

The American Clean Energy and Security Act of 2009

Implementation of Cap and Trade

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EXECUTIVE SUMMARY

The American Clean Energy and Security Act of 2009 addresses the problem of global warming, which can be defined as the human-induced increase in average global temperature that began with the onset of industrialization. Global warming is driven by the enhanced greenhouse effect, which results from the buildup of greenhouse gases, such as carbon dioxide, methane, and nitrous oxide, in the atmosphere, leading to an increase in the trapping of outgoing solar radiation and increased warming of the Earth's surface.

The impacts of global warming are significant and are not limited to the environment; serious economic and social repercussions are anticipated to occur as well. Because greenhouse gas emissions are a result of energy use at every level of social and economic activity, and global warming is potentially the most important global problem that humans face today, government action is needed to find a solution.

The Act, introduced into the United States legislative system in 2009, is comprehensive legislation composed of five titles, which together take a multi-dimensional approach to address climate change, as it considers both the causes and attendant effects. The focus of Title III is to reduce global warming pollution through a cap and trade program, with a goal of a 17% reduction in economy-wide greenhouse gas emissions by 2020 and an 83% reduction by 2050, relative to 2005 levels. The emissions sources covered under this emissions limit, or cap, are those that emit more than 25,000 carbon dioxide equivalents per year, which includes industries such as petroleum refiners, electricity generators, mining companies, the pulp and paper sector, and steel, aluminum, and cement manufacturers. Under this program, these sources must have permits, or allowances, to pollute, which will be allocated to industries or auctioned. Once a source has acquired allowances, they can either use them to cover their emissions or reduce their emissions and sell their allowances to another entity, resulting in market trading of allowances.

The primary administrator of the cap and trade program is the United States Environmental Protection Agency (USEPA). In addition to its leadership responsibilities for the program, the USEPA will also oversee other regulatory agencies that will be involved, including the Federal Energy and Regulatory Commission and the United States Commodity Futures Trading Commission. Within the USEPA, the Clean Air Markets Division of the Office of Atmospheric Programs will be in charge of implementing this program. Between now and the official start of the cap and trade program, January 2012, there will be a Preparatory Phase in 2010 and Phase 0 in 2011. Phase 0 will include a voluntary trading program that will enable industries to become involved ahead of the mandated start date.

The cap and trade program will require a significant number of new staff to be added to the existing USEPA structure. As most of the preparatory work involves hiring employees who will be working on

implementation, a large portion of the budget requirements for years 2010 and 2011 are staffing related. USEPA headquarters will be staffed during the Preparatory Phase, with additional staff added to the 10 regional offices the second year (Phase 0). Contractors will also be utilized for many aspects of program implementation. Other budget requirements include funding for training programs, office expenses, and the establishment of an information management system.

Effective implementation of the cap and trade program will be ensured with the help of a master calendar and performance measurement indicators. The master calendar provides a detailed timeline of when specific goals should be met and will be updated periodically in accordance with the information gained from performance indicators. Both internal and external, these indicators are important for gauging the progress of the implementation plan and help to reveal changes that need to be made to the process of implementation as well as to the timeline of the master calendar.

I. Addressing Global Warming

The Scientific Study of Climate Change

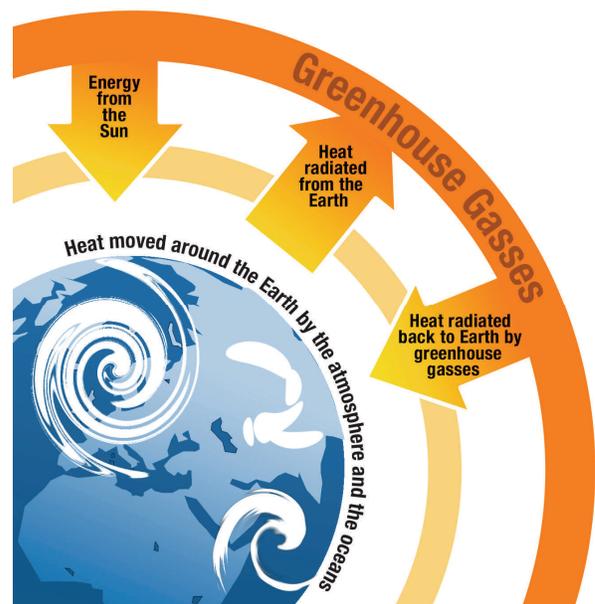
Anthropogenic emissions of greenhouse gases during the industrial era have altered the natural course of Earth's climatic progression. This understanding comes from decades of peer-reviewed, multidisciplinary scientific research, primarily organized by the Intergovernmental Panel on Climate Change (IPCC), which was formed in 1989 by the World Meteorological Organization and the United Nations Environment Program (e.g., Karl and Trenberth 2003; Hansen et al. 2006; Karl et al. 2006; Le Treut et al. 2007). The industrial era, approximately the past 150 years, is often referred to as the Anthropocene, a distinction that defines a new period in Earth's geological time scale, with an average temperature increase of 0.76 plus or minus 0.19 degrees Celsius (Houghton 2009). While the term *climate change* can refer to any widespread alteration of Earth's climate trajectory, as has occurred throughout Earth's geological history, the term *global warming* refers to the human-induced temperature increases that began with the onset of industrialization.

Figure 1. A schematic showing the enhanced greenhouse effect.

Source: <http://www.news10.net/news/education/weather101/images/greenhouse-effect-graphic.jpg>

What is Global Warming?

