Government
&
Policy- Domestic

Think Tanks: Climate Change Could Pose Greatest National Security Risk

Saturday, November 03, 2007

Associated Press

AMSTERDAM, Netherlands

Climate change could be one of the greatest national security challenges ever faced by U.S. policy makers, according to a new joint study by two U.S. think tanks.

The report, to be released Monday, raises the threat of dramatic population migrations, wars over water and resources, and a realignment of power among nations.

During the last two decades, climate scientists have underestimated how quickly the Earth's climate [illegible] perhaps to avoid being branded as alarmists, the study said. But policy planners should count on [illegible] reduced stability [illegible] parts of the world within 30 years.

The report was composed by a panel of security and climate experts [illegible] by the Center for Strategic and International Studies and the Center for a New American Security. The Associated Press received an advance copy.

Climate change is unlikely to create new conflicts, but [illegible] magnify existing problems, from the [illegible] of Darfur and [illegible] the report said.

It examined three scenarios, ranging from the consequences of an expected temperature increase of 2.3 degrees Fahrenheit by 2040 to the catastrophic implications of a 10 degree rise by the end of the century.

At the very least, the report said, the U.S. can expect more population movements, both internally and from across its borders, a proliferation of diseases, greater conflict in weak states, especially in Africa and [illegible] change [illegible] and a reshuffling of global power [illegible].

Left unchecked, "The collapse and chaos associated with extreme climate change [illegible] would destabilize virtually every aspect of modern life," said the report, comparing the [illegible] outcome with the [illegible] of a nuclear holocaust.

"Climate change has the potential to be one of the greatest national security challenges that this or any other generation of policy makers is likely to confront," said the report.

Among its [illegible] contributors were former CIA director R. James Woolsey, Nobel laureate Thomas Schelling, National Academy of Sciences President Ralph Cicerone, President Bill Clinton's former chief of staff John Podesta and former Vice President Al Gore's [illegible] adviser Leon Fuerth.

The report listed 10 implications of climate change that policy makers should consider, including tensions between rich and poor nations, the backlash resulting from mass migrations, health problems, [illegible] water shortages and [illegible] and concerns over nuclear proliferation as [illegible] increasingly turn to nuclear energy.

[illegible]

[illegible]

[illegible]

The Office of the National Intelligence Council is pursuing a long-range strategic assessment of the national security implications of climate change.

SEARCH GO

NOVEMBER

The Age of Consequences:

The Foreign Policy and National Security Implications of Global Climate Change

By Kurt M. Campbell, Jay Gulledge, J.R. McNeill, John Podesta, Peter Ogden, Leon Fuerth, R. James Woolsey, Alexander T.J. Lenkowski, Julianne Smith, Richard Weitz, and Derek Mix

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Center for a New American Security

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TABLE OF CONTENTS

NOVEMBER [illegible]

The Age of Consequences:

The Foreign Policy and National Security Implications of Global Climate Change

By Kurt M. Campbell, Jay Gulledge, J. R. McNeill, John Podesta
Peter Ogden, Leon Fuerth, R. James Woolsey, Alexander T. J. Lenkowski
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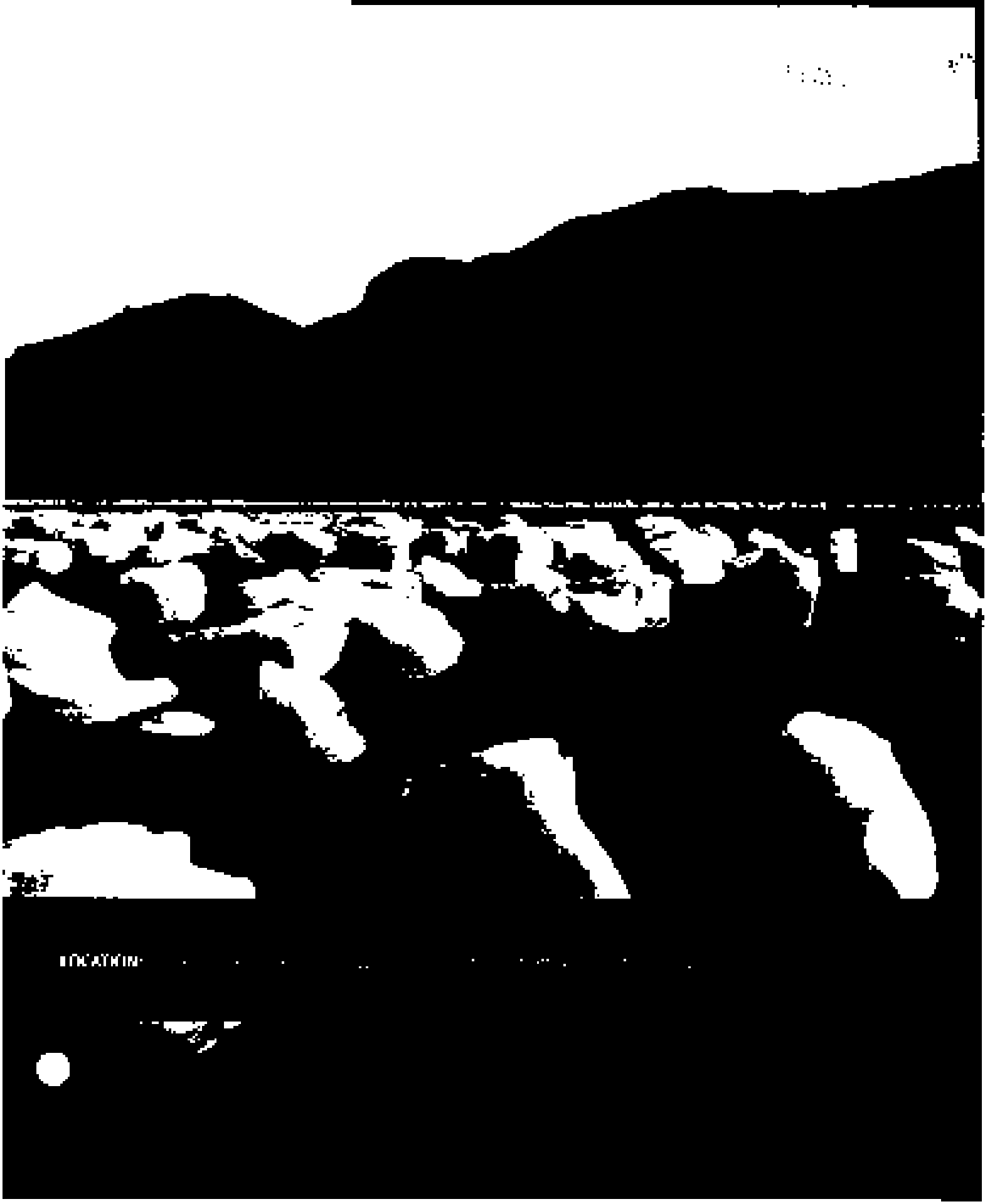
The Age of Consequences:

The Foreign Policy and National Security Implications of Global Climate Change



EXECUTIVE SUMMARY

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[illegible]

we know about the global climate. Within climate science, however, the level of uncertainty has always been very high. Indeed, the scientific community has been shocked at how fast some effects of global warming are unfolding, which suggests that many of the climate change estimates previously have been too conservative. When building climate scenarios in order to anticipate the future, therefore, there is a very strong case for looking at the full range of what is possible.

