FOIA Number: 2017-1093-F

FOIA MARKER

This is not a textual record. This is used as an administrative marker by the William J. Clinton Presidential Library Staff.

Collection/Record Group: Clinton Presidential Records

Subgroup/Office of Origin: Office of Environmental Initiatives

Series/Staff Member: Roger Ballentine

Subseries:

OA/ID Number: 19511

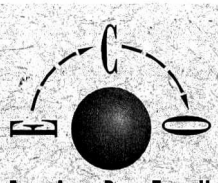
FolderID:

Folder Title:
Climate Change Other Industry [2]

Stack:	Row:	Section:	Shelf:	Position:
S	62	1	1	2

PHOTOCOPY
PRESERVATION

EARTH
COMMUNICATIONS
OFFICE



BACKGROUND

Founded ten years ago, The Earth Communications Office (ECO) uses the power of communication to improve the global environment. ECO's Board of Directors is comprised of leaders in film, television, music, advertising, and virtually all aspects of communication. Some of ECO's most prominent Board members include: actors Ed Begley, Jr., Pierce Brosnan, Cindy Crawford, James Cromwell, Woody Harrelson, Sharon Lawrence, Donna Mills, and Mimi Rogers; producers Ron Howard, Brian Grazer, and Debra Hill; and musicians Bob Weir and Toni Childs.

ECO's Advisory Board consists of distinguished members of the environmental, scientific, and political arenas. The Board includes Vice President Al Gore; Dr. Thomas Lovejoy of the Smithsonian Institution; Denis Hayes, the founder of Earth Day; Senator Max Baucus; Bill Patzert of JPL; and Hunter and Amory Lovins of the Rocky Mountain Institute.

The Public Service Announcement (PSA) Campaigns

ECO uses the skills and talents of members of the entertainment industry, to create public service campaigns that educate and inspire people around the world to take action to protect the planet. ECO's PSAs have been seen by more than **one billion** people in 13 languages and 150 countries worldwide. The unique, award-winning PSAs combine beautiful imagery with messages designed to inspire people to take action on behalf of the environment and to help them realize that they truly have the power to make a difference. ECO's campaigns encourage people to help in whatever way is most meaningful to them, whether it be protecting the oceans, saving endangered species, or simply learning how to recycle more effectively.

ECO's campaigns utilize the talent of the finest artists and communications experts anywhere and have been endorsed by the White House, U.S. Congressional leaders, the head of the United Nations Environment Programme, and by scientific and environmental leaders. ECO's PSAs are broadcast on movie screens, television, and radio, and through a unique network of ancillary outlets including airlines, stadiums, retail outlets, schools, hotels, home videos, CD-ROMs, and the Internet.

ECO's Website

All of the PSAs are tagged with ECO's website address, www.OneEarth.org. The site serves as a unique resource, providing visitors with environmental tips and information, links to environmental organizations around the world, and a place to discuss current environmental topics with others.

ECO's PSAs are also available on the site and can even be downloaded in digital formats by broadcasters. OneEarth.org provides visitors with the means to get involved and the ways to take action to help protect the environment.

Working With the Entertainment Community

ECO consults with and educates studios, advertising agencies, post production houses and other communications-based businesses on how to operate their facilities in a more environmentally friendly manner. ECO has helped to eliminate the use of the rain forest wood Lauan in movie and television set construction and helped to stop the wasteful packaging of the CD longbox used by record companies.

For additional information or to participate in ECO's communications campaign, please contact ECO at: 12021 Wilshire Blvd., #557, Los Angeles, CA 90025. (310) 656-0577ph, (310) 656-1657fax
email: ecoffice@earthlink.net.
www.OneEarth.org

Printed on 100% recycled paper

RADIO & RECORDS

JULY 30, 1993

PACKAGE DEAL

From Longboxes To Lunchboxes

The ecology-minded entertainment mavens at **Earth Communications Office** (ECO) are celebrating the success of their campaign against the CD longbox with a lavish luncheon August 9 in Los Angeles. Awards will be presented to **Bonnie Raitt**, the **Beach Boys**, **Raffi**, and **Ben The Box** founders **Rob Simmonds** and **Martin Folkman.**

Note that ECO put its packaging where its politics are: The invitations went out printed on recycled paper cut to the size of CD liner notes. These were slipped into CD cases made of 100% postconsumer recycled polystyrene resin,

which were in turn mailed in shiny lunchboxes made of recycled steel (pictured). The luncheon is funded by Waste Management Inc./Recycle America.

THE Hollywood REPORTER
a BPi publication
63rd year | Wednesday, August 11, 1993 | 95¢ (California) $1.50 (Elsewhere)

Upbeat wake for the longbox

By Jeffrey Jolson-Colburn

The music industry, which was feted Monday by environmental groups for eliminating the CD longbox, was called on to join a new campaign for a switch to recycled plastic jewel boxes.

A Westwood luncheon featuring 200 artists and music execs was hosted by Earth Communications Office, Waste Management and VH-1. Artists including Bonnie Raitt, the Beach Boys and Raffi were given special awards by ECO for fighting the longbox, as were Ban the Box founders Rob Simonds and Martin Folkman.

ECO executive director Bonnie Reiss said the industry should aim for 30% recycled plastic within a year. She also called on movie studios to eliminate rain forest wood from its sets.

In her lengthy speech, which covered topics from overpopulation to animal rights, Reiss applauded the music business for showing that "environmental factors can be included in 21st century decision-making," noting the elimination of the box saved 300,000 trees a year and 1.3 million gallons of oil. She also cheered the National Association of Theater Owners for including ecology trailers at its movie houses.

Also speaking was Recording Industry Association of America senior exec Hillary Rosen, who honored acts such as Raitt, Peter Gabriel, U2, Raffi and others who were "willing to risk sales by putting out alternative packaging" well before the retailers agreed to shift to the jewel box-only configuration.

In attendance were music figures including Danny Goldberg, Jimmy Iovine, Russ Bach, Jerry Moss and Hale Milgrim as well as Raitt, the Beach Boys, Stephen Stills and Raffi. □

THE Hollywood REPORTER®
a BPI publication
67th year | Friday, April 27, 1997 | $1.25 (California) $1.75 (Elsewhere)

Jeff Kravitz/Film Magic

Rally for the reefs

Helping the Earth Communications Office bow Hidden City, its 1997 awareness campaign, on Thursday were from left, Ed Begley Jr., ECO chairman Larry Kopald, Donna Mills and Hector Elizondo. Elizondo narrates the PSAs proclaiming the International Year of the Reef and explaining why endangered coral reefs are the rain forests of the ocean.

Stunt Diving With Tom Cruise & Brooke Shields, p. 37

Rodale's The Magazine Divers Trust

SCUBA DIVING

Left to right: Ed Begley, Jr., ECO Chairman Larry Kopald, Donna Mills and Hector Elizondo.

Star Power

For more information about "The Hidden City" and ECO's environmental awareness programs, call (310) 571-3141, visit ECO's web page at http://www.coralreef.org, or call the International Year of the Reef hotline at (888) CORAL-REEF.

[illegible] spots are very beautiful and [illegible] that's why I agreed to narrate," [illegible] said at the premiere. "I was [illegible] impressed by how touching these PSAs [illegible] are. They will get an audience people [illegible] the reefs."

[illegible] you don't catch "The Hidden City" [illegible] you can also catch it on the Discovery Channel's sister hotels and on [illegible] Travel Network, Channel One, [illegible] educational cable network which reaches [illegible] million young people daily. America West [illegible] airlines to flight entertainment programs, [illegible] the Discovery Channel, which will [illegible] also [illegible] internationally. Nothing like [illegible] celebrity power to get the message out.

"There's no time to go door-to-door [illegible] (with reef information)," says actor Ed Begley, Jr., who enjoyed the premiere. "So, we have to use the media to get the word out and use scientific information to let people know what's going on."

—Scott D. Jones

DAILY VARIETY

ONE DOLLAR

THURSDAY
JUNE 16, 1994

A CAHNERS PUBLICATION • LOS ANGELES, CALIFORNIA • NEWSPAPER SECOND CLASS P.O. ENTRY

PIERCE WILL PLUG PLANET

Brosnan inks for Earth Day PSA

By ADAM SANDLER

"Goldeneye's" Pierce Brosnan has been inked to narrate a 30-second public service announcement for Earth Communications Office. The signing marks ECO's first TV campaign in its seven-year history.

The TV PSA will be culled from a two-minute theatrical version dubbed "Neighbors," which will be shown on more than 20,000 screens beginning in April. The award-winning PSAs are often better received by audiences than the films they precede.

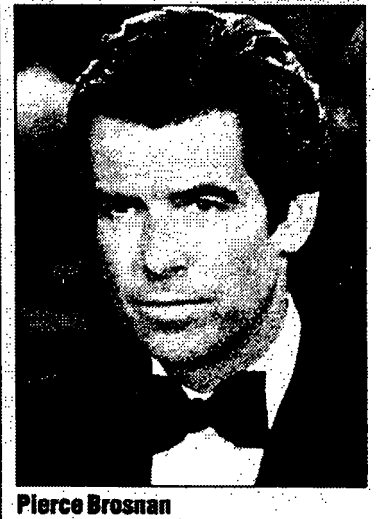
ECO also has nabbed actress Linda Hunt to narrate the theatrical version, which was filmed by "Free Willy" cinematographer Bob Talbot.

The "Neighbors" spot, which was scored by composer Jay Chattaway and produced by Talbot along with ECO chairman Larry Kopald, will focus on how the health of the oceans and its denizens affects the public's health.

The PSA will feature footage of dolphins filmed by Talbot, who has just completed work on the upcoming Universal Pictures film "Flipper."

"Ultimately, I hope that by seeing the incredible beauty of these animals on the bigscreen, people will realize the importance of preserving the planet for all its inhabitants," said Talbot.

The org is perhaps best-known for its first PSA, "Wonderful World," which featured singer Willie Nelson and garnered several awards.



Pierce Brosnan

"Neighbors" will run to coincide with Earth Day, April 22, and will sport ECO's 800 number and Web site address (< www.earthcomm.org>).

Ventura County Star 10.19.97

Ecology message hits silver screen

SPREADING: *Group's environmental spots have been shown in thousands of theaters.*

By Kevin Graham and Gary Chandler
Earth News

By using film, music and advertising mediums, the Earth Communications office has created a series of powerful and award-winning messages about the need to protect the environment. The group's empowering messages now reach more than 500 million people annually around the world, inspiring untold actions on behalf of the environment.

ECO's board of directors is composed of leaders from various entertainment and communication industries, including actors like Woody Harrelson, Michael Keaton and Pierce Brosnan. The board works directly with an advisory group made up of environmental, educational and political leaders to determine the focus of ECO efforts.