As described in the latest IPCC Assessment Report, global climate can be altered in several ways, including changes in the amount of radiation emitted and reflected from the Earth (Le Treut et al. 2007). The layer of greenhouse gases that exists naturally in the atmosphere traps some of this outgoing radiation, resulting in temperatures that make the Earth habitable. Houghton (2009) terms this the *natural greenhouse effect*, as these processes and gases existed long before the Anthropocene. The rising temperatures of the Anthropocene, however, have been driven primarily by human-induced increases in the atmospheric concentration of greenhouse gases, or the *enhanced greenhouse effect* (Figure 1), because more total outgoing radiation is trapped (Houghton 2009).



The concentration of carbon dioxide in the atmosphere has increased by 40% during the industrialization of the past 150 years (Houghton 2009), over half of which occurred after 1965 (Karl and Trenberth 2003). While carbon dioxide has caused approximately 72% of the enhanced greenhouse effect (Houghton 2009), other greenhouse gases are recognized as important contributors, including methane, nitrous oxide, and halocarbon compounds, because they are long lived in the atmosphere, are increasing in concentration, and contribute significantly to an increase in radiative forcing of climate (Forster et al. 2007). The dominant sources of these greenhouse gases are the burning of fossil fuels (oil, natural gas, and coal) for energy, as well as cement production, refrigerant use, agricultural practices such as biomass burning, and deforestation (Forster et al. 2007; Houghton 2009). Figure 2 shows the most recent IPCC estimates of the concentration of several greenhouse gases, and Figure 3 shows the effect of increasing carbon dioxide concentrations on global average temperatures.

The environmental effects of a warming climate are numerous and widespread and vary spatially and temporally, as well as in magnitude. For example, the polar regions of the globe have shown the largest temperature increases, accompanied by significant reductions in seasonal snow cover, glacier extent, and sea ice cover, which in turn affects the global reflectivity of incoming solar radiation as well as ocean circulation (ACIA 2005; Hansen et al. 2006). Warming of the mid and low latitudes will result in decreased ecosystem resilience to disturbance, leading to plant and animal species migration and

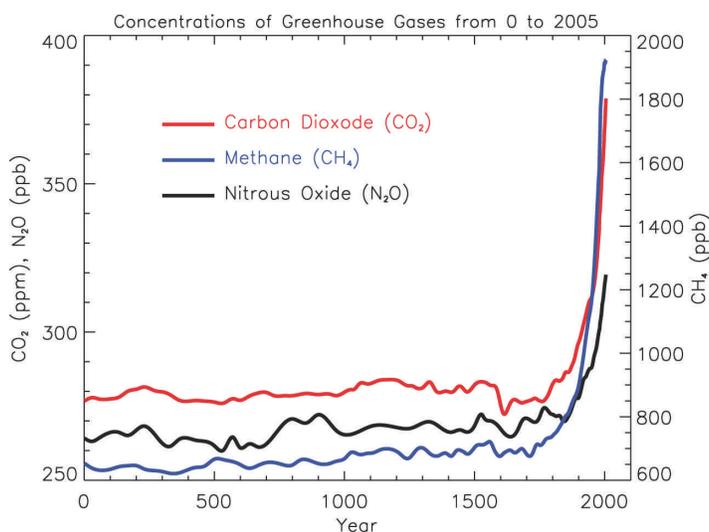


Figure 2. Atmospheric concentrations of carbon dioxide, methane, and nitrous oxide throughout the past 2000 years, as shown by the IPCC. Source: Forster et al. 2007.

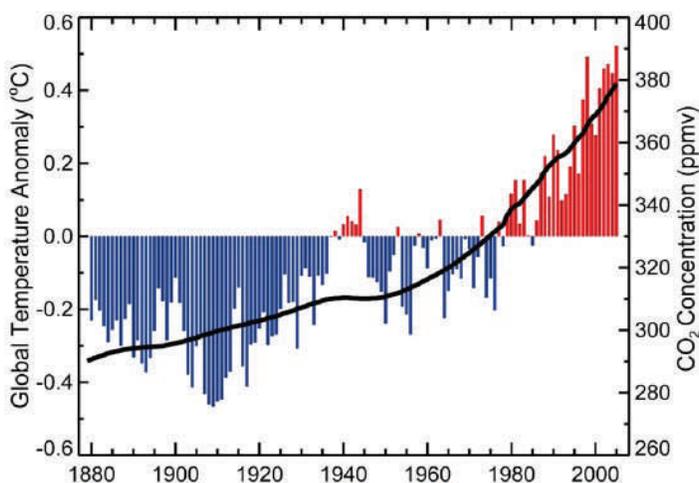


Figure 3. Global average temperature departures from the 1961 to 1990 base average. Carbon dioxide concentrations, both from proxy reconstructions and instrumental records, are also shown. Source: Karl and Trenberth 2003.

extirpations, with attendant losses of biodiversity and ecosystem goods and services (Bernstein et al. 2007). An increase in atmospheric carbon dioxide concentrations also acidifies the oceans, altering long-lived ecosystems such as coral reefs, and impacts both physical and biological components of the global oceans.

In addition to the impacts on Earth systems, human systems are also vulnerable to warming (Bernstein et al. 2007): increased incidence of disease due to changing distributions of infectious diseases and increased levels of air pollution; displacement of communities due to increased coastal erosion and flooding; significant shifts in agricultural productivity and increased food security issues; declining freshwater resources and attendant water shortages; and increased overall energy consumption. Margaret Chan, the director-general of the World Health Organization, states, "Climate change will affect, in profoundly adverse ways, some of the most fundamental determinants of health: food, air, water" (Chan 2008). Furthermore, experts anticipate significant impacts across all sectors of the economy, on local, federal, and international levels, resulting from costs and losses to businesses and governments, decreased trade and employment, damage to farms and agriculture, higher health care costs, and decreases in travel and tourism.