Such scenarios, [illegible] Shell's scenario planning exercises, are a tool used successfully by businesses and governments all over the world to anticipate future conditions and plan more wisely in the present. These particular scenarios are not meant to speculate conclusively about the future, as [illegible] but to consider possible developments using reasonable [illegible] for making prudent decisions and judgments about future geopolitical trends. In national security planning, it generally is [illegible] weapons systems [illegible] it is important to [illegible] environments. [illegible] important to [illegible] prepare for the challenges [illegible] in the future as a result of climate change.

The three scenarios we develop in this study are based on expected, severe, and catastrophic climate cases. The first scenario projects the effects in the next 30 years with the expected level of climate change. The severe scenario, which posits that the climate responds much more strongly to continued carbon loading over the next few decades than predicted by current scientific models, foresees profound and potentially destabilizing global effects over the course of the next generation or more. Finally, the catastrophic scenario is characterized by a devastating "tipping point" in the climate system, perhaps 50 or 100 years hence. In this future world, global climate conditions have changed radically, including the rapid loss of the land-based polar ice sheets, an abrupt and dramatic rise in global sea levels, and the [illegible] repair of the existing global order.

For each of the three plausible climate scenarios, we asked a national security expert to—considering the projected physical effects of global warming and analyze the possible consequences for peace and stability. Further, we [illegible] scenarios [illegible] to learn from the experiences of societies that have been confronted with comparable changes, flooding or other [illegible]. Each scenario was [illegible] and the three corresponding national security futures were less rigidly defined and [illegible].

Below is [illegible] summary of some of the key findings from the various chapters, discussions and presentations that have emerged over the course of the past several months. This is by no means an exhaustive list, but is meant to provide a flavor of the overall conclusions of the study.

- **The expected climate change scenario considered in this report, with an average global temperature increase of 1.3°C by 2040, can be reasonably taken as a basis for national planning.** As [illegible] write in Chapter [illegible] National security implications include heightened internal and cross-border tensions caused by large-scale migrations; conflict sparked by resource scarcity, particularly in the weak and failing states of Africa; increased disease proliferation, which will have economic consequences; and some geopolitical reordering as nations adjust to shifts in resources and prevalence of disease. Across the board, the ways in which [illegible] climate change will affect [illegible] underlying social, political and economic factors.

- **In the case of severe climate change, corresponding to an average increase in global temperature of 2.6°C by 2040, massive nonlinear events in the global environment give rise to massive nonlinear societal events.** In this scenario, addressed in Chapter IV, nations around the world will be overwhelmed by the scale of change and pernicious challenges, such as pandemic disease. The internal cohesion of nations will be under great stress, including in the United States, both as a result of a dramatic rise in migration and changes in agricultural patterns and water availability. The flooding of coastal communities around the world, especially in the Netherlands, the United States, South Asia, and China, has the potential to challenge regional and even national identities. Armed conflict between nations over resources, such as the Nile and its tributaries, is likely and nuclear war is possible. The social consequences range from increased religious fervor to outright chaos. In this scenario, climate change provokes a permanent shift in the relationship of humankind to nature.

- **The catastrophic scenario, with average global temperatures increasing by 5.6°C by 2100, finds strong and surprising intersections between the two great security threats of the day — global climate change and international terrorism waged by Islamist extremists.** This catastrophic scenario would pose almost inconceivable challenges as human society struggled to adapt. It is the most difficult future to visualize without strain of credulity. The scenario makes clear that an examination of climate change in light of the other great threat of our age, terrorism, can be illuminating. Although it is not intuitive, both threats are [illegible], and, indeed, the solution to both depends on [illegible] the world's energy economy — American energy consumption in particular. The security community must come to grips with this [illegible] because dealing with one set of these threats in isolation is likely to exacerbate the other, while dealing with them together can [illegible].

- **Historical comparisons from previous civilizations and national experiences of such natural phenomena as floods, earthquakes, and disease may be of help in understanding how societies will deal with unchecked climate change.** In the past, natural disasters generally have been either localized or abrupt, or both, making it hard to directly compare them [illegible]. No precedent exists for a disaster of this magnitude — one that affects the entire planet [illegible]. Nonetheless, the historical record can be instructive. Human beings have reacted to natural disasters in many ways. Natural disasters have tended to be divisive and sometimes [illegible] social and even international [illegible]. [illegible] Disease and epidemic disease have [illegible] and both are expected effects of future climate change. Indeed, [illegible] global warming [illegible] many of its effects will be experienced as local and regional phenomena, suggesting that past human behavior may well be [illegible].

- **Poor and underdeveloped areas are likely to have fewer resources and less stamina to deal with climate change — in even its very modest and early manifestations.** The impact on coastal [illegible] has already been seen in much of Africa, parts of Central Asia, and throughout [illegible] South America. Some of the nations and people of these regions lack the resilience to deal with

[illegible]

- **Perhaps the most worrisome problems associated with rising temperatures and sea levels are from large-scale migrations of people — both inside nations and across existing national borders.** [illegible]

- **The term "global climate change" is misleading in that many of the effects will vary dramatically from region to region.** [illegible]

- **A few countries may benefit from climate change in the short term, but there will be no "winners."** [illegible]

- **Climate change effects will aggravate existing international issues and problems.** [illegible]

this [illegible] existing problems. The climate change is already taking place in its dramatic [illegible] in Darfur, to water shortages in the Middle East, to destabilizing [illegible] in South Asia and [illegible] struggles over land and water are [illegible] these and other effects are likely to increase and intensify in the years ahead.

- **We lack rigorously tested data or reliable modeling to determine with any sense of certainty the ultimate path and pace of temperature increase or sea level rise associated with climate change in the decades ahead.** Our group found that [illegible] experts [illegible] predictions of the overall [illegible] of climate change over the last two decades, when compared with ultimate outcomes, have been consistently [illegible] what has actually transpired. There are perhaps many reasons for this tendency — an innate scientific caution, an incomplete data set, [illegible] shy away from [illegible], persistent efforts by some [illegible] to name but a few — but the result has been a relatively consistent underestimation of the increase in global climate and sea level rise. This history should provide [illegible] current predictions of future climate parameters.
- **Any future international agreement to limit carbon emissions will have considerable geopolitical as well as economic consequences.** For instance, China's role in such an arrangement could serve to enhance the international community's perception of it as a legitimate and [illegible] responsible stakeholder. [illegible] strategic [illegible] low-carbon [illegible] meanwhile, could bolster the position of a natural gas-rich country such as Russia. Such a new energy [illegible] power might [illegible] lead to a [illegible] role and significance of the Middle East in global politics. In addition, [illegible] from a [illegible] nuclear power. The emergence of [illegible] energy sources, especially [illegible], could also create new regions of strategic importance.
- **The scale of the potential consequences associated with climate change — particularly in more dire and distant scenarios — made it difficult to grasp the extent and magnitude of the possible changes ahead.** Even an [illegible] group of [illegible] and [illegible] had [illegible] contemplate [illegible] any radical change of this magnitude. Global temperature increases of more than 3°C and sea level rises measured in meters [illegible] these [illegible] paradigm that it is virtually impossible to contemplate all the aspects of national and international life that would be inevitably affected. As one participant noted, "unchecked climate change could be the [illegible] Mad Max, only hotter, with [illegible] beaches and perhaps with even more chaos." While such a characterization may seem extreme, the [illegible] of the potential consequences associated with global climate change is profoundly unsettling, and [illegible] would [illegible] virtually [illegible]. The only comparable experience [illegible] in the [illegible] thinking about the aftermath of a U.S.-Soviet nuclear exchange might have entailed during the height of the Cold War.
- **At a fundamental level, a narrow interpretation of the term "national security" may be woefully inadequate to convey the ways in which state authorities might break down in a worst-case climate change scenario.** It is clearly the case that [illegible] millions of people [illegible] some [illegible], but it is far from clear whether these [illegible] trigger [illegible] national security response [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

The Global Warming Solutions Act of 2006 (AB 32)

Passage of AB 32 commits the state to reducing, by 2020, California's greenhouse gas (GHG) emissions to 1990 levels. The act charges the Air Resources Board (ARB) with monitoring and regulating the state's sources of GHGs and establishes a timeline by which ARB is to complete various specified actions.