One of the nonprofit organization's first big successes involved a short message shown at more than 2,000 movie theaters as a prelude to feature films. The public service announcement praised the environmental efforts of Americans by using powerful statistics and sweeping footage of nature. Willie Nelson provided music for the piece by singing, "What a Wonderful World."

"Last year, by recycling paper, you saved 600 million trees. And 22 percent of you carpooled, keeping millions of tons of pollutants out of the air. You're making a world of difference," the announcement stated in writing, scrolled over footage of stunning natural scenery.

In a quiet theater on a big screen, the message created a powerful, positive-reinforcement message and was a triumph for an idea that had never been tried before, said Lisa Day, ECO's project director. Subsequent PSAs have been seen worldwide on tens of thousands of movie screens.

The group's second PSA, called "Connections," featured the voice of actress Linda Hunt reading Chief Seattle's statement, "All mankind is part of the web of life and whatever we do to the web, we do to ourselves." The spot showed that people around the world live a day much like everyone else and won several top awards at major advertising award shows.

> *"Last year, by recycling paper, you saved 600 million trees. And 22 percent of you carpooled, keeping millions of tons of pollutants out of the air. You're making a world of difference."*
> **— ECO message**

"We tap the genius of various producers, directors and advertising agencies and use their talents to create environmental messages that educate people about various issues," Day said. "And more than that, messages that empower them and teach them that their individual actions do make a difference in the future of our planet."

ECO has gone on to tackle other efforts, as well. It consults with and educates studios and other communication-based businesses on how to operate their facilities in more environmentally-friendly ways. For example, ECO has helped eliminate the use of the rain-forest wood for television- and movie-set construction.

For more information, write to ECO at 12021 Wilshire Blvd., Los Angeles, CA 90025, or call (310) 571-3141.

— Earth News is an environmental news service in Denver.

DAILY VARIETY

ONE DOLLAR

THURSDAY
JUNE 16, 1994

A CAHNERS PUBLICATION • LOS ANGELES, CALIFORNIA • NEWSPAPER SECOND CLASS P.O. ENTRY

AD PRIZES GO TO ENVIRONMENTAL PSA

By JOHN EVAN FROOK

A celebrated Earth Communications Office public service announcement that debuted in theaters last November, and was often better received by audiences than the movie it preceded, has won a distinguished Golden Clio for a public service announcement as well as the Assn. of Visual Communicators' Cindy Award for environmental/educational PSAs.

Titled "The Power of One," and with a musical score by Hans Zimmer, the 105-second spot featured shots of a child standing down a tractor preparing to clear rainforest land; endangered mountain gorillas; Mahatma Gandhi; Mother Teresa holding a child; and a student defying a tank in Tiananmen Square. The spot features the slogan "the power of one is to do something...anything."

ECO president/exec director Jan Rhees said the awards came five days apart. She said "Power of One" is more than a critical success. "When this PSA plays, the public often applauds, screams and yelps. It is a phenomenon."

The two awards punctuate what NATO/ShoWest chairman Tim Warner calls the "most enthusiastically received" public service trailers in exhibition history. It was also the most widely distributed, circulating to more than 15,000 screens in its run.

"The Power of One" was the third PSA cut by ECO, which previously released the Linda Hunt-narrated "Connections" and "Wonderful World," which featured the music of Willie Nelson.

Rhees said a fourth ECO spot is in the works. Themed to educating America's youth, and skedded for release in November, the PSA will be spearheaded by the McCann-Erickson ad agency.

Rhees called the ECO spots an industry triumph. "When people in the entertainment industry see this trailer, and their backs straighten up, and their hearts burst a little bit, they should feel a sense of pride," she said.

autumn 1995

incamera

ECO cinema commercial focuses on environment

This year marks the 25th anniversary of Earth Day. The commemoration will include widespread distribution of a public service announcement (PSA) produced by ECO, a non-profit environmental group that draws on the many available resources throughout the entertainment industry.

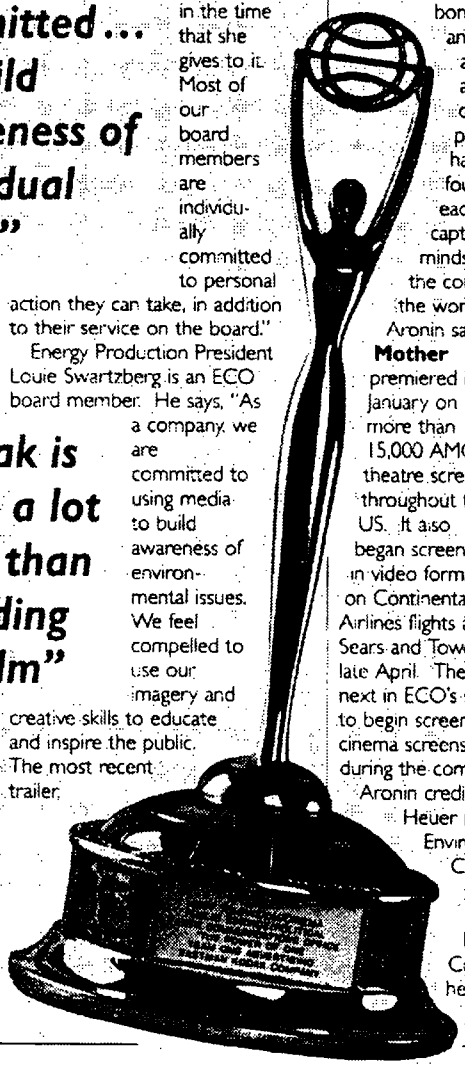
Mother is ECO's fourth annual PSA produced and distributed to theatres in 35mm format. The cine trailer features gorgeous images of Mother Earth, augmented with a narration by actor Peter Coyote and a musical score by Jonathan Elias, both of whom donated their time. In addition, several companies, including Kodak, Energy Productions, DeLuxe Labs, Miller Wishengrad and Pacific Title donated products and services to deliver a memorable and touching message about both the beauty and vulnerability of the planet on which we live.

ECO board members include Actor Woody Harrelson, Producer Debra Hill and Director Ron Howard, who is one of the organisation's founding board members. According to ECO Managing Director Ruben Aronin, "ECO was housed at Imagine Films for its first two years of existence. Ron Howard has been really phenomenal in his support. Donna Mills is also a current board member who has been very generous in her devotion to this cause and in the time that she gives to it. Most of our board members are individually committed to personal action they can take, in addition to their service on the board."

> ***"... we are committed ... to build awareness of individual issues"***

Energy Production President Louie Swartzberg is an ECO board member. He says, "As a company, we are committed to using media to build awareness of environmental issues. We feel compelled to use our imagery and creative skills to educate and inspire the public. The most recent trailer, **Mother**, embodies our belief that you will protect what you love. Experiencing stunning images on the big screen creates that emotional bond, and empowers the audience to take action." He concludes, "We take particular pride in having contributed to four spots for ECO, each of which has captured the hearts and minds of people across the country and around the world."

> ***"Kodak is doing a lot more than providing the film"***



Aronin says **Mother** premiered in January on more than 15,000 AMC theatre screens throughout the US. It also began screening in video format on Continental Airlines flights and in Circuit City, Sears and Tower Records stores in late April. The global market is next in ECO's sights. Aronin hopes to begin screening the PSA on cinema screens around the globe during the coming months.

Aronin credits Kodak's Harry Heuer (Chairman, Environmental Steering Committee, Motion Picture and Television Imaging, Eastman Kodak Company) with helping to launch the spot in the US and abroad. "Kodak is doing a lot more than providing the film. We worked with Harry to develop this year's public service announcement and the outreach campaign, and he's also taken the PSA out internationally through Kodak's marketers."

Aronin adds that the spot has already screened in Asia. "We are certainly looking to distribute it throughout France, Germany and England. We want to get it into more Asian markets that are just becoming environmentally aware, like Japan and Taiwan. In the Americas, we have translated it into Portuguese - we want to get it into Brazil - and we want to get it into Mexico and the rest of South and Central America."

> ***"Your effort really can and does make a difference"***

"The messages are really universal," Aronin concludes. "They say, 'Do something. Your effort really can and does make a difference, and is the only thing that's going to help us restore our planet.' "

*(Editor's note: **Mother** earned a CLIO award, distinguishing it among the best public service spots in 1994.)*

$9.50 (U.S.), $8.50 (CAN.), £4.50 (U.K.), ¥2,500 (JAPAN)
NEWSPAPER
Billboard
THE INTERNATIONAL NEWSWEEKLY OF MUSIC, VIDEO AND HOME ENTERTAINMENT • DECEMBER 7, 1996

Wanted: Environment-Friendly Radio

Station Support Sought For Ecological Campaign

■ BY CHUCK TAYLOR

With its involvement in an ecology-centered national public awareness campaign, radio has come down to earth.

Los Angeles broadcasters gathered at the Museum of Television and Radio in Beverly Hills Nov. 19 for a star-studded launch party in support of the Earth Communications Office (ECO), which aims to improve the global environment via education and awareness.

The kickoff took place with a virtual who's who of Southern California radio in attendance—some 200 from the industry—including Gary Owens; Tom Leykis; J.J. Jackson; KABC Los Angeles' Michael Jackson; and GMs, PDs, and/or personalities from every major outlet in town.

The event also drew celebrities like Ed Begley Jr., Donna Mills, Daphne Zuniga from "Melrose Place," and Tippi Hedren. ECO's board consists primarily of movie, television, music, and advertising executives. Then there's the involvement of another high-profile individual: At the opening party, a letter from President Clinton was read proclaiming Nov. 19 ECO Day throughout California.

With the support and involvement of radio stations across the nation, ECO Radio Advisory Board chairman Norm Pattiz says he hopes to help spread ECO's ecological awareness campaign for the first time over the airwaves. In the past, the ECO has primarily centered efforts on visual and dramatic public-service announcements in thousands of movie theaters around the world and on TV. Globally, the organization estimates it has reached more than 500 million people.

"Now is the time for the radio community to contribute an equal amount of effort to this. My feeling is that if radio gets behind ECO and gets the kind of response that film and motion-picture theaters and television shows have, they're not going to believe what we can do," says Pattiz, founder and chairman of Westwood One and a trustee of the Museum of Television and Radio.

Pattiz joined the organization's board two years ago, with the goal of integrating radio into ECO's efforts. Stations across the country will be able to access five custom-designed PSAs—created by well-known advertising producer Dick Orkin—via Westwood One satellite, whether or not stations are Westwood affiliates. Stations without satellite downloading capability may request cassettes at no cost.

"We will also contact stations through a direct-mail campaign and through the phone," Pattiz says. "We're timing it as a first-quarter campaign when the availability is there."

The theme of both the filmed versions and the 60-second radio PSAs, he says, is the difference made by a single person's effort in caring for the environment. "People that support these issues wonder, 'Well, what can I do, what can one person do?' The whole thrust of the campaign focuses on the fact that each of us can do a whole hell of a lot affecting how we live on this planet."