Why do we need government legislation to address global warming?

Greenhouse gas emissions are a result of human energy use at every level of social and economic activity, from industrial manufacturing to daily household activities. Addressing global warming requires implementing changes that would affect the supply of energy to all sectors of society, a task that will undoubtedly require government oversight in the United States and throughout the world. Leaving emissions reductions to industry and communities is not an effective course of action because on a local level, the current economic costs of making changes will often outweigh the benefits of reducing greenhouse gas emissions. Public policy can structure and mandate the necessary balance, as "All too often the 'balance' between environmental concerns and economic interests is not a balance at all – economic factors take precedent" (Ernst 2003). Furthermore, as non-renewable sources of energy are depleted in the United States, we depend increasingly on imports of foreign oil from potentially politically unstable regions, which could pose as a significant threat to national security and stability.

Global warming is undoubtedly among the most serious environmental, economic, and social problems that we face, and decades of scientific research have demonstrated that the source of the problem lies in the industrialization of modern society. The worldwide scope of global warming has and will continue to impact every sector of society. Although global action is necessary and is currently being negotiated, meaningful action in the United States requires a comprehensive, federal public policy approach.

II. America's Solution to Global Warming

How does the American Clean Energy and Security Act address global warming?

The American Clean Energy and Security Act of 2009 (the Act) is comprehensive legislation that considers both the causes and effects of global warming, moving the United States towards an economy focused on domestic, renewable, and cleaner fossil fuel energy sources. The Act sets renewable energy targets for power generation, modernizes the nation's electric grid, mandates new energy efficiency standards across sectors, promotes research and development of carbon

sequestration technology, establishes a national cap and trade program to reduce greenhouse gas emissions, initiates a green jobs program, and requires U.S. agencies to begin planning domestic and international adaptation strategies to mitigate the effects climate change. The Act takes a multisectoral approach, employing a suite of mandates, regulations, market-based strategies, and financial incentives in an attempt to set the U.S. on a long-term path towards environmental sustainability and energy security. The Act is divided into five titles, each dealing with distinct but interrelated energy issues:

Title I: *Clean Energy*. Issues related to establishing a Smart Grid, carbon capture and sequestration technology, performance standards for coal plants, and research for clean transportation technology.

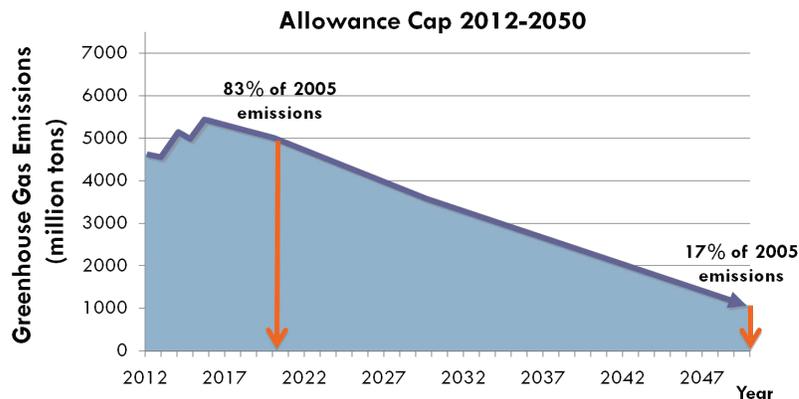
Title II: *Energy Efficiency*. Issues related to lighting, appliances, transportations and buildings.

Title III: *Reducing Global Warming Pollution*. Establishing a cap and trade system for greenhouse gas emissions from major emitters, with industries responsible for pollution reductions.

Title IV: *Transitioning to a Clean Economy*. Issues related to global competitiveness and adaptation initiatives.

Title V: *Agriculture and Forestry-Related Offsets*. Establishing an offset program for domestic agriculture and forestry.

Figure 4. The cap (greenhouse gas emissions in millions of tons of carbon dioxide equivalent units) is set by the Act and declines throughout the length of the program, shown under the blue line.



How does the Act specifically address reducing greenhouse gas emissions?

Title III of the Act, *Reducing Global Warming Pollution*, creates a new set of regulations to reduce industrial greenhouse gas emissions and identifies how the new regulations interact with those of the Clean Air Act. Specifically, a declining total cap limits emissions of greenhouse gases from the business operations of major industries, with a goal of achieving a reduction in emissions by 2020 to 83% of 2005 levels, and 17% of 2005 levels by 2050 (Figure 4). The Act has defined a specific list of greenhouse gases that are regulated: carbon dioxide, methane, nitrous oxide, sulfur hexafluoride, hydrofluorocarbons, perfluorocarbons, and nitrogen trifluoride, all measured as carbon dioxide equivalents (the global warming potential of these gases, standardized as the functional equivalent amount of carbon dioxide). Industries covered under the Act are those that emit greater than 25,000 tons of carbon dioxide equivalents per year, which includes large industries such as petroleum refiners, electricity generators, mining companies, and other industrial sources such as the pulp and paper sector, and steel, aluminum, and cement manufacturers. Emissions allowances, measured in carbon dioxide equivalents, are distributed by the Administrator of the Act to entities being regulated, both through distribution and auctioning; the specific distribution of the

allowances is determined by the Administrator. Holders of allowances are then able to use the allowances to cover their own emissions, or reduce emissions and sell allowances through exchange or over the counter trading. Title III also establishes a mechanism for banking and borrowing emissions allowances. This entire system is referred to as *cap and trade*, which combines a command and control regulatory approach, through a centrally administered economy-wide emissions cap, with economic incentives, achieved through the trading of allowances.