Act Declares State's Interest in Limiting Global Warming. Last year, the Legislature enacted Chapter 488, Statutes of 2006 (AB 32, Nunez)—the Global Warming Solutions Act of 2006. The act states that global warming poses a threat to California's economy, public health, natural resources, and environment, and states the necessity of federal and international action to effectively combat global warming impacts. The act also notes that California's early efforts to reduce GHG emissions can serve as a model for actions by other states, the federal government, and the other countries and jurisdictions that comprise economic competitors of California, and GHG emissions in other jurisdictions.

ARB in Charge of State's Multiagency Emissions Reduction Efforts. The act charges ARB as the sole state agency responsible for monitoring and regulating sources of GHG emissions and gives ARB a role in coordinating with other state agencies and stakeholders in implementing AB 32. The ARB is to require and monitor compliance and reporting of statewide GHG emissions, determine the state's GHG emissions in calendar 1990, and adopt regulations to reduce state GHG emissions, by the year 2020, to what they were in 1990.

The act also calls for the Climate Action Team—the multiagency body established in 2005 by executive order and led by the Secretary for Environmental Protection—to continue its coordinating role in state policy.

Emissions Reduction Goal and Timelines. The act lays out the broad goal of reducing statewide GHG emissions. In addition, the act establishes a timeline by which ARB is to have taken specified actions, as shown in Figure 1.

Figure 1

Global Warming Solutions Act of 2006 (AB 32)
Timeline of Required Actions

Date	Action	Responsible State Entity
[illegible]	• Publish a list of greenhouse gas (GHG) emitting activities and actions that can be implemented prior to the adoption of Air Resources Board (ARB) emissions reduction measures, rules, and regulations. These actions may be voluntary beginning January 1, 2007.	ARB
[illegible]	• Convene an environmental justice committee composed of representatives of communities most significantly exposed to air pollution, including communities with high cumulative exposure burdens.	ARB
[illegible]	• Report on innovative technology, advanced energy, and other measures to achieve maximum feasible and cost-effective reductions.	ARB

	[illegible] and development	
[illegible]	• Determine baseline GHG emissions [illegible]	ARB
	• Approve 1990 [illegible] GHG emissions [illegible]	
	• Adopt regulations to require reporting and verification of statewide GHG emissions and to monitor compliance	
[illegible]	• Prepare and adopt a scoping plan [illegible]	ARB [illegible]
[illegible]	• Adopt regulations, [illegible] January [illegible] measures[1]	ARB
[illegible]	• Adopt regulations on GHG emission [illegible] measures to become effective [illegible] January 1, 2012	ARB

[1] [illegible]
[2] [illegible]

GHG Emissions Reduction Measures Must Satisfy Extensive, Specific Criteria. The act [illegible] numerous, detailed criteria that any GHG emissions reduction measure must satisfy in order for ARB to adopt it. The act states that ARB's regulations should achieve maximum feasible and cost-effective reductions, and that they should be complementary and nonduplicative. The act also states that ARB's regulation of GHG emissions should achieve the following specific goals:

- Minimize costs.
- Maximize benefits.
- Encourage early action.
- Not disproportionately affect [illegible] industries.
- Consider [illegible] GHG emission reductions.
- Complement federal and state energy efficiency efforts.
- Consider indirect benefits of GHG and other regulations (such as air pollution reductions, energy security benefits, and other economic, environmental, and public health benefits).
- Minimize administrative burdens.
- Minimize the amount of California GHG emissions to cause other sources to increase their emissions (known as "leakage").
- Consider the impact of the regulation on California's contribution to statewide emissions of GHGs.

In addition, GHG emission reductions are to be [illegible], verifiable, and enforceable by the state. To the extent feasible, program measures, such as providing financial incentives for GHG emissions reduction, are to be [illegible] to the maximum advantage of California.

Market-Based Mechanisms Permissible, but Must Meet Additional Criteria. The AB 32 also, but does not require, ARB to adopt market-based compliance mechanisms as part of its regulations to be adopted by January 1, 2011. (Market-based compliance mechanisms, in very general terms, refer to flexible regulatory programs in which government sets a market-wide goal, such as a cap on percent of emissions to be met by regulated entities, and then allows regulated sources to set their own emission reductions in response to that goal.)

However, the statute allows ARB to include such market mechanisms in its regulations only if: (1) the regulations meet the criteria applicable to all GHG emission regulations, as described above, and (2) ARB takes a number of significant actions in the evaluation and design of such mechanisms, namely:

- Ensuring that the potential for these mechanisms to result in adverse emissions effects on communities is already addressed by other provisions
- Designing any market-based mechanism to prevent an increase in emissions of toxic air contaminants or criteria air pollutants regulated by the state
- Maximizing equitable and broad environmental benefits to the state

September 25, 2006

AB 32 Fact Sheet •

California Global Warming Solutions Act of 2006

Establishes first-in-the-nation comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of greenhouse gases (GHG);

Makes the Air Resources Board (ARB) responsible for monitoring and reducing GHG emissions

Continues the existing Climate Action Team, several pole greenhouse efforts

Authorizes the Governor to suspend AB32 in the event of a compelling emergency, catastrophic event or the threat of a significant economic harm, for up to 12 months at a time

Requires ARB to

- Establish a statewide GHG emissions cap for 2020, based on 1990 emissions, by January 1, 2008;
- Adopt mandatory reporting rules for significant sources of pollution or gases by January 1, 2008;
- Adopt a plan by January 1, 2011 describing how emission reductions will be achieved from significant GHG sources via regulation, market mechanisms, and other actions;
- Adopt regulations by January 1, 2012 to achieve the maximum technologically feasible and cost-effective reductions in GHGs, taking into account for compliant market mechanisms and alternative compliance mechanisms;
- Convene an Environmental Justice Advisory Committee and an Economic and Technology Advancement Advisory Committee to assist ARB;
- Ensure public review and opportunity for comment for all ARB actions;
- Prior to imposing any mandates or authorizing market mechanisms, requires ARB to evaluate several factors, including but not limited to impacts on California's economy, the environment, and public health, equity between regulated entities, statutory reliability, consistency with other environmental laws, and to ensure that the rules are not disproportionately burdensome to low-income communities;
- Adopt a set of discrete early action measures by Jan. 1, 2007 that can be implemented before January 1, 2012 and adopt regulations.

For More Information

Please contact the ARB toll-free at (800) 242-4450 (916) 322-7037 (California only) or (916) 322-2037. For information on the ARB's Climate Change Programs, see www.arb.ca.gov/cc/cc.htm. You may obtain this document in an alternative format by contacting ARB's Americans with Disabilities Act Coordinator at (916) 322-6533 (voice), (916) 324-9364 (TDD), (916) 322-3928 (FAX), or (916) 324-1076 (TDD) (California Relay Service).