For information on involvement in ECO, call the organization in Los Angeles at 310-571-3141.

Vol. XX, No. 24 11/25/96 to 12/8/96 (outside Calif. $3.50, Canada $3.50) $2.75

MUSIC CONNECTION

THE WEST COAST MUSIC TRADE MAGAZINE

Earth Communications Office

When it comes to reaching mass audiences, few environmental organizations can match the success of the Earth Communications Office (ECO). Since its inception in 1989, ECO has reached more than 500 million people worldwide through its music, theatrical and television campaigns, which have included putting inserts into CDs to raise environmental awareness, banning the CD longbox, working with movie studios to stop the use of certain rainforest woods in building sets and creating award-winning public service announcements (PSAs) for movie theaters and television.

This month, the organization will kick-off its first radio PSA campaign, featuring six different spots, narrated by a variety of actors, including Carl Reiner and Ron Perlman. These public service announcements will begin to air in Los Angeles this month, and nationally in January. Westwood One Radio Chairman, and Chairman of ECO's Radio Advisory Board, Norm Pattiz is helping to launch the spots.

ECO's Managing Director, Ruben Aronin, says, "Through Westwood One, the PSAs will be available to more than 6,000 radio stations around the country and millions of listeners."

The PSAs focus on health and the environment and are part of ECO's continuing efforts to make people more aware of how critical the health of our environment is.

"Unfortunately, many people don't equate their own health with that of the environment," Aronin explains. "Yet if you get into highly populated communities, you will find more children and senior citizens who suffer from serious health problems. The cost of protecting the environment is inconsequential compared to the health costs incurred from a continued decline in public health."

The radio PSAs follow the release of ECO's highly successful PSA, *Neighbors*, which has been shown in movie theaters and on television stations around the country. The TV spot was narrated by actor Pierce Brosnan, and both feature images by *Free Willy* cinematographer Bob Talbot. *Neighbors* is currently playing in theaters around the country, and is featured on the home video release of *Flipper*.

In addition to empowering people around the world to help perserve the Earth, ECO also works closely with the entertainment community to make sure it is doing its own share of protecting our natural resources. Earlier in the decade, ECO played a major part in getting the environmentally wasteful CD longbox banned, and is working to find ways to use recycled plastic in jewel boxes.

Among the artists who worked with ECO and others on the "ban the box" coalition were Bonnie Raitt, the Beach Boys, U2, Phil Collins, Dire Straits and Ringo Starr.

According to Aronin, by simply eliminating the longbox, the music industry has saved 332,500 trees, 1,303,205 gallons of oil and a 500,000 cubic yards of landfill space. "This clearly shows just how much of an impact one campaign can make on the environment," he says.

Besides banning the CD longbox, many artists, such as Barbra Streisand, Quincy Jones, R.E.M. and Neil Young, have worked with ECO by using the organization's logo on their CD to show support for the environment.

Currently, ECO is working with the Department of Energy to produce a video campaign on energy efficiency and how it affects our health and the environment. It also is benefitting from two CD releases—receiving a portion of the proceeds from Kitaro's *Peace On Earth* and Extrodinaire Media's *Americana* series—and has holiday cards for sale that are printed on recycled paper.

STATS:

Funding Breakdown: 82% programs, 18% overhead

Fund-raising Activities: Sales of CDs, private donations, holiday card sales, foundation grants.

Supporters: Pierce Brosnan, Norm Pattiz, Olivia Newton-John, Russ Bach, Ed Begley, Jr., Belinda Carlisle, Shanna Reed, Donna Mills, Mimi Rogers and Hale Milgrim.

Address: 12021 Wilshire Blvd., Box 557, Los Angeles, CA 90025

Phone: 310-571-3141 and 888-ONE-EARTH

Web Site: http://www.oneearth.org

ADWEEK®

Vol. XXXXV No. 9 WESTERN EDITION February 27, 1995/$2.95

Earth Communications Office Event, L.A.

Larry Kopald, chairman of the Earth Communications Office, had reason to celebrate.

Larry Kopald, the former creative chief for Foote, Cone & Belding, Santa Ana, Calif., has reason to celebrate. Now serving as chairman of the board for Earth Communications Office (ECO), the Los Angeles-based pro-environment organization, Kopald recently unveiled ECO's new environmental trailer, called "Mother," and the country's first national environmental interactive phone line. Meanwhile, ECO also honored a diverse collection of institutions, ranging from Eastman Kodak and Deluxe Labs to the North Atlantic Treaty Organization and the Teresa and H. John Heinz III foundation, all for their commitment to environmental communication.

"In continuing ECO's tradition of inspiring audiences with encouraging environmental messages, this year we chose to focus on the offerings of Mother Earth in all her glory," said Kopald.

ECO has drawn a host of celebs and beautiful people to its cause as evidenced by the attendance at the recent event. **Donna Mills, Shanna Reed, Cary Elwes** and producer **Debra Hill** all showed to add their support. Conceived and written by Kopald, "Mother" began its run in more than 15,000 screens this month.

Actor **Peter Coyote** narrates the trailer while actor **Ed Begley Jr.** hosts the first national, environmental phone line. Those interested in making the call can do so by dialing 1-800-ONE-POWER.

Vanity Fair's

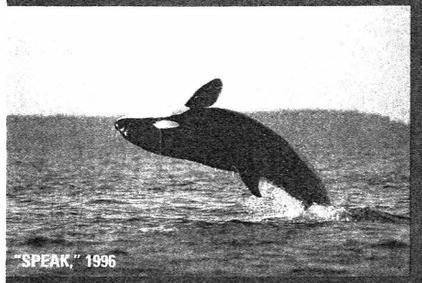
HALL OF FAME 1990

ECO *Earth Communications Office* **Here they are, the good-earth gang. America's homegrown Greens, globally warming our hearts. A loose coalition of environmental activists, each with his own specialty, ECO uses the media to get its message across. With their battle cry of "Reduce, Re-use, Recycle," they're turning America from a nation of tree muggers into a nation of tree huggers.**

From left to right: L. HUNTER LOVINS, president and executive director, Rocky Mountain Institute; TIM WIRTH, U.S. senator (D-Colorado); LEON SHENANDOAH, head chief, Iroquois Confederacy; BONNIE REISS, founder and executive director, ECO; JACK HEINZ, U.S. senator (R-Pennsylvania); OREN LYONS, chief and faith keeper, Onondaga Nation; ED BEGLEY JR., actor; DR. DAVID SUZUKI, author, TV host, professor of zoology, University of British Columbia; DR. THOMAS LOVEJOY, assistant secretary, Smithsonian Institution, and conference host; CESAR CHAVEZ, president and founder, United Farm Workers of America; TOM CRUISE, actor, not conference host; OLIVIA NEWTON-JOHN, singer, actress

The Earth Communications Office (ECO) is a non-profit, non-partisan organization that uses the power of the entertainment and communications industry to improve the global environment. For the past eight years, ECO has produced a series of award-winning public service announcements (PSAs) that have been seen by nearly one billion people worldwide.

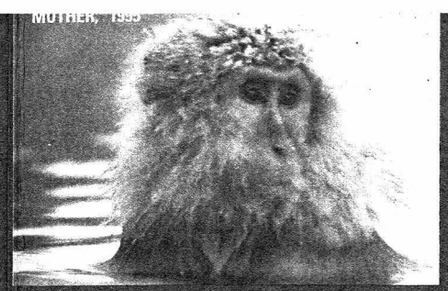
Think More, Use Less. ECO's most recent campaign on the overconsumption of our natural resources features narration by Patrick Stewart, Julianna Margulies, and Mimi Rogers, as well as music written by award winning composer Hans Zimmer. The spot comes in three lengths: 60, 30, and 20 seconds.


"SPEAK," 1996

Speak & Water Planet. Bob Talbot's extraordinary wildlife cinematography and Pierce Brosnan's narration bring the beauty of the ocean, whales, and dolphins to life and address the importance of keeping the world's oceans healthy in these 30-second spots.

Hidden City. This PSA features a kaleidoscope of images of the plants and animals that make up our endangered coral reefs. Academy Award winner Gene Hackman and Emmy Award winner Hector Elizondo narrate the spot which is available in both 30 seconds and two minutes.

"HIDDEN CITY," 1997


"MOTHER," 1995

Mother. A two-minute PSA narrated by actor Peter Coyote, Mother reminds the viewer that the Earth has always been our caretaker and provider and we are responsible for taking care of it in return.

Power of One. This two-minute spot combines evocative images of some of the most famous figures of the 20th century and a moving score by Hans Zimmer to illustrate that each of us has the power to change the world.

Connections. Based on the poetic words of Chief Seattle and masterfully narrated by Academy Award winner Linda Hunt, this two-minute spot reaffirms our connection to each other and to all living things and reminds us that people from around the world live a day much the same way as everyone else.

Neighbors. Neighbors, which also features the cinematography of Bob Talbot, explores the connection between the health of our oceans and our own health. This two minute spot features the narration of actress Linda Hunt.

"CONNECTIONS," 1992

Wonderful World. ECO's first PSA, Wonderful World is a two minute spot that combines Willie Nelson singing "What a Wonderful World" with breathtaking footage of nature. The PSA encourages and inspires the viewer by educating them about the impact individual actions can have on the planet.

Be green.

There are two VHS tapes available: Power of One and Just A Minute, which includes all thirteen of ECO's public service announcements, One Earth, Island Home, Last Chance for Groceries, Hidden City (two versions), Speak, Water Planet, Neighbors, Mother, Power of One, Connections, Wonderful World, and Earth Day.

Power of One is available for $25.00 ($15.00 for non-profits and schools) and Just A Minute is $50.00 ($25.00 for non-profits and schools). If you are interested in ordering a copy of ECO's PSAs, please fill out the information below and mail this card back to ECO with your payment. Or, to order by credit card, fax this form to ECO at (310) 656-1657 or call the office with your order at (310) 656-0577.