Are there any concerns about using a cap and trade system?

Cap and trade is politically favored because it allows room for negotiation in terms of which industries, and to what degree those industries, will be regulated (Broder 2009), while allowing affected industries autonomy in choosing how and when to reduce emissions. Although cap and trade is the solution favored in the current political environment, it is not without controversy, and it is important to recognize how the cap and trade program outlined in the Act stands up to some of these arguments.

Cap and trade will cost too much. Some argue that the cost of implementing a cap and trade system is too great and should not be incurred during an economic recession. Senator Ben Nelson (R-NB) states that he fears the economic costs cap and trade will have on the

public and industry: “People who turn the switch on at home are going to be disadvantaged. As you turn on the lights, the electricity will cost more. Store owners, the same thing; manufacturers, the same thing” (Hardwood 2009). Moreover, there are concerns that as the number of allowances declines over time, the cost to pollute will become too high and will be passed on to the consumers. An opinion piece published in the Wall Street Journal, relying on a study conducted by the Heritage Foundation (Lieberman 2009), suggests that cap and trade will make prices of goods so high that Americans will reduce consumption and companies will produce less, leading to higher unemployment (The Cap and Tax Fiction: Democrats Off-Loading Economics to Pass the Climate Change Bill 2009). Despite economic concerns, the Congressional Budget Office estimates costs to be relatively small: under their calculations, the average cost to households will likely be \$175 annually (starting in year 2020) (PEW 2009). Even further, some economic models analyzed by the United States Environmental Protection Agency (USEPA) suggest that average costs could be as low as \$80-\$111 between 2012 and 2050, while a portion of the public will save more money than the average costs due to increasing energy efficiency (PEW 2009). Ultimately, our group believes that the introduction of comprehensive climate and energy legislation should be viewed as an investment in a future green economy, regardless of the initial costs.

The cap is set too high to mitigate global warming. Another concern is that the cap does not go far enough in reducing carbon dioxide emissions. The IPCC’s most stringent stabilization at an atmospheric carbon dioxide level of 490 parts per million (ppm) requires attenuation of carbon dioxide emissions before 2015 and a further 50%

reduction of emissions by 2050 (Fisher and Nakicenovic 2007). However, James Hansen, a prominent climate scientist, believes that the IPCC levels underestimate the impact of current situations, and has stated that a maximum carbon dioxide concentration of 450 ppm should be the goal (Hansen et al. 2008). Hansen also believes that the present atmospheric global mean of 385 ppm carbon dioxide is already in a “dangerous zone”, while other researchers have suggested that we are close to, or perhaps beyond, a climate and ecological tipping point (e.g., Smol and Douglas 2007; Hansen et al. 2008). The disparity between the IPCC and Hansen’s projections is partially due to the inclusion of environmental feedback mechanisms, which IPCC mitigation projections do not include because they are difficult to quantify and project (Fisher and Nakicenovic 2007). It is difficult to predict what the ideal level of carbon dioxide is due to limitations of modeling and uncertainty of future events, but the level of the cap in the Act was determined so as to effectively reduce greenhouse gas emissions while having a manageable effect on the economy.

A cap and trade program is too complicated to implement. Concern also exists that a cap and trade program is too complicated, and therefore some favor a more straightforward approach such as a tax on carbon dioxide emissions. Al Gore argues it is easier to “tax what you burn, not what you earn” (Broder 2009). However, the complexity of the program partially rests on what sources are covered under the cap, and in this case most are upstream, such as mining companies and electricity generators, which simplifies the initial implementation process. This cap and trade program is implementable and fiscally feasible, as is shown by the implementation plan outlined in the following sections.

III. First Steps in Implementation

Who will be administering the cap and trade program?

Effective implementation and regulation of the Act necessitates a broad range of expertise. The environmental success and cost effectiveness of a cap and trade program requires extensive knowledge of climate science and related technologies, public policy, and economic trends and financial mechanisms. Therefore, a multi-agency regulation approach will be used, with the USEPA acting as primary administrator and overseeing other regulatory agencies (including the Federal Energy and Regulatory Commission [FERC] and the U.S. Commodity Futures Trading Commission [CFTC]). A number of units in the USEPA Office of Air and Radiation will be involved in the implementation of the cap and trade program, with an emphasis on the Clean Air Markets Division of the Office of Atmospheric Programs (Figure 5). The Clean Air Markets division will develop and operate the information systems to track emissions and allowances, as well as verify reported emissions data. Staff with expertise in climate change, public policy, and market-based emissions reduction systems will perform necessary outreach and training and operate a national network of emissions monitors. For the first year of the program, beginning in January 2010, the focus of implementation work will reside in the federal headquarters of USEPA, and in the second year, staffing at

the Regional Offices will commence. Regional Offices will ultimately be responsible for monitoring and enforcement, as well as local outreach.

How will covered sources participate?