[illegible]

AB 32: Global Warming Solutions Act

Authors: Assembly Speaker Fabian Núñez, Assembly Member Fran Pavley

California Climate Choices

A Fact Sheet of the Union of Concerned Scientists

Capping Global Warming Emissions

Scientists overwhelmingly agree that unless we prevent the most dangerous consequences of global warming, such as a 90% loss of California's Sierra snowpack, global warming emissions worldwide must be significantly reduced. Many scientists agree that emissions must be reduced by roughly 60% by mid-century.

In response to this warning from the scientific community, the state of California has taken initial steps to reduce global warming emissions to 2000 levels by 2010, 11% below business as usual levels by 2020, 29% below business as usual levels by 2030, and 80% below 1990 levels by 2050.

Existing policies such as California's outlook glass, tailpipe emissions standard for vehicles and renewable energy and efficiency requirements will move the state halfway toward meeting the 2020 target. Additional policies are essential to get us the rest of the way there.

AB 32 – Global Warming Solutions Act of 2006

AB 32 establishes the state's policy requiring 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 pollution that is to be phased in starting in 2012. In order to effectively implement the cap, AB 32 directs the California Air Resources Board (CARB) to develop appropriate regulations and establish a mandatory reporting system to track and monitor global warming emissions levels.

Additionally, AB 32 requires that CARB use the least costly strategies to implement the cap.

- Distribute benefits and costs equitably
- Ensure that there are no direct, indirect, or cumulative increases in air pollution and local contaminants
- Prevent emission reductions from being offset by increased emissions through market trading
- Allow for coordination with other states and countries to reduce emissions

Economic Benefits of Implementing a Global Warming Emissions Cap

Two recently released, independent economic analyses show that early action to reduce California's global warming emissions would benefit California's economy and wealth in California.[1]

The state's top energy modelers found that $100 billion and $4 billion in income could be generated in California by reducing the state's emissions by 2020.

Leading economists from UC Berkeley and Stanford also analyze the state's current energy policy and conclude that state's current policy, including the Pavley model rule, these policies such as cleaner standards for vehicles and capturing methane from landfills, would save the Golden State billions by approximately $40 billion and create over 20,000 new jobs.

California Leadership

California is the world's 12th largest source of carbon dioxide, the chief heat-trapping gas that causes global warming. The state has a responsibility to reduce its share of emissions and by doing so, lead the United States and the world in adopting the innovative policies and technologies needed to avoid the most catastrophic consequences of global warming.

AB 32 sponsors: Environmental Defense, Natural Resources Defense Council

[illegible]

David Paterson

From: Paul Bridgman
Sent: Monday, July 09, 2007 8:18 AM
To: David Peterson
Cc: Ken Pulskamp, Jason Smisek, Lisa Hardy
Subject: FW: Global Warming Plan update from AG's office (UNCLASSIFIED)

This is the second General Plan update being challenged by the Attorney General. Identifying ways to address the issues raised by Jerry Brown's office is one of the issues that the "green team" will need to address. Thanks, Paul Bridgman for DivDir

Paul Bridgman
Director of Community Development
City of Santa Clarita
661-255-4[illegible] Office
661-510-2[illegible] Cell

From: Jeff Hogan
Sent: Monday, July 09, 2007 7:44 AM
To: Lisa Hardy, Jason Smisek
Cc: Paul Bridgman
Subject: Global Warming Plan update from AG's office (UNCLASSIFIED)

AG: City's Global Warming Plan Not Tough Enough

State attorney general tells San Diego to take enforceable steps to reduce new development's impacts on global warming.

By ROB DAVIS [illegible]

Thursday, July 5, 2007 The blueprint for San Diego's future development reflects the threats the city faces from global warming, scientists and interested [illegible]

But the blueprint concludes that the city's development — and more than 200,000 new residents that will flock to [illegible] — will bring about [illegible] the greenhouse gases that cause global warming, even though the city could take steps to reduce those emissions.

The state attorney general recently charged the city for failing to sufficiently mitigate the new development's impacts on global warming, saying that the city should adopt enforceable steps to combat climate change.

San Diego has dozens of tools available to reduce its carbon dioxide and other greenhouse gases, from mandating rooftop solar panels to establishing global warming standards

Lukewarm on Warming

- **The Issue:** [illegible] the city of San Diego has to address its impacts on the environment and global warming.
- **What It Means:** The state attorney general, [illegible] the city's development plan [illegible]

greenhouse gas emissions

+ **The Bigger Picture:** [illegible]

As the city drafts its general plan to address future growth, state law requires the plan to evaluate its impacts on the environment, including how the [illegible] generally affect global warming. The attorney general's office, the agency responsible for enforcing [illegible] recently sued San Bernardino County saying its [illegible] development [illegible] global warming.

San Diego's general plan, which outlines its challenges and goals for the city's future growth over the next 20 years, estimates that the population will grow by 350,000 by [illegible] to those residents [illegible] and transportation [illegible] tons of carbon dioxide to the air.

On June 11 [illegible], Sandra Goldberg, a deputy attorney general, urged the city to adopt a broad range of enforceable mitigation measures to reduce greenhouse gas emissions resulting from new development [illegible] in the plan.

Goldberg said the city [illegible] "[illegible] preferences and [illegible] rather than a definite commitment to accept and enforce policies."

The Attorney General's Office [illegible] steps the city could take to reduce residential greenhouse gas emissions. They include:

+ Requiring new [illegible] to install solar panels and new businesses to get a portion of their energy from renewable sources.

+ Requiring new construction and renovation projects to incorporate green building design principles.

+ Closing gaps in the city's recycling policies to require mandatory recycling in apartments and businesses, as well as the reuse of construction debris.

The Attorney General's Office met with city officials last week. On Monday, the mayor's [illegible] said the city [illegible] of the state's [illegible]. The city [illegible] and [illegible] by [illegible] and Waring said.

When [illegible] said the city [illegible] greenhouse gas reduction [illegible] state or federal [illegible] Waring said [illegible] the effection the global problem.

We [illegible] greenhouse gases [illegible] reduced," Waring said. "But we're [illegible] We really want to [illegible] [illegible] plan [illegible] encompass. There are [illegible] through [illegible] the city has the power to do that."

Scientists [illegible] San Diego's [illegible] shortsighted.

"It's like [illegible] development is inevitable and greenhouse gas emissions are impossible that seems to be [illegible] the question," said Richard Somerville, a distinguished professor emeritus at Scripps Institution of Oceanography. "It's [illegible]."

But Craig Benedetto, a spokesman for the Building Officers and Managers Association, said adopting too many requirements [illegible] development [illegible] pressure to move outside the city. He suggested an incentive-based approach that would [illegible] requirements depending on how green a building is.

"If they want to be a leader," Benedetto said, "they should [illegible] incentivizing these standards in the general plan."

City Council member Donna Frye said she worried that the new measures [illegible] not [illegible] to be sufficient.

"There are [illegible] the city more sustainable," Frye said. "Just because you can't change the way it [illegible]."

[illegible] stop things from getting worse." [illegible] "We're selling a story, selling a story, selling a story." Ann [illegible] says.

Other cities on the West Coast have taken steps to combat global warming and price cost. San Diego by suggesting that [illegible] governments were powerless.

San Francisco's government [illegible] expanded recycling programs and began purchasing electricity from renewable sources. The city aims to reduce residents' greenhouse gas emissions 20 percent below 1990 levels by 2012. A study found that San Francisco's emissions have returned to pre-1990 levels.

"We can't wait to see the federal government," said Mark Westlund, a spokesman for San Francisco's Environment Department. San Diego wants to take a leap ahead before they play. "We don't have the luxury of inaction."

In Portland, the city established a $2.5 million [illegible] program to support green [illegible] projects to buy a [illegible] every city hall within its by 2010 and increased investments in bike [illegible] infrastructure.