☐ Power of One Quantity:_____

☐ Just A Minute Quantity:_____

Name _____

Company _____

Title _____

Address _____

City/State/Zip _____

Country _____

Phone _____

Fax _____

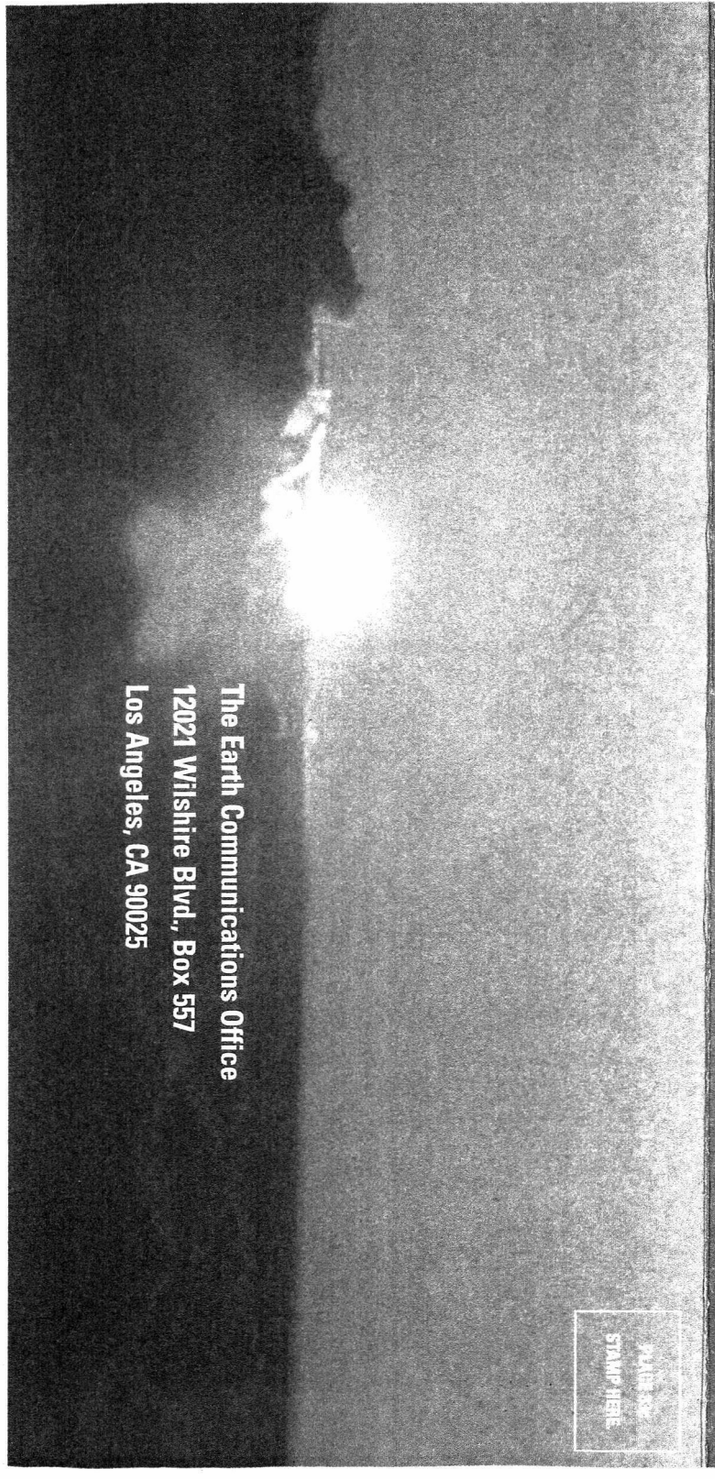
TO ORDER BY CREDIT CARD: ☐ MASTERCARD ☐ VISA

Cardholder's Name _____

Card # _____

Exp. Date _____

Signature _____



The Earth Communications Office
12021 Wilshire Blvd., Box 557
Los Angeles, CA 90025

PLACE STAMP HERE

The Earth Communications Office (ECO), the environmental voice of the entertainment industry, was formed ten years ago to serve as a bridge between the environmental community and the entertainment industry. ECO's goal is to educate and inspire people around the world to take action to help protect the planet. To achieve its goal, ECO has created award-winning communication campaigns that utilize the talent of the finest artists and communications experts anywhere and have been endorsed by President Clinton, U.S. Congressional leaders, the head of the United Nations Environment Programme, and by scientific and environmental leaders.

ECO's Board of Directors is made up of top producers, directors, actors, writers, composers, advertisers and publicists who work with an Advisory Board made up of environmental, scientific and political leaders to create messages that motivate people to take personal action to keep our planet healthy. Some of ECO's most prominent Board members include: Ed Begley, Jr., Pierce Brosnan, Cindy Crawford, James Cromwell, Woody Harrelson, Debra Hill, Ron Howard, Michael Keaton, Donna Mills, and Bob Weir.

E A R T H
COMMUNICATIONS
O F F I C E

Using the power of the communications industry to improve the global environment.

12021 Wilshire Blvd., Suite 557
Los Angeles, CA 90025
(310) 656-0577
(310) 656-1657 fax
eco@oneearth.org
www.OneEarth.org

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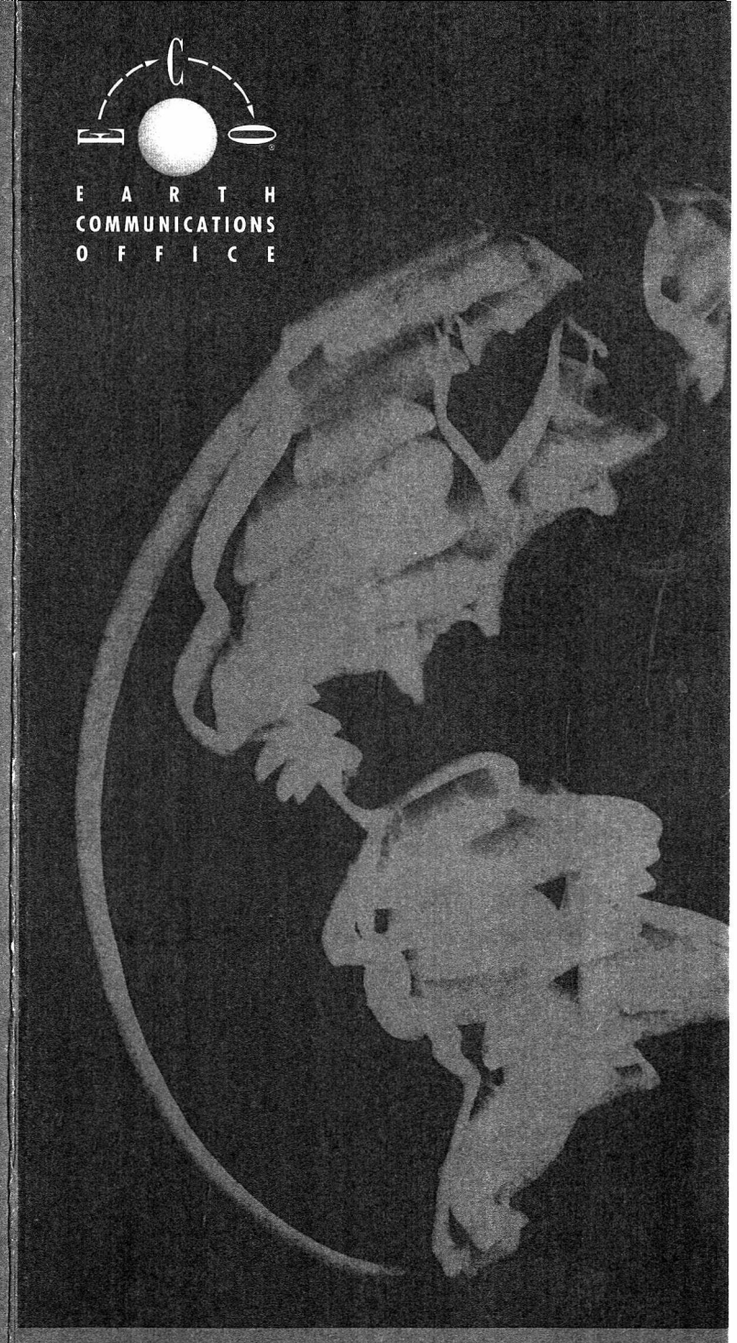

It's easy being green.

TDG

MEMORANDUM

TO: **Roger Ballentine**

FROM: **Deana Perlmutter**

DATE: **August 12, 1999**

RE: **Invitation to Vice President Gore for September 16, 1999 in Los Angeles**

Enclosed is the original of an invitation to the Vice President to participate in and address the audience at the premiere of the Earth Communications Office's (ECO) public service announcement campaign on global climate change. The premiere will be held at Paramount Studios in Los Angeles on the evening of September 16, 1999, and is being co-hosted by ECO, the CEO Coalition to Advance Sustainable Technology (CEO-CAST), and the Union of Concerned Scientists.

The invitations for the event are being printed early next week. May we put on the invitations that Vice President Gore has been invited to speak? Please let me know as soon as possible.

Your assistance in securing the Vice President's participation in the premiere would be appreciated. Please let me know if you need any more information about this event.

THE DUTKO GROUP
A PUBLIC POLICY MANAGEMENT CORPORATION
475 SEVENTEENTH STREET, SUITE 950 ● Denver, Colorado 80202 ● (303) 295-7866 ● Fax (303) 295-7899

E A R T H
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12021 Wilshire Blvd. #557 Los Angeles, CA 90025
(310) 656-0577 Fax: (310) 656-1657
ecoffice@earthlink.net www.OneEarth.org

August 13, 1999

The Honorable Al Gore
Vice President of the United States
Old Executive Office Building
Washington, D.C. 2510

Dear Vice President Gore:

On behalf of the Board of Directors of the Earth Communications Office (ECO), the Union of Concerned Scientists (UCS), and the CEO Coalition to Advance Sustainable Technology (CEO-CAST), we would like to officially invite you to address a gathering of environmental leaders from the Hollywood, scientific, business and industry communities on the evening of September 16. We are gathering for the premiere of ECO's newest communications campaign focused on raising awareness of one of the most critical environmental issues facing the planet: global climate change.

The communications campaign will be unveiled in an hour-long premiere event at Paramount Pictures. Nobel Laureate Mario Molina, the only Mexican-American to win a Nobel prize and the only recipient recognized for his achievements in environmental science, will deliver the keynote remarks. We would then ask you to speak to the Hollywood community about global climate change and congratulate the entertainment industry on its effort to raise awareness of environmental issues. (We hope to begin a dialogue with some of Hollywood's major studios to follow the examples set by companies like Patagonia, Stonyfield Farm, Interface and BP/Amoco who are voluntarily working to reduce their overall greenhouse gas emissions.)

The audience will include hundreds of entertainment and communications industry executives with business people, political leaders, and members of the environmental community. There will also be displays presented by Toyota, Stonyfield Farm, the Department of Energy and Environmental Protection Agency's Energy Star Program, BP Solar and Los Angeles Department of Water and Power (LADWP). This energy pavilion will include hybrid vehicles, energy efficient appliances, solar panel arrays, etc.

The premiere is also the celebration of ECO's 10th anniversary of using the power of communication to improve the global environment. ECO's communications campaigns are seen by more than one billion people worldwide and have received nearly every advertising award from Gold Clios and Mobius to New York Festival Gold Medals and an Emmy nomination.

ECO is proud to partner with CEO-CAST and UCS for the event. As an organization of CEO's who share the view that environmental stewardship is compatible with sound and competitive business practices, CEO-CAST is working within its business and industry contacts to forward the belief that innovative practices can create economic growth, jobs, and build competitive advantage when driven by sound regulatory policies. UCS has worked tirelessly, developing the scientific data on global climate change, and this campaign will help people worldwide understand the significance of its impact.