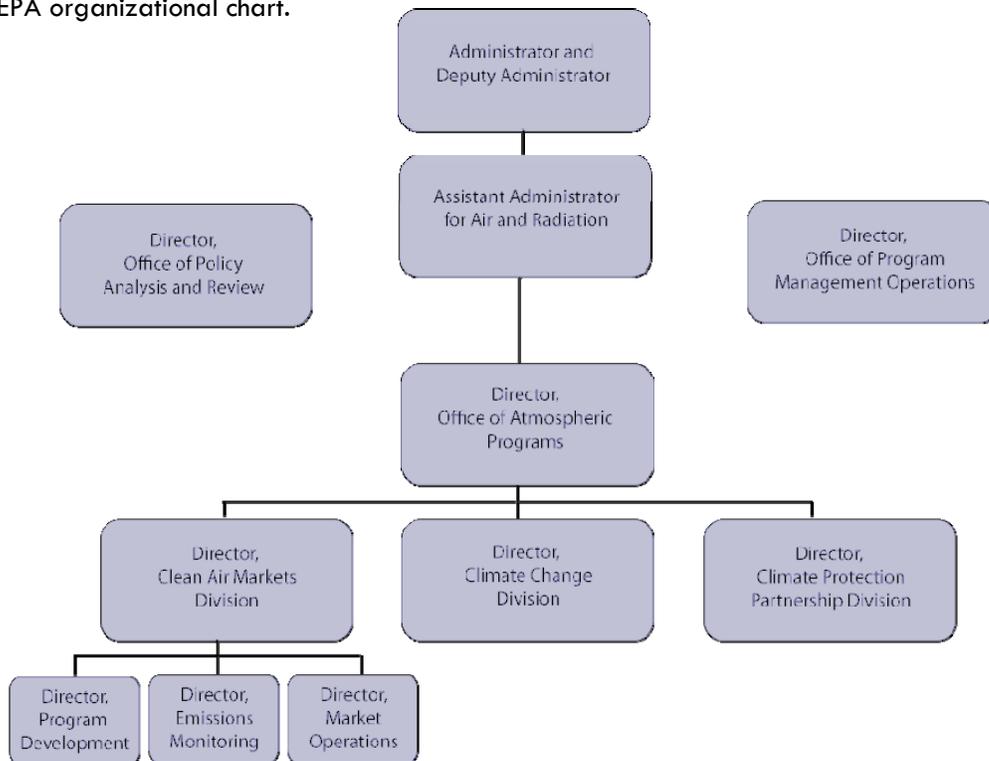
As we previously stated, industries covered under the cap are those entities that emit greater than 25,000 tons of carbon dioxide equivalents per year. State and federal agencies will be able to identify most eligible sources because currently many of these entities are regulated under existing energy and environmental laws. For example, the USEPA already tracks some operational emissions, such as sulfur dioxide and nitrogen oxide, for various industrial sectors and activities. Additionally, the FERC currently tracks all utilities and is therefore familiar with the entities that will be regulated under this program, facilitating identification of covered sources. These sources, as well as additional entities that are not currently regulated, can use an applicability tool located on the USEPA website (<http://www.epa.gov/climatechange/emissions/GHG-calculator/index.html>), answering questions pertaining to materials used and fuel sources to determine their eligibility and responsibilities. Eligible sources will then individually register with the USEPA.

After registering, covered industries will report their emissions on an annual basis to the USEPA. Monitoring will be left up to the

regulated sources, in which case they will provide emissions data directly to the USEPA, a process similar to an individual taxpayer providing income data to the Internal Revenue Service. This option will reduce implementation costs for the government, but provides little

oversight and increases the probability of misreporting. However, random audits will occur to encourage compliance and minimize the chance of fraud in self-reporting, further described in Section V.

Figure 5. USEPA organizational chart.



What will take place between now and the mandated start of the program in 2012?

The Preparatory Phase of the cap and trade program will commence in January 2010. During this time, the main infrastructure required to run the cap and trade program will be established at the USEPA headquarters. Working off the existing organizational structure, additional staff will be hired into the Clean Air Markets Division, emissions sources will begin to be registered, a data management system will be developed, and a comprehensive greenhouse gas emissions inventory will be established. In January 2011, Phase 0 of the program, outreach and technical support will be provided to covered entities, and a voluntary allowance trading period will commence. This phase will allow industries to voluntarily get involved in the cap and trade program ahead of time and avoid delays when mandatory participation begins in 2012. This phase will also allow entities participating in other existing regional emissions trading initiatives to transition to this system. The USEPA will provide administrative incentives for industries that participate voluntarily.

IV. Staffing and Budget Requirements

Who will implement this program and how much will it cost?

The first two years of implementation of the cap and trade program include the Preparatory Phase (2010) and Phase 0 (2011). A significant portion of the budget outlined for the first two years is allocated to personnel needs, as these phases will require the expansion of staffing within the USEPA as well as increased contractor needs. The Preparatory Phase has an overall budget of \$12.9 million and Phase 0 has an overall budget of \$19.6 million.

In the Preparatory Phase, 26 new full-time employees will be hired at USEPA headquarters, primarily in the Clean Air Markets Division of the Office of Air and Radiation (Table I). In the second year, Phase 0, 30 additional employees will be hired in the USEPA, and most of these individuals will be regional coordinators for the 10 USEPA regions. In addition to the salaries of the new employees, the budget includes a portion of the salaries of employees currently working at the USEPA, namely the Assistant Administrator and Division Directors, in accordance with how much time they allocate to the cap and trade program. The salaries for the new USEPA employees were determined according to the pay scales from the United States government salary table for 2009. The pay grades range from GS-08 (\$52,486) to GS-15 (\$136,941.40),

as well as the Senior Executive Service pay scale. The full breakdown of the EPA staffing is included in the Appendix (Table A1).