"It's not only that global warming is [illegible]," said Amy Spaeth, a spokeswoman for Portland's Office of Sustainable Development. "If San Diego wants to [illegible] global warming in its growth plans, we'd certainly say there's a big [illegible] that hasn't been Portland's philosophy. It seems a little shortsighted."

[illegible]

Climate Change Series

California Cities Tackle Climate Change

August 2007

By [illegible] Sanders

[illegible] Sanders is program director for the California Climate Action Network program of the Institute for Local Government. She can be reached at [illegible]@ca-ilg.org.

Global warming poses a real threat to California and the rest of the planet. Local communities can implement the following strategies to lower the carbon emissions and combat global warming both in their own operations and throughout the community. In most cases, these strategies [illegible] the environment [illegible] other [illegible] as well.

1. Conserving energy and using it more efficiently reduces the amount of carbon dioxide and other greenhouse gases pumped into the atmosphere. It also helps [illegible] and [illegible] and reduces the need to build more costly power plants and pipelines.

2. Reducing waste and recycling cuts the amount of greenhouse gases that are generated to manufacture, package, transport and dispose of products and materials. More importantly, perhaps, reducing waste and recycling [illegible] methane emissions from landfills. Methane is 23 times more potent than carbon dioxide and a significant contributor to global warming.

A number of cities have instituted programs to recycle and reuse construction and demolition (C&D) debris, which can be a big part of the waste stream. The City of San Jose estimates that about 30 percent of the [illegible] going to landfills is from C&D. To encourage greater recycling and reuse, applicants for city building and demolition permits are charged a deposit based on the size and type of the construction project. Materials can be taken to a certified recovery facility, reused or donated. The deposit is refunded for projects that successfully reduce the amount of debris [illegible] landfills. For more information about C&D [illegible], see "Deconstruction: A [illegible]," [illegible] 2007, *Western City*, online at www.westerncity.com [illegible]

3. Buying green products and services harnesses the purchasing power of public agencies to improve environmental quality. Products that are durable, contain recycled content, conserve energy and [illegible] and water pollutants can also result in lower greenhouse gas emissions.

Many cities have enacted environmentally preferable purchasing ordinances. For example, San Francisco requires City departments to purchase [illegible] products from an approved list.

Another area where cities can have a positive impact on global warming is by purchasing greener fleet vehicles. The City of Santa Monica has had a comprehensive Environmentally Preferable Purchasing program in place since 1994. In 2001 the city succeeded in meeting its goal of having 75 percent of its public works vehicle fleet operating on reduced emissions fuels. Currently, 81 percent of the city's vehicle fleet [illegible], including more than [illegible] of the city's Big Blue Bus transit fleet. Santa Monica is one of five Southern California cities that are participating in a [illegible] program to test hydrogen-fueled hybrid vehicles in their fleets.

4. Using lower carbon fuels to power vehicles, run industries and generate electricity can cut carbon emissions substantially while creating new local industries. It can also reduce our reliance on foreign oil, which improves both the economy and national security.

The City of Santa Rosa has entered into a partnership with Sonoma State University Professor Michael Cohen to grow algae in ponds at the city's sewage treatment plant. Oil will be extracted from the algae and mixed with diesel fuel to produce biodiesel for powering the city's fleet. The byproducts from producing the biodiesel will then be used to help power the treatment plant, reducing the demand for electricity from the power grid.

Biodiesel reduces net carbon dioxide emissions by 78 percent compared to diesel refined from petroleum. It reduces also particulates, carbon monoxide, particulates, unburned hydrocarbons that cause smog, and cancer-causing air pollutants.

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

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[illegible]

[illegible]

Thinking Globally, Acting Locally

[illegible]

[illegible]

[illegible]

Climate Change Series

Reducing Greenhouse Gases in City Operations and Services: Best Practices From the Private Sector

August [illegible]

[illegible]

[illegible]

[illegible]

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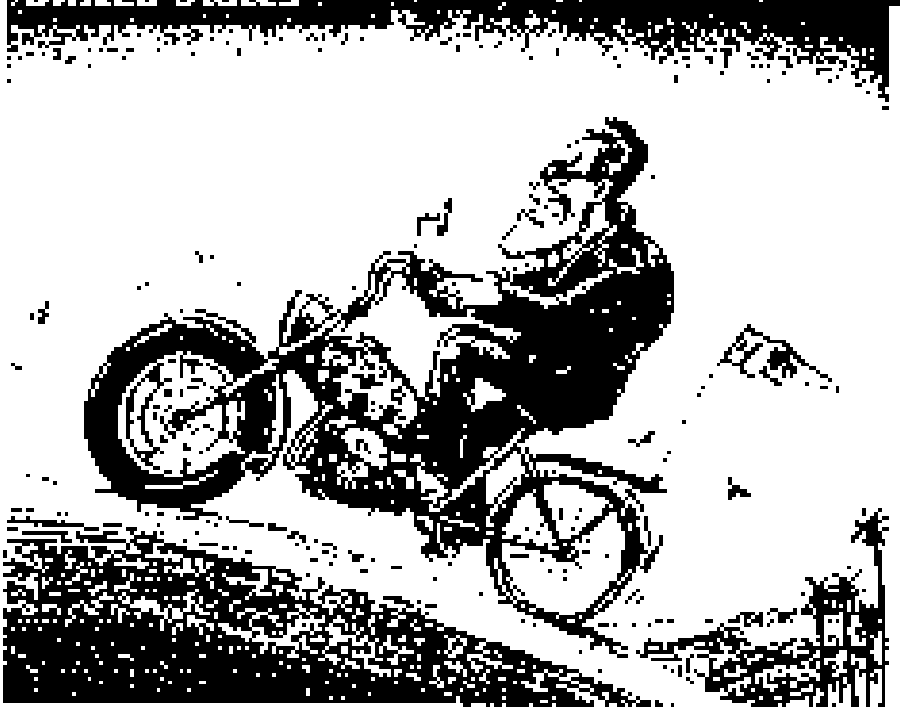


Also in this section

[illegible]

Environmental policy (1)

Arnie's uphill climb

California's confident approach to climate change [illegible] America and the world. But things [illegible] in the state itself?

[illegible]

[illegible]

Lawsuits and allegations

[illegible]

Where soap comes from

[illegible]

[illegible]

[illegible]

Sue Hewitt (Kelly 21)

Soot and safflower

[illegible]

Can Marcano's coal & soap powder be greener?

[illegible]

[illegible]

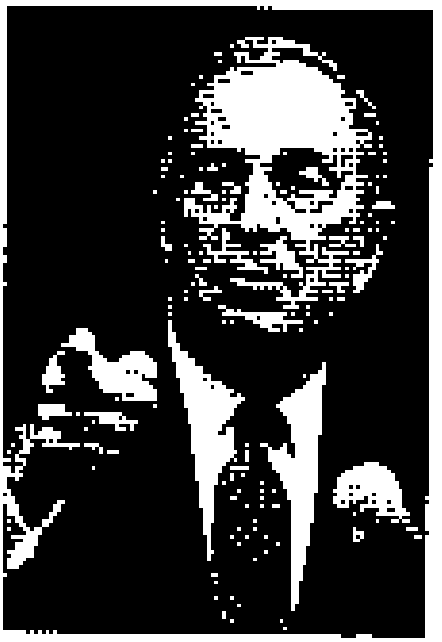
Burning would help oil

[illegible]

By Paul Kiernan

Aiming for the gold, with gold

New York's mayor faces an independent bid for re-election



Dan Hamburg looks

The Scope

Limbering up f fight

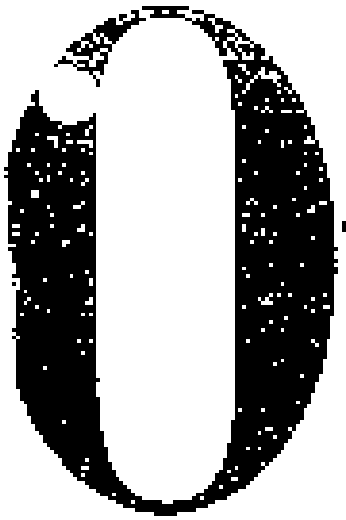
3 Branches,

The Environmental Protection Agency must go back to the drawing board and reconsider its decision about regulating carbon dioxide emissions from new vehicles.