ECO Board of Directors: Larry Kopald, CHAIR • Tony Adamson • Ed Begley, Jr • Daniel Benzali • Bob Bernstein • Linda Blair • Steve Bornstein • Pat Brenner • Pierce Brosnan • Toni Childs • Bob Cohen • Cindy Crawford • James Cromwell • Hollace Davids • John Paul DeJoria • Cary Elwes • Scott Garen • Sara & Barbara Gilbert • Kip Gilman • Donna & Donnie Graves • Brian Grazer • Khrystyne Haje • Barry & Maureen Halderman • Woody Harrelson • Sandra Hay • Tippi Hedren • Fraser & Marilyn Heston • Debra Hill • Bambi Holzer • Al Hornsby • Ron & Cheryl Howard • Michael Keaton • Robert Glenn Ketchum • Mick Kleber • Alan Kozlowski • Joe Lando • Marcia Lansdown • Jessica Laufer • Ed Lauter • Sharon Lawrence • Tim Matheson • Peter Max • William McCrum • Jim & Penny McGehee • Hale & Anne Milgrim • Renee Miller • Donna Mills • David Mirkin • Jeffrey Mora • Esai Morales • Nancy Morgan Ritter • Dave Mount • Mateo Neri • Olivia Newton-John • Norman Pattiz • Alexandra Paul • Laurie Peters • Shanna Reed • John Ritter • Mimi Rogers • Rick Rosenthal • David Ryer • Howard Sapper • Gregory Sater • Michele Scarabelli • Louis Schwartzberg • Gary Shafner • Keely Shaye Smith • Randi Spivak • Nancy Stephens • Ron Stone • Jim Swindel • Bob Talbot • Kit Thomas • Tim Warner • Dennis Weaver • Lance Webster • Bob Weir • Michael Weiss • Floyd Red Crow Westerman • Pete Zackery • Hans Zimmer • Daphne Zuniga

ECO Advisory Board: Neal Barnard, Physicians Committee for Responsible Medicine • Senator Max Baucus, (D) Montana • Tamara Lee Boyer, NRDC • David Brower, Earth Island Institute • Dr. Noel Brown, Friends of the United Nations • Jean-Michel Cousteau, The Jean-Michel Cousteau Institute • John Cronin, Hudson Riverkeepers • Akiko Domoto, GLOBE Japan • Sylvia Earle, Deep Ocean Research and Exploration • Paul and Anne Erlich, Stanford University • Joanne Fox-Przeworski, United Nations Environment Programme • Bob Gillespie, Population Communication • Cliff Gladstein, Gladstein & Associates • Vice President Al Gore • Randy Hayes, Rainforest Action Network • Teresa Heinz, EDF • Dr. Henry Kendall, Union of Concerned Scientists • Congressman Joe Kennedy II, (D) Massachusetts • Roger Kennedy • Michael Klubock, Malibu Foundation • Fred Krupp, EDF • Dr. Thomas Lovejoy, Smithsonian Institution • Hunter and Amory Lovins, Rocky Mountain Institute • Chief Oren Lyons, Onodaga Nation • Judy Martinez • Dr. Michael Oppenheimer, EDF • Alex Pachecco, PETA • Chris Palmer, National Wildlife Productions • Bill Patzert, JPL • Gary Petersen, Environmental Problem Solving Enterprises • John Picard, E2 Environmental Enterprises • Congressman John Porter, (R) Illinois • Barbara Pyle, Turner Broadcasting • Rodger Schlickeisen, Defenders of Wildlife • Claudine Schneider, Renew America • Dr. Stephen Schneider, Stanford University • Robert Scowcroft, Organic Farming Research Foundation • Charles Taylor, National Park Service • Dr. Abdullah Toukan, Royal Scientific Society of Jordan • Peter Wallerstein, Whale Rescue Team • Congressman Henry Waxman, (D) California • Susan Weber, Zero Population Growth • Tim and Wren Wirth • Naida Yolen

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We would be truly honored to showcase your commitment to the environment at this premiere and to show you the commitment of the Hollywood community and others to make an impact on global climate change.

Thank you for your consideration of this invitation. If you have any questions, please do not hesitate to contact one of us.

Sincerely,

Larry Kopald
ECO Chairman

Howard Ris
UCS Executive Director

Ralph Petersen
CEO-CAST Chairman

Norman J. Pattiz
ECO Board Member

Debra Hill
ECO Executive Board Member

Donna Mills
ECO Board Member

Ed Begley, Jr.
ECO Board Member

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12021 Wilshire Blvd. #557 Los Angeles, CA 90025
(310) 656-0577 Fax: (310) 656-1657
ecoffice@earthlink.net www.OneEarth.org

August 4, 1999

Roger Ballentine
Old Executive OfficeBuilding
Room 115
Washington; DC 20501

Dear Roger,

Per your conversation with Deana Perlmutter, I have enclosed some background materials on the Earth Communications Office (ECO) including a short video copy of our award-winning campaigns and the scripts for this year's spots.

Formed ten years ago to use the power of communication to improve the global environment, ECO is a national non-profit organization based in the hollywood community. Each year, ECO produces an environmental communications campaign that reaches more than **one billion** people around the world.

This year, ECO is collaborating with the Union of Concerned Scientists and with CAST to produce and disseminate a campaign on global warming. The campaign will be launched at a gala premiere screening on September 15th at Paramount Pictures. The event will showcase alternative-fueled vehicles, solar panels, and state of the art EnergyStar labeled electronics and appliances. We have invited the Vice President to join us for the premiere which will feature a keynote address by Nobel Laureate Mario Molina, the only Mexican-American to win a nobel prize.

Our global warming campaign will begin playing in movie theatres across the country this Fall and will be broadcast on television and radio beginning in January, 2000. They will play through Earth Day 2000 and well into the summer. ECO has also partnered with Yahoo! to create a co-branded web-page and a series of celebrity chats that will significantly raise awareness of global warming by targeting a young adult audience.

We would be thrilled to work with you to promote awareness of the potential impacts of global warming and to encourage individuals to take simple actions which can dramatically reduce the emissions that cause global warming.

Please feel free to call me at (310) 656-0577 if you have any questions about ECO or our campaign.

Yours for the environment,

Ruben Aronin
Managing Director

Encl.

ECO Board of Directors: Larry Kopald, CHAIR • Tony Adamson • Ed Begley, Jr • Daniel Benzali • Bob Bernstein • Linda Blair • Steve Bornstein • Pat Brenner • Pierce Brosnan • Toni Childs • Bob Cohen • Cindy Crawford • James Cromwell • Hollace Davids • John Paul DeJoria • Cary Elwes • Scott Garen • Sara & Barbara Gilbert • Kip Gilman • Donna & Donnie Graves • Brian Grazer • Khrystyne Haje • Barry & Maureen Haldeman • Woody Harrelson • Sandra Hay • Tippi Hedren • Fraser & Marilyn Heston • Debra Hill • Bambi Holzer • Al Hornsby • Ron & Cheryl Howard • Michael Keaton • Robert Glenn Ketchum • Mick Kleber • Alan Kozlowski • Joe Lando • Marcia Lansdown • Jessica Laufer • Ed Lauter • Sharon Lawrence • Tim Matheson • Peter Max • William McCrum • Jim & Penny McGehee • Hale & Anne Milgrim • Renee Miller • Donna Mills • David Mirkin • Jeffrey Mora • Esai Morales • Nancy Morgan Ritter • Dave Mount • Mateo Neri • Olivia Newton-John • Norman Pattiz • Alexandra Paul • Laurie Peters • Shanna Reed • John Ritter • Mimi Rogers • Rick Rosenthal • David Ryer • Howard Sapper • Gregory Sater • Michele Scarabelli • Louis Schwartzberg • Gary Shafner • Keely Shaye Smith • Randi Spivak • Nancy Stephens • Ron Stone • Jim Swindel • Bob Talbot • Kit Thomas • Tim Warner • Dennis Weaver • Lance Webster • Bob Weir • Michael Weiss • Floyd Red Crow Westerman • Pete Zackery • Hans Zimmer • Daphne Zuniga

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"A Perfect Balance" :60

VO: It took billions of years. But it was perfect.

New life coming from the old. Part of it hot. Part of it frozen.

A constantly moving blend of atmospheric elements kept the thermostat in a perfect place to support the delicate balance.

It has been called a miracle. And when you see how perfectly everything works together, you realize that it is.

But today, the Earth is warming.

If it continues, what quenched our thirst will flood the land.

What filled our plates, will starve the land.

Nature is not doing it. We are.

Nature cannot stop it. We can.

But we have to start now.

Title: www.OneEarth.org

Title: ECO logo

"A Perfect Balance" :30

It's the only planet known to sustain life.

The only one whose atmosphere has been regulated perfectly by nature for millions of years.

But today, the earth is warming and nature's not doing it.

Fortunately those who created the problem have the power to create the solution.

Who are these people?

They're sitting in your seat.

Clinton Presidential Records
Digital Records Marker

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Earth Communique

NEWSLETTER OF THE EARTH COMMUNICATIONS OFFICE

E C O
EARTH COMMUNICATIONS OFFICE

FALL 1998

NEW PSA CAMPAIGN

ECO Premieres "Island Home" at Sony Pictures

PATRICK STEWART, MIMI ROGERS, JULIANNA MARGULIES NARRATE THEATRE AND TV SPOTS

ECO launched its eighth annual public service campaign "Island Home" on September 23rd with a gala premiere at Sony Studio's Cary Grant Theatre in Culver City. Among the celebrities attending the premiere were Sharon Lawrence and ECO Board members Donna Mills, Mimi Rogers, Ed Begley, Jr., and Khrystyne Haje.

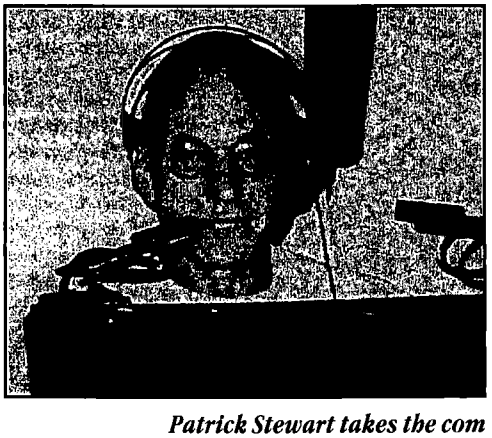
The theatrical and television PSAs were narrated by Patrick Stewart, Mimi Rogers, Julianna Margulies, and voice-over talent Nick Tate. Academy Award winner Hans Zimmer provided the music for the spots, reprising his role as guest composer. ECO also premiered three of its new radio PSAs featuring Alfre Woodard, Hank Azaria, Ed Begley Jr., and Jacqueline Obradors for the more than 300 entertainment industry executives in attendance.