The work of contractors is also an important part of implementing government programs, and five contractors are budgeted for each new USEPA staff member. These contractors will be paid at the going market rate according to their skill set, which for budgeting purposes is assumed to be 115% of the salary of a similarly skilled USEPA staff member. The overall cost of USEPA staff in 2010 is 20.8% of the annual budget (\$2.7 million) and the cost of contractors is 58.3% of the budget (\$7.6 million, see Table II). In the second year, 2011, the cost of EPA staff increases to \$5.4 million (27.8% of the budget) and the contractors to \$13.3 million (67.6%, see Table III).

Aside from staffing, the budget includes funds for utilities, travel, supplies and equipment, training programs, annual policy conferences, and office expenses, including rent for office space. These budget items are grouped together under Other than Personnel Services (OTPS) and total \$2.7 million in 2010 and \$916,000 in 2011. In the preparatory phase, \$2 million is budgeted to establish a robust information management system for recording and tracking all emissions data. Aside from this expense, rent for office space, travel, and training are the largest budget items in this category. The OTPS cost decreases significantly in 2011 because the information

Table I.
Staffing
timeline.

<i>Timeline</i>	<i>Staffing</i>
<i>Preparatory Phase (2010): Program Development</i>	- Staff USEPA Headquarters (75 people) - Request for Proposal: Economic Analysis, Policy Analysis, Field Outreach Team, Industry-specific Experts and Advisors (4 contracts, approx. 250 people)
<i>Phase 0 (2011): Information Dissemination and Voluntary Participation</i>	- Staff USEPA Regional and State Offices (225 people) - Request for Proposal: Independent Market Monitors, Emissions Monitoring & Data Management (2 contracts, approx. 750 people) - Appoint members of Oversight Review Board
<i>Phase 1 (2012): Full Program Implementation</i>	- All contracts in effect

management system will already be established.

The program budget in 2011 (\$19.6 million) is almost double the budget from 2010 (\$12.9 million) due to the increase in staffing at the regional level and the hiring of additional contractors. Although the funding required for implementation of the cap and trade program is significant, it is not unreasonable compared to other federal government programs, and the auctioning of emissions allowances at the beginning of Phase 1 (2012) will potentially recoup a significant portion, if not all, of the funds that will be needed at the program's start; however, these funds may not be directly channeled back to the program. The Congressional Budget Office estimates that revenue generated from the cap and trade program could range from \$50 billion to \$300 billion per year, beginning in 2012.

2010 Program Budget		
Air and Radiation	\$32,812	0.3%
Office of Atmospheric Programs	\$54,561	0.4%
Climate Change Division	\$50,037	0.4%
Climate Protection Partnership Division	\$50,037	0.4%
Clean Air Markets Division	\$9,511,119	73.5%
Director	\$83,396	0.6%
Clean Air Markets (ACES)	\$3,375,158	26.1%
Program Development	\$2,165,956	16.7%
Emissions Monitoring	\$2,133,799	16.5%
Market Operations	\$1,637,847	12.7%
Fringe Benefits (25%), EPA staff only	\$537,177	4.2%
EPA Staff	\$2,685,888	20.8%
Contractors	\$7,549,858	58.3%
OTPS	\$2,705,500	20.9%
TOTAL	\$12,941,246	100%

Table II. Budget for year 2010.

How will the staff meet the goals of the program?

To ensure timely completion of program objectives and, ultimately, full program implementation, program staff will work off of a master calendar (see Appendix, Table A2) that outlines the sequence of events that must occur during the first year of implementation. This master calendar provides a framework against which progress can be measured and will help move the implementation plan along in a focused and efficient manner. The master calendar outlines goals and timelines for the following:

- Budget
- Implementation Task Force
- Organizing Office Space
- EPA and Contractor Staffing
- Public Relations
- Agency Outreach with CFTC and FERC
- Oversight Review Board
- Training for USEPA Employees
- Data Management System
- Emissions Inventory
- Education and Training for Covered Sources
- Annual Policy Conference

2011 Program Budget		
Air and Radiation	\$32,812	0.2%
Office of Atmospheric Programs	\$54,561	0.3%
Climate Change Division	\$50,037	0.3%
Climate Protection Partnership Division	\$50,037	0.3%
Clean Air Markets Division	\$12,110,562	61.7%
Director	\$83,396	0.4%
Clean Air Markets (ACES)	\$3,463,756	17.7%
Program Development	\$2,219,366	11.3%
Emissions Monitoring	\$3,733,310	19.0%
Market Operations	\$2,492,321	12.7%
USEPA Regional	\$5,315,009	27.1%
Fringe Benefits (25%), EPA staff only	\$1,088,809	5.6%
EPA Staff	\$5,444,046	27.8%
Contractors	\$13,257,784	67.6%
OTPS	\$916,0000	4.7%
TOTAL	\$19,617,831	100%

Table III. Budget for year 2011.

This detailed master calendar is also an integral part of the performance management aspect of implementation. It will serve as a reference to coordinate all staff in terms of program objectives and deadlines, and it will be updated as needed to reflect results of performance measurement analyses.

V. Measuring Success

How will we ensure success in the implementation of the cap and trade program?