T

A unanimous court

[illegible]



Consensus

Will Congress overturn a landmark Supreme Court decision?

By Lora A. [illegible]

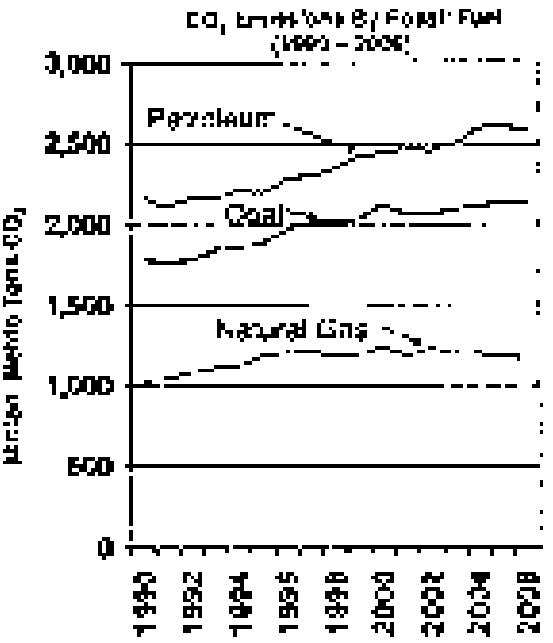
Lazaro, the [illegible] test in the [illegible]

Up Close and Personal

[illegible]

At the Courts

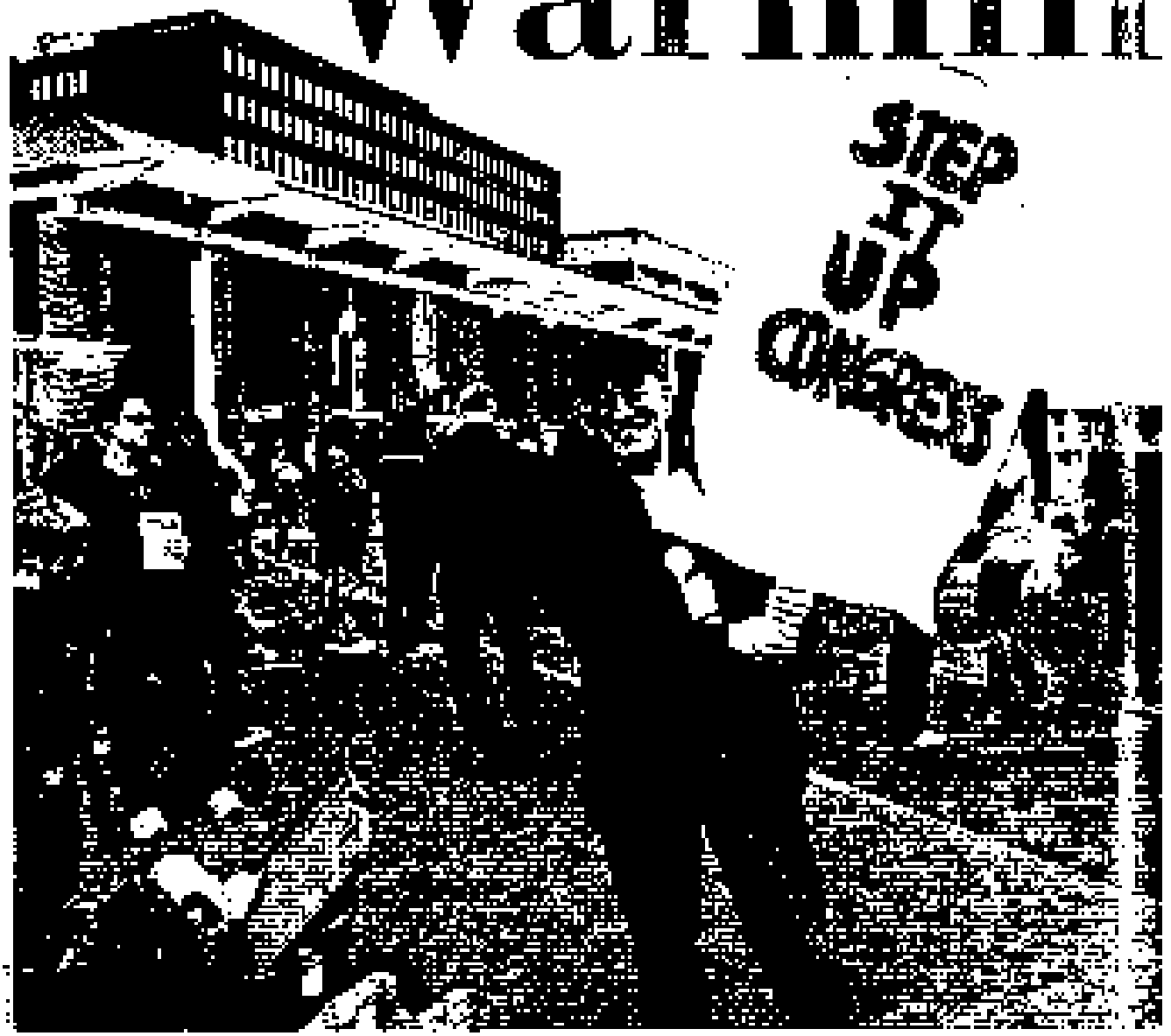
[illegible]



Limitations of the Estimates

Resources

Warmin



g Warriors

By Geof Koss

Congress tackles emissions—and related issues—one bill at a time.

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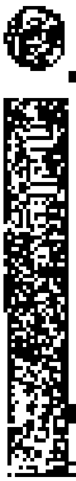
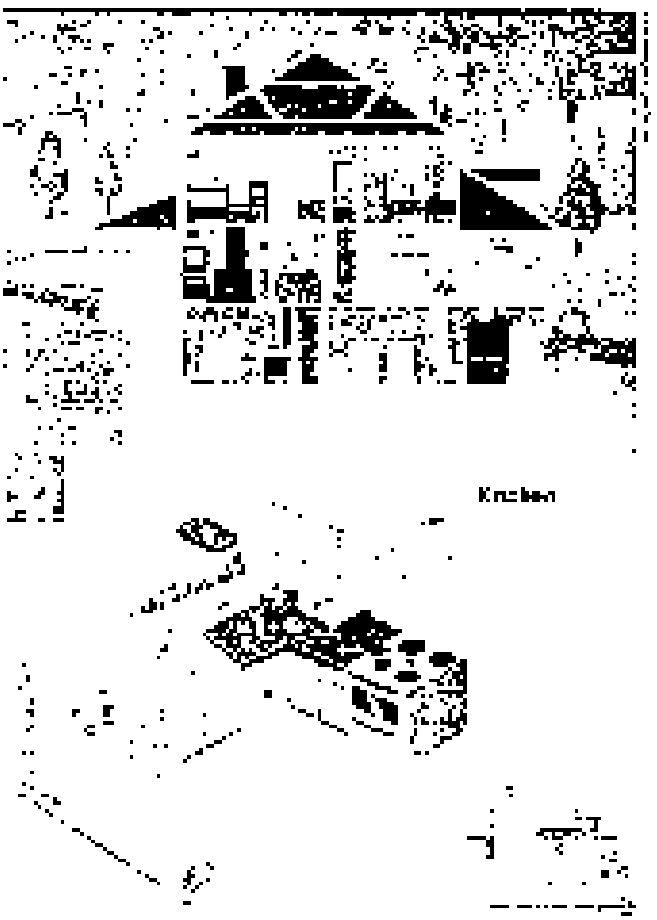
[illegible]

