direction towards increasing energy security, making energy more affordable and decreasing climate change-inducing emissions. Prominent energy expert Amory Lovins considers energy efficiency as a free lunch that we are paid to eat.<sup>40</sup>

#### e. Nuclear

The past year ushered in a new wave of interest in nuclear energy in the US as part of the global warming discussions. Today in the US there are 104 operating nuclear reactors, although an order for a new nuclear reactor in the US has not been filled in over three decades.<sup>41</sup> The existing US nuclear power industry relies on heavy subsidies in a variety of forms. Any potential growth of new nuclear power in the United States will likely depend on a number of factors, including significant constraints on carbon, sustained high natural gas prices, and importantly, maintaining the existing and entrenched subsidies and obtaining a variety of new taxpayer subsidies and regulatory protections against the marketplace. The mixture of existing and new subsidies include such things as the Price-Anderson Act—federal insurance against catastrophic accidents—generous tax credits on future electricity sales from new nuclear power plants, guarantees of federal “cost sharing” during the licensing and construction phases, risk insurance for any “delays” to either the licensing or construction of a new reactor, continued nuclear energy R&D funding, and of course, federal assumption of responsibility for the disposal of spent nuclear fuel.<sup>42</sup>

Within the past two years, via the **Energy Policy Act of 2005**, Congress granted approximately 10 billion dollars in subsidies to the nuclear industry for the construction of a handful of new reactors.<sup>43</sup> The authorization included a \$2 billion risk insurance program for the next six nuclear reactors that are built.<sup>44</sup> The 2005 Act also authorized a new federal loan guarantee program for new nuclear reactors that is worth billions and included other incentives for nuclear

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<sup>38</sup> “Low Carbon leader: Cities Oct. 2005,” [The Climate Group](#).

<sup>39</sup> “Climate Action Plan”, [City of Seattle](#), September 2006, [http://www.seattle.gov/climate/docs/SeaCAP\\_plan.pdf](http://www.seattle.gov/climate/docs/SeaCAP_plan.pdf)

<sup>40</sup> Amory B. Lovins, [Soft energy paths: toward a double peace](#), (New York: Harper & Row, 1977)

<sup>41</sup> Thomas B. Cochran, “The Future Role of Nuclear Power in the United States.”, 15 April 2004, <http://www.nrdc.org/nuclear/pnucpwr.asp>.

<sup>42</sup> NRDC Nuclear Facts, Feb. 2007, <http://www.nrdc.org/nuclear/plants/plants.pdf>

<sup>43</sup> Id.

<sup>44</sup> Department of Energy, Press Release, “Secretary Bodman Announces \$2 Billion Federal Loan Guarantee Program as Part of First Anniversary Celebration of Energy Policy Act” (August 7, 2006), <http://www.energy.gov/news/3897.htm>.

development, like production tax credits that are also worth billions of dollars.<sup>45</sup> The 110<sup>th</sup> Congress is also discussing more subsidies for the nuclear energy industry in terms of US energy security.<sup>46</sup>

In February 2006, the Department of Energy announced a new program, the **Global Nuclear Energy Partnership**, to restart the plutonium reprocessing of spent nuclear fuel in the US and to develop sodium-cooled fast reactors.<sup>47</sup> The GNEP program, ambitious and expensive by any analysis, is a matter of controversy in the United States and is certain to be the subject of legal challenges and significant debates in Congress.<sup>48</sup> Nuclear waste disposal remains a heated issue with the proposed repository at Yucca Mountain, Nevada continuing in its central role for the foreseeable future. However, with DOE not having filed a license application for the site with the federal licensing agency (the Nuclear Regulatory Commission) and Nevada Senator Harry Reid (D-NV) currently the Senate Majority Leader, it is unlikely that the proposed repository will move beyond continued funding and policy debates. Even DOE has noted that 2017 is the earliest the proposed repository could be open, and that depends on the site being licensed in the first instance.

Without question, the nuclear industry and its allies have argued that nuclear power has a central role in power generation in a carbon constrained world and the debate on this matter in the United States is currently vigorous. The environmental community, its allies, and many members of Congress in the new majority have by and large, noted that building new nuclear power plants is not yet economically viable without significant government subsidies and the nuclear industry has yet to demonstrate it can further reduce the continuing security and environmental risks of the entire nuclear fuel cycle—including the misuse of nuclear materials for weapons and radioactive contamination from nuclear waste. The environmental community has pointed out that several issues plague the industry beyond its economics – from uranium mining to a weak regulatory structure to the failure to adequately site and license a final disposal site. Focusing on just one of these controversial issues – waste disposal – illuminates the issues facing the industry. Currently, there is also no operational geological repository for spent fuel anywhere in the world. Although there is a proposal for disposing of spent nuclear fuel and high-level radioactive waste at Nevada's Yucca Mountain and the US Federal government has spent decades and billions of dollars trying to establish this repository, progress has been, at best, fraught with technical and political controversy. Although the government's response has been to attempt to relax the licensing criteria to ensure that the facility receives an operating license, this plan, even if successful, would not likely occur until at least another decade, if not longer. Similarly, there has been no work on a second repository even though within a few years more waste will be generated than the amount of waste for which Yucca Mountain is currently licensed.

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<sup>45</sup> "H.R.6. Energy Policy Act of 2005 (Enrolled as Agreed to or Passed by Both House and Senate)", The Library of Congress, <http://thomas.loc.gov/cgi-bin/query/D?c109:6:./temp/~c109hhotul>.

<sup>46</sup> Climate Stewardship and Innovation Act: Lieberman-McCain (S. 250); House subcommittee meetings on security measures (Energy and Commerce Oversight and Investigation Subcommittee as well as the House Armed Services Strategic Forces Subcommittee).

<sup>47</sup> Global Nuclear Energy Partnership, <http://www.gnep.energy.gov/>.

<sup>48</sup> Mary O'Driscoll, "Nuclear Power: GNEP rush 'doesn't make sense,' industry official says," January 10, 2007, Greenwire; Nevada Commission on Nuclear Projects, "Report and Recommendations of the Nevada Commission on Nuclear Projects," Dec. 2006, pg. 28, [http://www.state.nv.us/nucwaste/news2006/pdf/nv2006dec\\_commission-report.pdf](http://www.state.nv.us/nucwaste/news2006/pdf/nv2006dec_commission-report.pdf).

In summary, the more significant debate (i.e., not the public relations campaign) in the US regarding new nuclear generation has, thus far, focused on whether a few additional heavily subsidized new plants will be licensed, constructed, and then brought online. Currently, Internal Revenue Service guidelines for the 2005 Energy Policy Act subsidies require that nuclear utilities must file license applications by 2008 to be in line for the subsidies available to pay half the costs of the application. Then, utilities must make a decision whether or not to commence construction by 2014. Given the pressing concern of climate change, debate on developing new nuclear power will certainly continue in the near future where a focus of this dialogue will likely be on the efficacy of continued and new subsidies for this mature industry.