Although success will be measured ultimately by a reduction in economy-wide greenhouse gas emissions, the goals of the first few years of the program will be focused on effective program development. Therefore, this program will gauge initial success by using measurable indicators that are first internal to the USEPA, and then move to external indicators (Appendix, Tables A3a and A3b). Effective implementation of these key measures will be indicative of the overall success of the program. The three divisions that will assess performance are within the Clean Air Markets Program of the USEPA: Program Development, Market Operations, and Emissions Monitoring.

Assessment of internal indicators will begin immediately in 2010, with the Program Development division handling performance monitoring. The following internal indicators will be included:

Adherence to Master Calendar. This indicator will rely on quarterly identification of three key targets that gauge program performance and progress towards meeting overall program goals. Collection will occur monthly within the three Clean Air Markets Division departments to determine if targets and deadlines are being met; the three Program Coordinators will subsequently report the information to the Clean Air Markets Program director.

Meeting Staffing Requirements. This indicator will rely on the percent of program staffing in place to assess program success. The staffing percentage will be used to assess program personnel and internal development needs throughout program development. On a monthly basis, Program Coordinators will collect hiring statistics; with requests from the Program Coordinators, the Program Director will request necessary staffing changes.

Outreach and Education Performance. This indicator will track the number of informational workshops held in each region and number of industry representatives from regulated sources that have successfully completed workshops. These statistics will be used to identify regional or industry-specific outreach and education opportunities, and to address outreach or education shortcomings internally or to request additional resources.

Contractor Oversight. This indicator will rely on percent of satisfactory performance evaluations, a threshold that is specific to each contract. Continuous evaluation and improvement of contractor performance will be used to enhance program implementation. Contract Representatives will address any unsatisfactory evaluation items, reported on a quarterly basis.

Starting in 2011 external indicators will be used to assess performance of the cap and trade system. They will be monitored by the Emissions Monitoring and Market Operations divisions, who will make recommendations to the Assistant Administrator of Air and Radiation for changes in procedure. The external indicators include the following:

Compliance and Allowance Use. This indicator will rely on economy-wide emissions versus the regulated cap, percent of regulated sources exceeding annual allowance, and percentage of used versus unused allowances. The measurement will determine the compliance level within regulated sources and the overall use of allowances. The Emissions Monitoring Program Coordinator will analyze industries' self-reported emissions levels to determine whether the cap needs adjustment, which sectors are noncompliant, and which require outreach and education or auditing.

Trade Volume. This indicator will rely on the number of market transactions, percent of trade-registered regulated sources, and geographical distribution of trade. On a quarterly basis, the Market Operations Department will collect data from the Commodity Futures Trading Commission. The Clean Air Markets Division Program Director will make recommendations regarding the level of the cap and allowance allocation.

Trends in Reporting Accuracy. This indicator will rely on percent of regulated sources failing to meet emissions reporting requirements, percent of inaccurate emissions reports, and percent of total allowances associated with inaccurate reporting. The Clean Air Markets Program Director will provide recommendations regarding adjusting reporting progress, increasing outreach and education, and targeted industry audits.

Success of Audit Coverage. This indicator relies on percent of regulated sources audited per region and distributed across industry sectors. The measurement will determine whether distribution of audits is representative of economy-wide emissions. The Program Director will make recommendations regarding adjusting audit coverage based on non-compliance and regional deficiencies.

Need for Enforcement Action. This indicator relies on the number of case referrals, orders, and notices taken against non-compliers. The measurement will determine whether enforcement actions change non-complier behavior and on what time-frame enforcement actions are effective. After enforcement data are collected and reported on a quarterly basis, the Program Director will make recommendations regarding increasing total enforcement and the effectiveness of enforcement actions.

Success of the cap and trade program depends on continued analysis of the internal and external indicators through coordination between the Assistant Administrator of Air and Radiation, Clean Air Markets Program Director, and the three divisions within. As the program progresses, additional performance indicators will be added, with external indicators becoming increasingly important over time in measuring the success of the cap and trade program.

CONCLUSION

Global warming is one of the most important problems facing the world today. Due to the large scale of impacts global warming can have on all aspects of society, government action is needed. The cap and trade program outlined in Title III of the Act aims to progressively reduce the overall amount of greenhouse gas emissions of large industries between 2012 and 2050, ultimately aiming to achieve a sustainable level of atmospheric carbon dioxide. The implementation of a cap and trade program requires the USEPA to act as the primary administrator of the program, with the Clean Air Markets Division being primarily responsible, distributing allowances to mandated industries, monitoring the success of the program, and punishing emissions cap violators. In order to accomplish these tasks, the Clean Air Markets Division will be given additional funding, hire new staff and contractors, and establish an information management system.

Cap and trade alone cannot solve the problem of global warming. The Act recognizes this and includes four other titles that work together to lower carbon dioxide emissions and adapt to the effects of global warming. The titles include provisions to increase sources of renewable energy, increase energy efficiency, stimulate a “green” economy, and establish agriculture and forestry offsets. These mandates are complimentary and ensure the success of meeting cap and trade emissions reduction targets. Alone, the United States cannot achieve global sustainable levels of atmospheric carbon dioxide. However, given the leadership role of the United States on the world stage, this Act represents a step towards a united effort to combat global warming.

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APPENDIX

Table A1. Breakdown of EPA staffing.