"Low-hanging fruit"

[illegible]



Homeowners (e)



Resolution carbon

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Political ch

[illegible]

[illegible]

Executive opposition

[illegible]

[illegible]

SOLVING THE CLIMATE PROBLEM

Technologies Available to Curb CO_2 Emissions

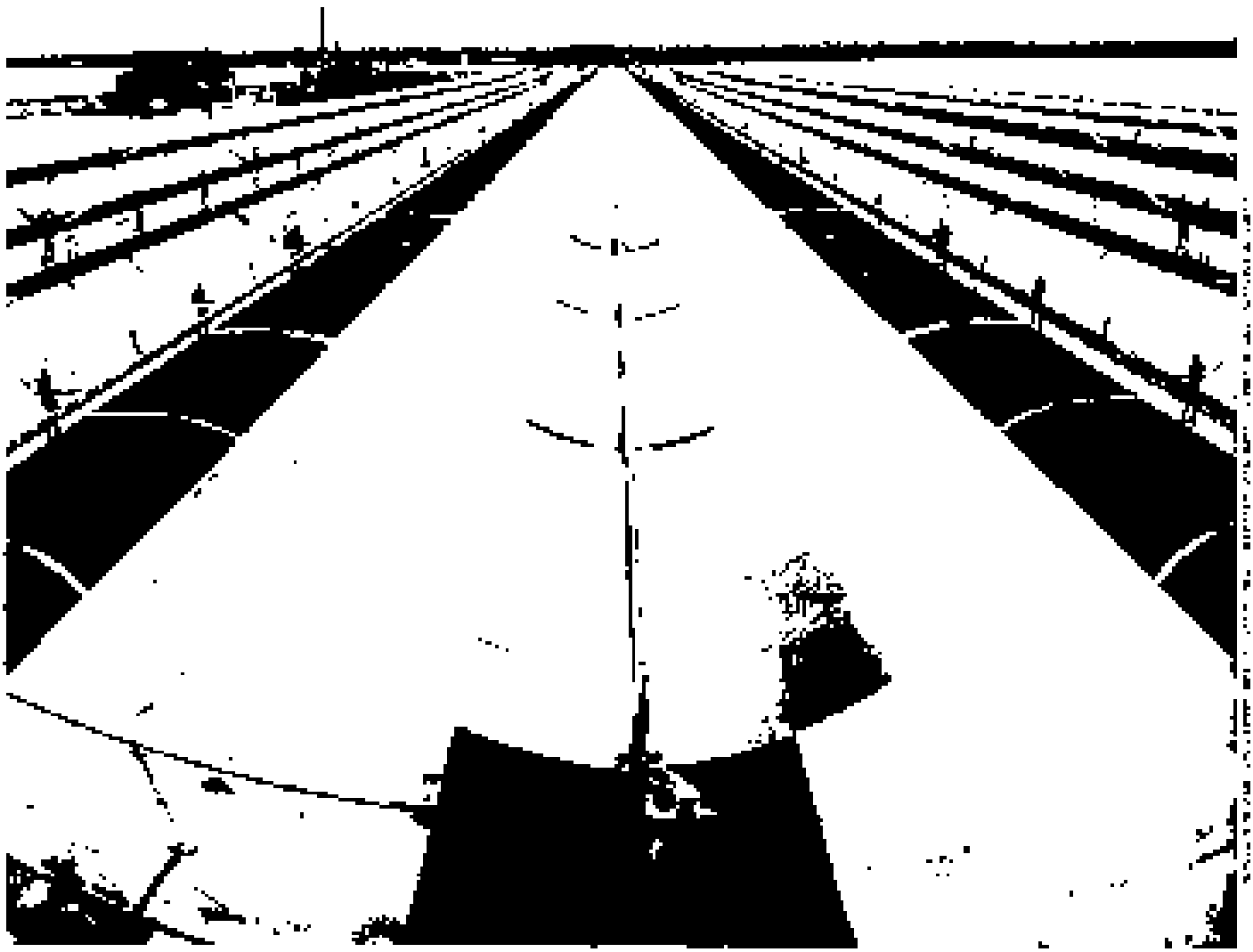
by [illegible]

[illegible]

Charting a New Path

[illegible]

BEYOND KYOTO



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The Scale of the Problem: Stabilization Wedges

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Energy Conservation

[illegible]

Figure 1a. Historical carbon emissions with two potential pathways for the future

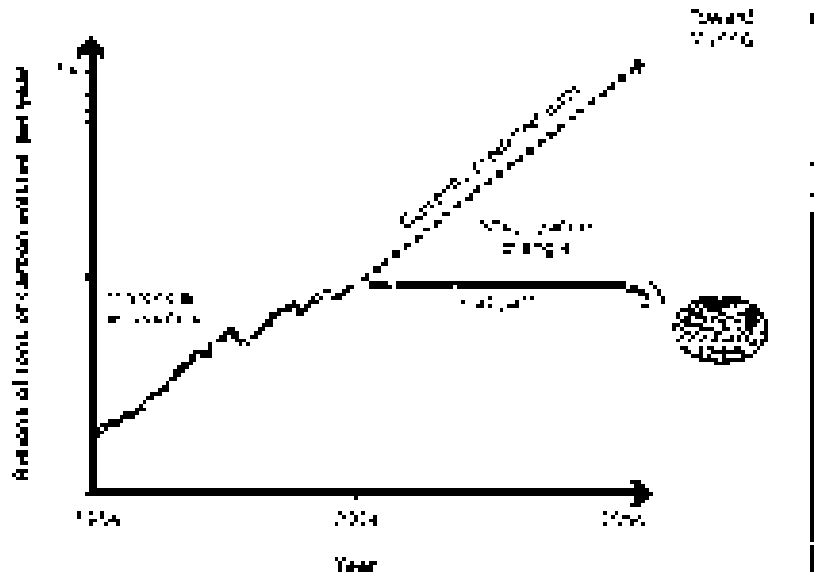

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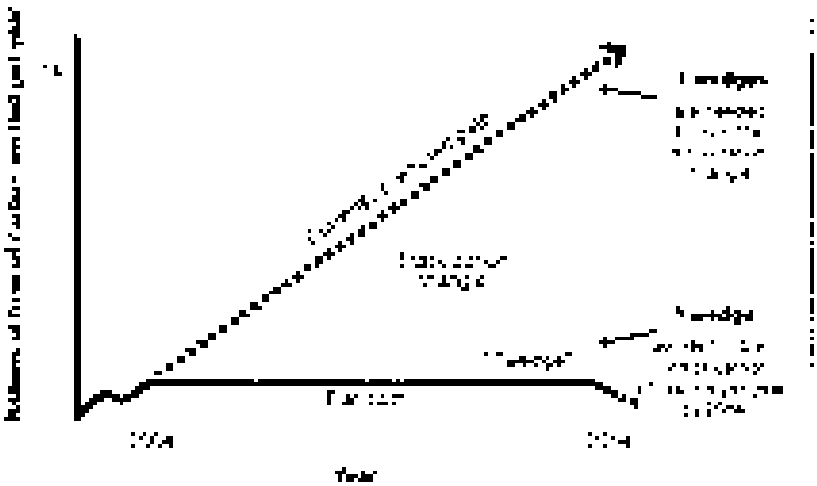
Figure 1b. Stabilization wedges