Speakers at the screening included Rhino Records Co-Founder and President Richard Foos and environmental author and over consumption expert Alan Thein Durning, the Executive Director of Northwest Environment Watch.

Funded by the Richard and Rhoda Goldman Fund, "Island Home" addresses the root cause of most environmental problems: over consumption. "Island Home" reminds people everywhere to think about the impacts of their consumption on the environment. The PSA begins by showing the strain a small island would experience if it became more crowded and its limited resources were over used. It then visually extends that metaphor to our "Island Home," planet Earth, and urges viewers to "Think More and Use Less."

The campaign, which was written by ECO Chairman Larry Kopald and produced by Michael Ingram, includes 60, 30 and 20 second public service announcements for movie theaters, television and cable as well as six radio PSAs. ECO is also launching a print campaign for use in CD booklets and redesigning its website, www.OneEarth.org. The Merck Family Fund helped underwrite the CD campaign and the website.

The theatrical spots will be distributed to movie theaters in the United States and Canada this Fall and Winter. In the first part of 1999, the television spots will be translated into eight languages and distributed domestically and internationally and the radio spots will be distributed to stations in the United States and Canada. Like last year's campaign, "Island Home" is expected to be seen by more than a billion people worldwide.



Patrick Stewart takes the com to record ECO PSAs.

ECO Industry Alliance Continues Its Support

"Island Home" would not have been possible without the contributions of ECO's Entertainment Industry Alliance. For the eighth year in a row, the film for the theatrical trailers was donated by Eastman Kodak and the prints were made by Deluxe Laboratories. Both companies are founding members of the Alliance.

CONTINUED ON PAGE 2

IN THIS ISSUE

1 "Island Home" Campaign Debuts
2 Celebrity Narrators
3 Do You Really Need that Thneed?
4 "Island Home" Premiere
5 Global Resources
5 Green Cuisine
6 Behind the Scenes
7 Environmental Politics

VOL 9, NO 1

Earth Communiqué

NEWSLETTER OF THE EARTH COMMUNICATIONS OFFICE

E A R T H
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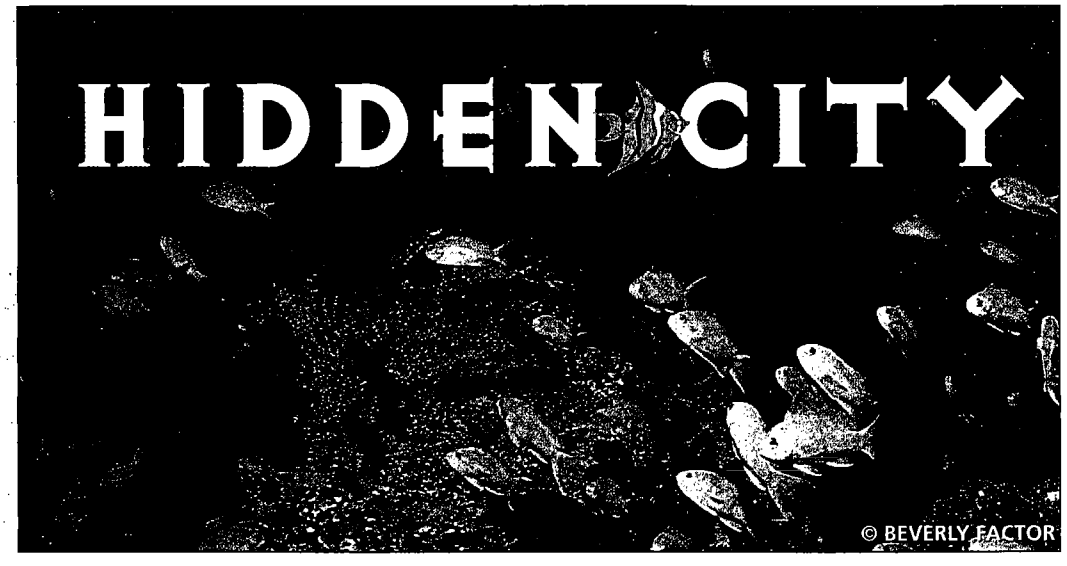
SPRING 1997



"HIDDEN CITY"

ECO's '97 Global Campaign Supports International Year of the Reef

THEATRE PSA NARRATION BY HECTOR ELIZONDO; GENE HACKMAN NARRATES TELEVISION VERSION

"Hidden City," ECO's sixth annual environmental public service campaign, kicked off with a star-studded premiere screening and party at the AMC Century 14 theatres and DIVE! Restaurant on Wednesday, April 23rd.

The campaign, which includes public service announcements for television and movie theatre screens worldwide, was created in celebration and support of the International Year of the Reef. The PSAs are designed to focus attention on the critical situation of the coral reefs and the impact their impending destruction would have on the oceans, our planet and ultimately, ourselves.

Written and directed by ECO Chairman Larry Kopald, "Hidden City" uses footage from dozens of the world's finest cinematographers to tell the story of a magical city hidden beneath the sea – the coral reef – which is home to one quarter of the world's marine species.

Theatre Spot Debuts at ShoWest

ECO's theatrical PSA once again premiered before the nation's movie theatre owners at the ShoWest Convention in Las Vegas thanks to ECO Board member Daniel Wheatcroft, President and CEO of NATO California/Nevada and President of ShoWest. After an exclusive run in AMC Theatres, "Hidden City" began playing in movie theatres across the country in April in honor of Earth Day. A 30-second version will be seen on television stations and networks nationwide beginning in June.

The theatrical version of "Hidden City" is narrated by Hector Elizondo of *Chicago Hope*. The television version is voiced by Gene Hackman. Composer Billy Mallery provided the original score for the spot, which was produced by ECO Board members Kit Thomas and Scot Garen.

888-CORAL-REEF Hosted by Jean-Michel Cousteau

World renowned oceanographer Jean-Michel Cousteau is the voice of this year's ECO toll-free hotline. Cousteau unveiled the toll-free number in February at a Press Conference promoting the International Year of the Reef with Under-Secretary of State Tim Wirth and Jim Baker, Director of the National Oceanic and Atmospheric Administration (NOAA).

The toll-free number, (888) CORAL REEF, along

CONTINUED ON PAGE 2

IN THIS ISSUE

1 Hidden City PSA Debuts
3 ECO Forms Celebrity Alliance
3 Narrators Hackman & Elizondo
4 Radio PSAs Premiere
5 Oscar Night Gala
6 ECO Teams with UNEP
6 International Year of The Reef
7 Profile: Dr. Henry Kendall

VOL 8, NO 1

Federal Performance Contracting Coalition

August 13, 1999

Roger Ballantine
Special Assistant to the President
For Legislative Affairs
112 East Wing
The White House
Washington, DC 20500

Dear Roger:

On behalf of the Federal Performance Contracting Coalition, I would like to thank you for your leadership in helping to stave off efforts to weaken the Administration's recent Executive Order to encourage energy efficiency measures in federal facilities.

We share your belief that Executive Order 13123 will maintain a focus on site-based measurement of energy savings, while recognizing the value of source-based and lifestyle cost analyses (as required by existing federal statute). Further, the Order consolidates, simplifies, and slightly expands the goals and objectives of a host of executive orders issued over the past two decades.

It has been a pleasure working with you and your staff on this issue. It has been especially helpful over the past months working with Shelley Fidler on this and other key issues. She has performed a valuable role as the conduit between the Clinton Administration and the business community working on energy savings performance contracts. Her expertise was essential in keeping EO 13123 moving through the labyrinthine process that key policy statements must undergo.

Again, thanks for your work on this. We will continue working to remove the Cochran compromise language during conference, and I'm looking forward to continuing to work with you.

With best wishes,

Michael L. Marvin
Federal Performance Contracting Coalition

Cc: FPCC Members

Duke Solutions

HEC

Honeywell

Johnson Controls

Sempra Energy Services

Viron Energy Services

York International

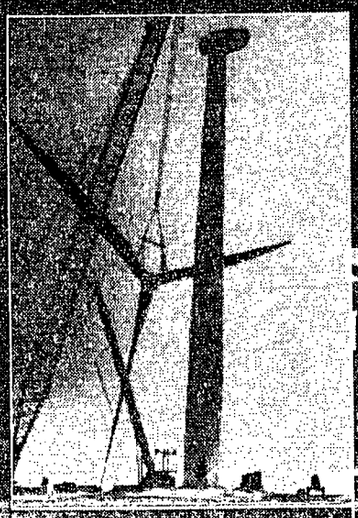
1200 18th Street, NW, Ninth Floor Washington, DC 20036 phone: 202-785-0507 fax: 202-785-0514

Our 21st Century Technologies Will Help the Environment.

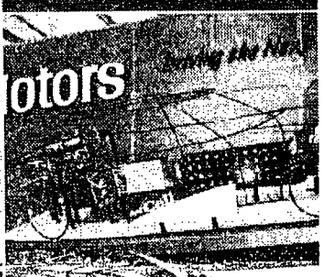
American ingenuity and imagination have long led the way to the development of innovations that improve our lives – and our environment. Today, members of The Business Roundtable are hard at work developing 21st century technologies that show great promise for virtually every sector of our economy in dealing with climate change.

A new issue paper from The BRT, *The Role of Technology in Responding to Concerns About Global Climate Change*, closely examines the opportunities and the challenges associated with the emergence of these new and important technologies. It is clear that technological innovations must be aggressively and sensibly pursued. It is also clear that their full benefits can best be realized through a long-term strategy ensuring that the private sector has the time and the resources needed. Only through prudent and considered policymaking can the technology of tomorrow begin to become a reality today.

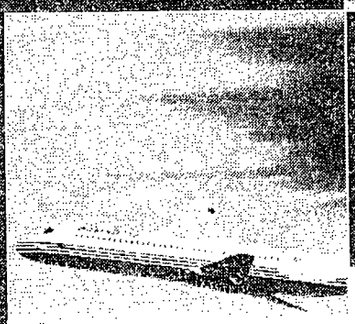
A full copy of the report is available from The BRT or log on to: **www.brtable.org.**



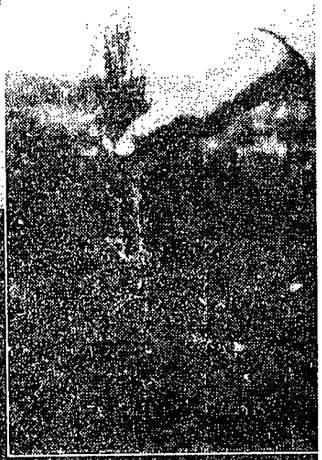
Advances in materials control systems are making the promise of renewable energy sources, such as windmills, more attainable.



Fuel cell vehicles, which can convert chemical energy directly into electricity, offer great long-term potential for reducing emissions.