Department	Supplemental Staffing	Pay Grade
USEPA Headquarters:		
Clean Air Markets	(1) ACES Program Director	GS-15
	(1) ACES Program Coordinator	GS-12
	(5) ACES Policy Analyst	GS-09
Program Development	(1) ACES Coordinator	GS-11
	(10) Policy Analyst	GS-09
Emissions Monitoring	(1) ACES Coordinator	GS-11
	(20) Data Managers	GS-07
	(20) Field Team	GS-07
Market Operations	(1) ACES Coordinator	GS-11
	(10) Economic Analyst	GS-09
USEPA Regional & State:		
USEPA Regional	(10) Regional ACES Coordinator	GS-11
	(60) Regional Administrator (field)	GS-09
USEPA State	(50) State ACES Program Manager	GS-11
	(105) State Administrator (field)	GS-09

Table A3a. Internal performance management indicators.

	<i>Indicator</i>	<i>Measurement</i>	<i>Collection</i>	<i>Reporting</i>	<i>Feedback</i>	
Internal	Adherence to Master Calendar	Identify 3 key targets per quarter and determine whether Master Calendar deadlines are met.	Use targets to gauge program performance and progress towards meeting overall program goals.	Monthly: Program Coordinators within the three CAMD Departments determine target and deadline met.	Quarterly: CAMD Program Coordinators report to CAMD Program Director.	With requests and justification from Program Coordinators, CAMD Program Director submits Master Calendar revision requests to Assistant Administrator for Air and Radiation.
	Staffing Requirements	Percent of program staffing in position.	Use staffing percentage to assess personnel and internal development needs throughout program development.	Monthly: Program Coordinators collect hiring statistics and identify any deficiencies.	Quarterly: CAMD Program Coordinators report to CAMD Program Director.	With requests and justification from Program Coordinators, CAMD Program Director presents analysis to Assistant Administrator for Air and Radiation and Human Resources Management Division to request necessary staffing adjustments.
	Outreach and Education	Number of workshops held in each region and percentage of industry representatives from regulated sources who successfully complete workshops.	Use statistics to identify regional or industry-specific outreach and education opportunities.	Monthly: Emissions Monitoring Department collects workshop information from administrators.	Quarterly: Emissions Monitoring Program Coordinator reports statistics to CAMD Program Director.	CAMD Program Coordinators addresses outreach and education shortcomings internally or requests additional resources from CAMD Program Director as necessary.
	Contract Oversight	Percent of satisfactory contractor performance evaluations (specific to each contract).	Use continuous evaluation and improvement of contractor performance to enhance program implementation.	Monthly: Overseeing each contract, CAMD representatives evaluate contract performance and submit findings to CAMD Coordinators.	Quarterly: CAMD Program Coordinators submit contract specific statistics to CAMD Program Director, Contract Representative.	Contract Representatives address any unsatisfactory evaluation items. CAMD Program Director and Assistant Administrator for Air and Radiation review performance history and consider throughout contract negotiation and renewal.

Table A3b. External performance management indicators.

	<i>Indicator</i>	<i>Measurement</i>	<i>Collection</i>	<i>Reporting</i>	<i>Feedback</i>	
External	Compliance and Allowance Use	Economy-wide emissions versus the regulated cap, percent of regulated sources exceeding annual allowance, and percentage of used/unused allowances.	To determine compliance level within regulated sources and the overall use of allowances.	Annually: Industries monitor emissions levels and self-report. Emissions Monitoring Department tracks annual allowance issuance and emissions levels in existing database.	Quarterly: Emissions Monitoring Program Coordinator reports findings to CAMD Program Director.	Emissions Monitoring Program Coordinator analyzes to determine whether the cap needs adjustment, which sectors are non-compliant and require outreach and enforcement, and which industries should be audited. CAMD Program Director recommends actions to Assistant Administrator for Air and Radiation.
	Trade Volume	Number of market transactions, percent of trade-registered regulated sources, and geographical distribution of trade.	Trade volume is indicative of a successful market and stringent emissions cap.	Quarterly: Market Operations Department collects data from the Commodity Futures Trading Commission (CFTC).	Quarterly: Market Operations Program Coordinator reports findings and analysis to CAMD Program Director.	CAMD Program Director proposes recommendations to the Assistant Administrator for Air and Radiation regarding the level of the cap and allowance allocation.
	Inaccurate Reporting	Percent of regulated sources failing to meet emissions reporting requirements, percent of inaccurate emissions reports, and percent of total allowances associated with inaccurate reporting.	To determine success of reporting program and the implications on economy-wide emissions.	Annually: Emissions Monitoring Department collects and analyzes data after annual regulated source self-reporting deadline.	Quarterly: Emissions Monitoring Program Coordinator reports findings and analysis to CAMD Program Director.	CAMD Program Director provides recommendations to the Assistant Administrator for Air and Radiation regarding adjusting reporting process, increasing outreach and education, and targeting industry audits.
	Audit Coverage	Percent of regulated sources audited per region and distribution across industry sectors.	To determine whether distribution of audits is representative of economy-wide emissions.	Annually: Emissions Monitoring Department collects audit data from Regional Offices.	Annually: Emissions Monitoring Program Coordinator reports findings and analysis to CAMD Program Director.	CAMD Program Director makes recommendations to the Assistant Administrator for Air and Radiation regarding adjusting audit coverage based on significant non-compliance and regional deficiencies.
	Enforcement Actions	Number of case referrals, orders, and notices taken against significant non-compliers.	To determine whether enforcement actions change non-complier behavior and on what time-frame enforcement actions are effective.	Quarterly: Program Development Department collects enforcement data from Regional Offices.	Quarterly: Program Development Program Coordinator reports findings and analysis to Assistant Administrator for Air and Radiation.	CAMD Program Director makes recommendations to the Assistant Administrator for Air and Radiation regarding increasing total enforcement and the effectiveness of enforcement actions.