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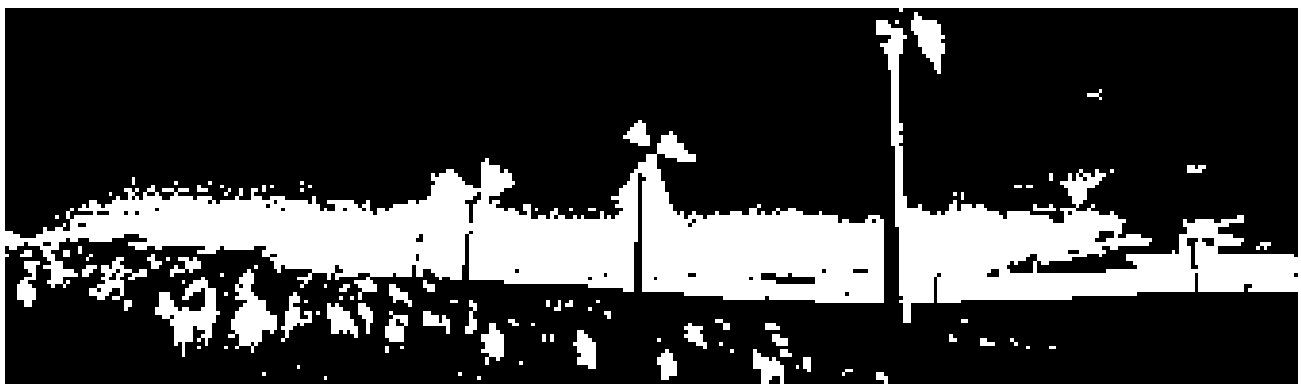
Renewable Energy

Renewable Electricity



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Renewable Fuels

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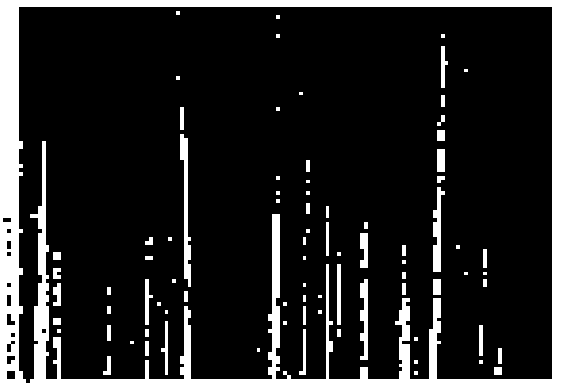
Enhanced Natural Sinks

[illegible]



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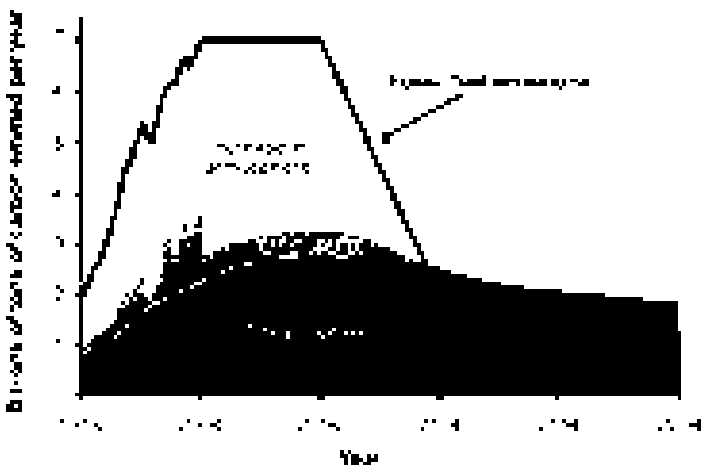
Nuclear Energy

OCEAN AND LAND SINKS

Where does the carbon go?



Ocean

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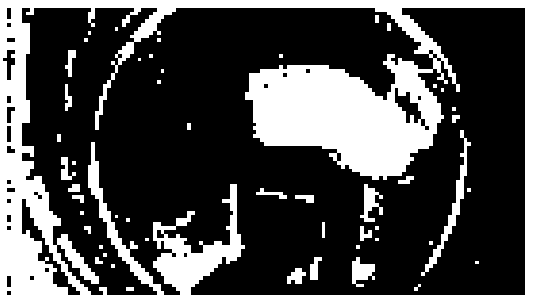


Fossil-Carbon Management

Changing the Mix of Fossil Fuels

Carbon Capture and Storage

Getting Started with Wedgetek: The Next 10 Years

The Road Ahead

CO2 SEQUESTRATION PROJECTS

NOTES

USEFUL ONLINE REFERENCES

Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies

S. Pacala[1]* and R. Socolow[2]

[illegible]

[illegible]

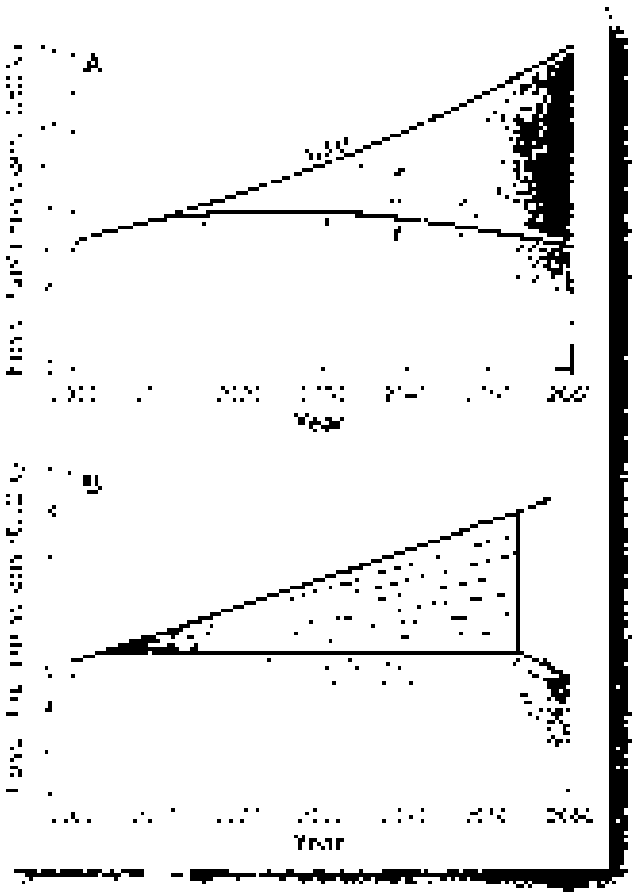
What Do We Mean by "Solving the Carbon and Climate Problem for the Next Half-Century"?

[illegible]

A Stabilization Triangle

[illegible]

What Current Options Could Be Scaled Up to Produce at Least One Wedge?



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Conclusion

References Cited

SPECIAL SECTION

VOLUME 305

Sustainable Hydrogen Production

JOHN A. TURNER

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Climate Change Series

Making It Easier to Buy Green

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Developing Standards

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The Post-Consumer Stage

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Buying Green and Staying in the Black

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Additional Resources

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