Advanced materials and control systems, and emerging technologies such as "smart wings," will dramatically improve aircraft fuel efficiency.



Enhanced biomass growth will play a critical role in the removal of carbon from the atmosphere.

All We Need Is An Environment That Will Help Our Technologies.

PHOTOCOPY
PRESERVATION

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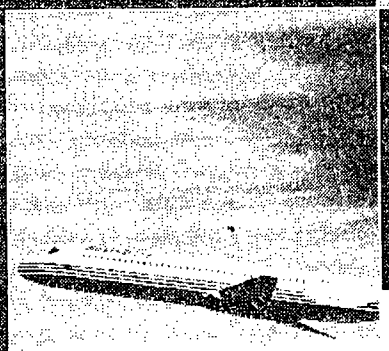

Advanced materials and control systems, and emerging technologies such as "smart wings," will dramatically improve aircraft fuel efficiency.

Fuel cell vehicles, which can convert chemical energy directly into electricity, offer great long-term potential for reducing emissions.

Enhanced biomass growth will play a critical role in the removal of carbon from the atmosphere.

All We Need Is An Environment That Will Help Our Technologies.

BRT THE BUSINESS ROUNDTABLE

[The Wall Street Journal]
[July 26, 1999 Monday]
[BRC]

PHOTOCOPY
PRESERVATION

Cement - Holnam

mike mellon, Paul Rhorse,

- % of limestone in cement matches percentage of CO_2 as a %
- Kyle Mulhall in Edgewater office working on this.
  - Blythe building a plant in St. Louis.
- Boilermakers, steelworkers represent 1/3 or 500 of labor force.

Paul A. Yhouse, President and Chief Executive Officer (Acting Chief Financial Officer), Holnam Inc.

Holnam, owned by the Swiss company Holderbank, is the largest cement producer in the United States with revenues of about $1 billion. Holnam has proposals before the Administration and state governments to reduce greenhouse gas emissions by 15% by utilizing by-products from steel and coal-fired plants in the manufacture of cement. They have prompted the interagency group looking at ways to improve Federal energy management to include these options in their program.

II. BACKGROUND

Dirk Forrister, of the White House Climate Change Task Force, has been managing this consultative effort.

In the United States, the industrial sector emits about 1/3 of total greenhouse gases. The manufacturing sector represents about 80% of the industrial sector (remainder is mining and agriculture).

Highlights on Industry and Actions

- Cement represents approximately 1.5% of total U.S. industrial energy consumption and 4.7% of U.S. industrial CO_2 emissions. Half of emissions result from energy use and half result from limestone calcination ($CaCO_3$ + Heat ➔ $CaO + CO_2$). Limestone calcination is the largest non-energy source of anthropogenic CO_2 emissions.

- The cement industry consists of firms producing Portland, masonry, prepared hudraulic, natural, lime, and oil well cements. Portland Cement comprises about 96% of hydraulic cement production, with masonry cement production making up a significant portion of the remainder. Cement production involves four main steps: quarrying and crushing, raw grinding, pyroprocessing (raw materials heated to produce *clinker*, the primary intermediate product of cement making), and finish grinding (combining clinker with gypsum or other additives to make cement). Limestone calcination occurs in the pyroprocessing step and accounts for 84% of GHG emissions. Pyroprocessing also accounts for 82% of energy use.

- In 1997, U.S. cement companies operated 118 plants, most of which were integrated facilities producing both clinker and cement and employ over 17,000 people.

- The top ten producers account for 59% of clinker capacity and production:

Holnam, Inc.- 12.4%	Essroc Materials, Inc.- 5%
Lafarge Corp.- 7.9%	Medusa, Inc.- 4.4%
Southdown, Inc.- 6%	Lehigh Portland Cement Co.- 4.1%
Ash Grove Cement Co.- 5.8%	Lone Star Industries- 4.2%
Blue Circle, Inc. - 5.1%	**California Portland Cement Company**- 3.9%

- In 1996, about 73% of all clinker was produced in the U.S. in dry kilns and 27% in wet kilns. Wet and dry kilns produce the same types and quality of cement, but wet kilns are older, less efficient, and higher emitters. Wet kilns consume about 6.5MMBtu per ton of cement, and the three types of dry kilns are long (5.8MMBtu/ton cement), preheater (4.6MMBtu/ton cement), and precalciner (4.4MMBtu/ton cement), which translates to a 11-32% improvement in efficiency. Between 1974 and 1995, the number of kilns in operation dropped by more than half from 432 to 208, while domestic production grew about 45% and the average plant size increased.

- As a result of suggestions from the industry, the Federal government is exploring opportunities for cement as part of the initiative to improve the efficiency of Federal energy management. An interagency team is examining ways in which the Federal government can promote the use of blended cement and materials substitution. Both of these options are likely to reduce greenhouse gas emissions as well as improve efficiency.

- The industry has been active participants in several Federal programs to encourage energy efficiency, most notably the Environmental Protection Agency's *Climate Wise* program, as well as the Department of Energy's Motor Challenge and other efficiency programs.

Overview of Stretch Goal

- In 1990, cement industry emissions were 19MMTce; 1998 emissions are estimated to be 22MMTce, and a *business as usual* case estimates cement industry emissions at 22MMTce in 2010.

- A 21% reduction from the BAU would be necessary to reach the 7% reduction from 1990 levels. EPA estimates that the industry could achieve 20-25% reductions below the BAU by increasing energy efficiency, utilize blended cements and material substitution, and other efforts.

- **These efforts would translate to a 5MMTce reduction from BAU.**

Primary Issues of Concern

Primary issues of concern are:

- Facilitating an increase in the market for blended cement, the proliferation of material substitutions, improved energy efficiency and support for other innovative practices that reduce CO_2 emissions;

- Possibilities for the federal government to alter its procurement practices to use more blended cements, cement made with limestone additions, and to enhance material substitutions;

- Possible role for the federal government to help secure a change in the ASTM standard for Portland Cement to allow more limestone intergrinding; and

- Plans that the federal government has to recognize the actions of companies participating in existing voluntary efforts and support greater participation in these programs.

III. EXPECTED NEXT STEPS

The Administration's objective for the fall is a compact between government and industries encompassing the four elements set forth in the first section of this memo. We will ask industries

Force including Holnam.

Outline of Major Issues Raised in Scoping Meetings

- What can be done to facilitate an increase in the market for blended cement, the proliferation of material substitutions, improved energy efficiency and support other innovative practices that reduce CO2 emissions?
- Can the federal government alter its procurement practices to use more blended cements, cement made with limestone additions, and to enhance material substitutions?
- How can the US Government help secure a change in the ASTM standard for Portland Cement to allow more limestone intergrinding?
- How can the government recognize the actions of companies participating in existing voluntary efforts such as Climate Wise and support greater participation in the program?

Recommendations for Administration's Response to Major Issues

Support Change in ASTM Standards

The ASTM process seems to be stalled by a small minority of participants. Additional avenues can be explored to try to satisfy the concerns of those particular entities that are impeding the proposed change on non-technical grounds. This strategy will see an increase in domestic capacity and a significant decrease the CO2 emissions per ton of cement.

Promote the Use Blended Cement And/Or Cement That Utilizes Appropriate Material Substitution

Cement experts at the National Institute of Science and Technology (NIST) have already produced a letter in support of using a higher proportion of blended cement. Following a review of all the ancillary outcomes on all media, the EPA could scribe a similar letter. Other appropriate agencies involved in purchasing large quantities of cement can be tasked to provide similar letters of support.

As a major purchaser of cement the federal government can increase the procurement of blended cement and/or cement utilizing material substitution by the various agencies through an Executive Order. A variety of procurement methods or strategies could be used to enhance the purchase of cement to the benefit of the climate.

An Executive Order Supplement is currently under final consideration to strengthen the existing Executive Order 12873 (1993) that includes cement purchasing guidelines as part of the Federal Government's efforts to buy recycled materials. This process is now in the final stages of review, but it may be possible to modify the Executive Order and to develop implementing guidance to further assist procurement officials in identifying and purchasing cement manufactured in a

manner that reduces overall carbon emissions. This might include providing more specific guidance on when certain types of cement should be employed based on climate concerns.

Work with state and local governments to support similar procurement strategies

The new highway bill, TEA-21, provides a great opportunity for outreach to state and local officials who will soon be contracting for road improvement projects.

Work with other major certifying organizations (i.e. AIA, ASHTO, and NIST)

There are a few key players that can influence the purchase of most of the cement in the country, but a full analysis is needed to fully research the potential for all types of cement.

Recognize corporate participation in existing voluntary programs

The American Portland Cement Alliance requested another meeting in conjunction with its annual CEO meeting on July 22. Todd Stern has been invited to this event to recognize the efforts the Climate Wise Companies have made already and promote participation by non-partners.

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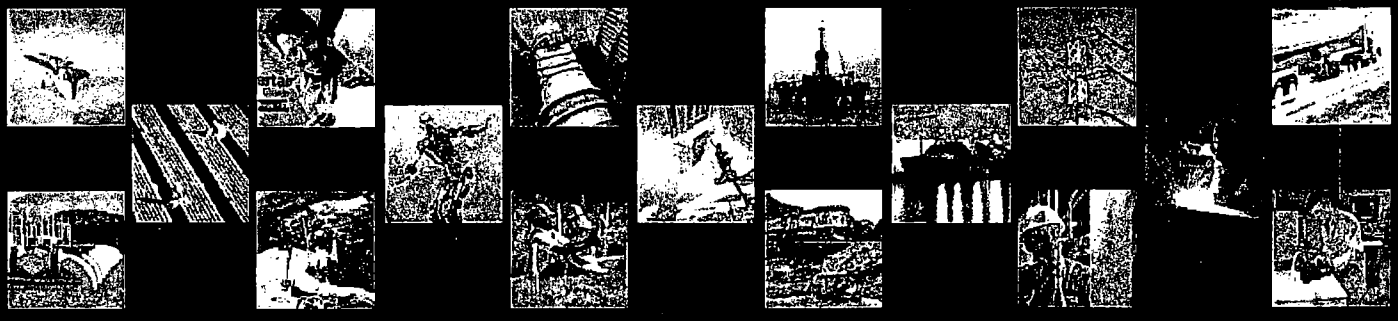
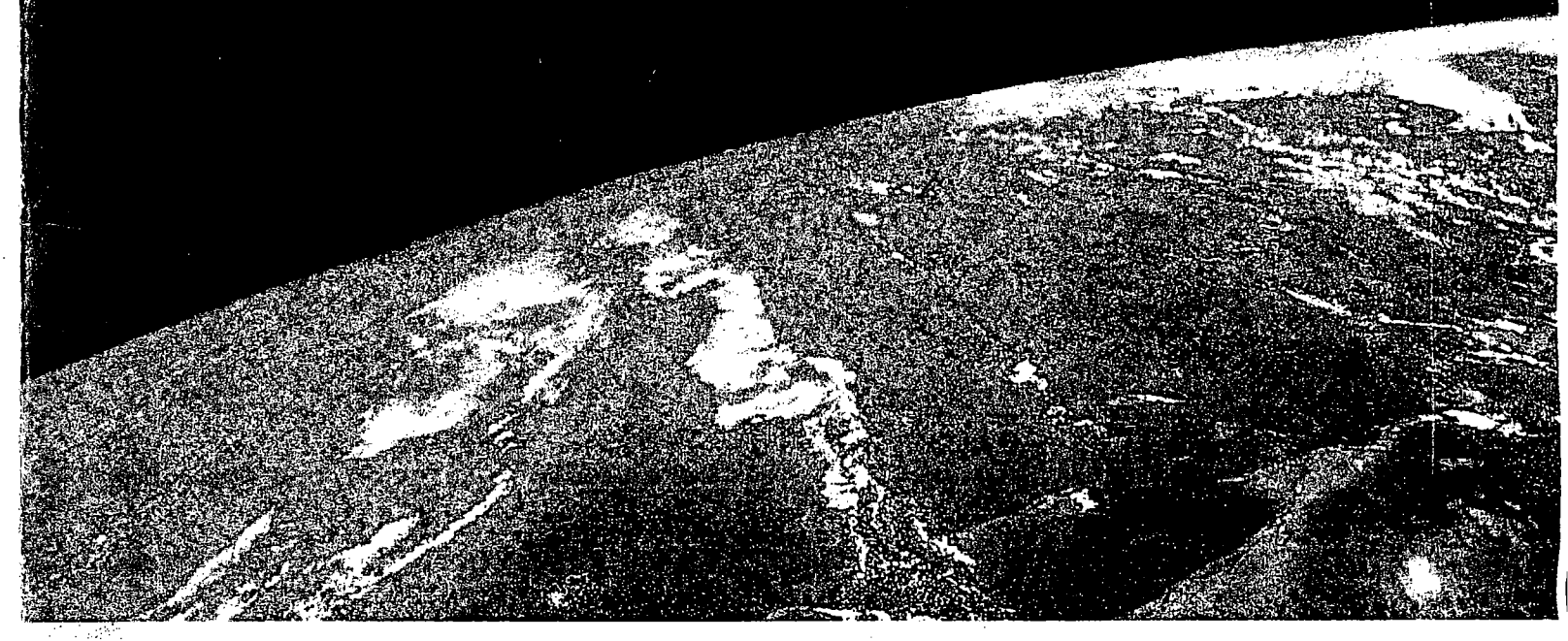
THE BUSINESS ROUNDTABLE

THE ROLE OF TECHNOLOGY IN RESPONDING TO CONCERNS ABOUT GLOBAL CLIMATE CHANGE

TECHNOLOGY IN THE 21st CENTURY





THE BUSINESS ROUNDTABLE

FACTS-AT-A-GLANCE

BRT's Global Climate Program

Background

The Kyoto Protocol sets forth specific targets and timetables for the United States and other industrialized nations to reduce emissions of six greenhouse gases believed to cause changes in the global climate system. The agreement, which was signed by President Clinton in November 1998, calls for the United States to reduce its emissions seven percent below 1990 levels by 2008-2012, an unprecedented 41 percent reduction off projected emission levels. To place the magnitude of the United States' commitment into perspective, it is the equivalent of having to eliminate *all* current emissions from either the U.S. transportation sector, the utilities sector, both residential and commercial sources, or the industrial sector.

The seven percent reduction target will require painful choices and the timetable will give the United States little time to achieve the necessary reductions, given the constitutional obligations for ratifying the Kyoto Protocol and the subsequent lengthy domestic implementation process. The Business Roundtable opposes the agreement in its current form because it is filled with holes or "gaps" that would harm the U.S. economy without significant global environmental benefit.

In view of the potential implications of the Kyoto Protocol, BRT in early 1998 launched a series of efforts to take a thoughtful, independent view of the very complex problem of climate change. As outlined below, BRT's five-part Global Climate Program aims to help policy-makers and the public gain a better understanding of the environmental benefits and economic consequences of the Kyoto Protocol.

"The Kyoto Protocol – A Gap Analysis"

Published in June 1998, this 42-page report analyzes the Kyoto Protocol in terms of its binding restrictions on the United States, and the measures it contains to help industry meet the emission-reduction targets. The report finds the Kyoto Protocol contains major "gaps" or problems, including: immediate and significant cuts in energy use; lack of developing country participation; lack of specificity on definition of "carbon sinks;" no details on compliance and enforcement; and no details on emissions trading.

The Gap Analysis findings raise fundamental questions in the areas of science, economics, and the role of technology in responding to climate change. As a result, BRT launched the following initiatives to gain a better understanding of the issues in each of these areas.

Economic Project

This two-part project was designed to analyze the Kyoto Protocol and several issues identified in BRT's Gap Analysis that require further economic study, including a number of the "free market" mechanisms proposed by the Administration. With the aid of highly credible, independent economists and BRT member company experts, the Roundtable performed the following work.

- *Principles for the Design of an Emissions-Credit Trading System for Greenhouse Gases* – Released in June 1999, this white paper evaluates what is necessary to make the Kyoto Protocol's emissions trading mechanism work. The paper lays out three broad principles for the design of a viable trading system: confidence, liquidity, and economic viability.

- *Trade and Industry Impacts of the Kyoto Protocol* – Published in June 1999, this report by W. David Montgomery of Charles River Associates and James L. Sweeney of Stanford University analyzes the potential impacts on U.S. trade and competitiveness if industry is required to meet emission-reduction targets in the agreement.

  Key findings, which have been documented in peer-reviewed literature, include: U.S. agriculture, chemical, and other energy-intensive industries risk sales losses in the five to 10 percent range in 2010, unless developing countries are included in international emissions-permit trading; and U.S. GDP losses would exceed $60 billion per year from 2010 onward, unless full participation in global permit trading creates a level playing field.

Technology Project

This effort is a review of the role of new and emerging technologies in addressing global climate change. In June 1999, BRT released a white paper entitled *The Role of Technology in Responding to Concerns About Global Climate Change.* The paper shows that although technologies hold great promise, there is no evidence to support the belief that technologies can meet the kinds of energy and carbon-reduction goals inherent in the Kyoto Protocol. The paper examines the enormous potential of technology to improve energy and resource efficiency, points out several barriers to accelerating the emergence of new technologies, and identifies performance measures that can be applied to assure proper stewardship of taxpayer investments and subsidies. BRT makes recommendations to accelerate near-term technology and foster long-term technology development.

Scientific Forum

In October 1998, BRT sponsored the Conference on Global Climate Science to help participants and member companies better understand the scientific context in which the issue of potential climate change is being discussed. BRT issued a report earlier this year summarizing 12 global climate science presentations on the following topics: What Do We Know About Climate Science?; How Can Humans Influence Climate?; How Do We Forecast Climate?; What Limits Our Ability to Forecast Climate?; What Can We Say About the Impacts of Climate Change?; Have Humans Already Influenced Climate?; and The Link Between Policy and Science.

Education Project

BRT is in the process of developing a program to educate member company employees and the public at large about the findings of our combined initiatives to examine the Kyoto Protocol, its underlying science, and implications for the U.S. economy.

To obtain copies of these reports and white papers, visit BRT's web site at *www.brtable.org*

THE BUSINESS ROUNDTABLE

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Samuel L. Maury
President

Patricia Hanahan Engman
Executive Director

July 21, 1999

Mr. Roger Balletine
Assistant to the President for Special Projects
White House Task Force on Climate Change
734 Jackson Place NW
Washington, DC 20503

Dear Mr. Ballentine:

The Business Roundtable today released a report, *The Role of Technology in Responding to Concerns About Climate Change*, which calls for two initiatives intended to bring together government and business to accelerate development and use of innovative technologies that can address global climate concerns.

The first part of the global climate effort will involve working with government to identify and remove obstacles to the innovation, commercial assimilation and dissemination of new technologies with potential to address global climate concerns, including time-consuming processes involving infrastructure, trade, and regulation. The Business Roundtable intends to prepare a report on its findings on ways to streamline governmental processes to facilitate technology development on this important issue.

Secondly, the BRT intends to bring together leaders from government, the nation's science labs and major research institutions, and leading science academicians to co-host a national summit on technology transfer in the 21st century. The counsel of government, business, research and academic communities will be important to honing research targets and opportunities as well as facilitating technology transfer to the market. A national summit will serve as a kick-off to the process of developing concrete proposals and goals by reaching consensus on steps to accelerate new technologies that address global climate change.

The just-completed BRT report is enclosed as background on the approach recommended by the nation's major employers. The Business Roundtable believes the development, large-scale commercialization, and global dissemination of innovative, long-term technologies will enable us to meet the world's growing environmental and energy needs.

Breakthrough technologies that will make a real difference in climate change will not be ready overnight. We need to focus on the long-term developments in technology that will enable us to realize such a difference.

One action already on the table that can be of substantial assistance is S 882, the Murkowski-Hagel-Byrd legislation that would fund an R&D program to spur development of energy-saving technologies. The BRT fully supports this bill, and was joined by Senators Frank Murkowski and Chuck Hagel and Congressman John Dingell in releasing the BRT study.

The BRT is excited about the promise of new technologies that can address concerns about climate change, and we are committed to turning this promise into reality. I am asking you to join with business, government, research and academic leaders to put this comprehensive approach to work on behalf of all Americans, and future generations.

Sincerely,

Robert N. Burt

Robert N. Burt,
Chairman and Chief Executive
FMC Corporation
and Chairman of the Environment Task Force,
The Business Roundtable

THE BUSINESS ROUNDTABLE

PRESS Release

FOR IMMEDIATE RELEASE

Contact: Laura Catalano
(202) 828-8867

BRT LAUNCHES PROGRAM TO SPEED CLIMATE CHANGE TECHNOLOGIES

Calls on government to clear a path for technology development, commercialization

Washington (July 21, 1999) – The Business Roundtable today launched two initiatives that seek to combine the power of government and business to accelerate development of technologies that will help address global climate concerns. BRT called on the government to clear a path for development and commercialization, emphasizing the vast potential of technologies and their role in addressing climate change.

"Fostering and accelerating the development and commercialization of new and breakthrough technologies is the most effective response to address concerns about climate change, even though it is clear there will be considerable time before we understand the range of potential impacts from greenhouse gases," said Robert N. Burt, chairman and CEO of FMC Corporation and chairman of BRT's Environment Task Force.

A new BRT report, *The Role of Technology in Responding to Concerns About Climate Change*, illustrates the enormous potential of fascinating technologies being developed in every sector of the economy. It also details the technological, cost, infrastructure, and market challenges that must be overcome before these technologies can be successfully brought to the marketplace.

"BRT believes the development, large-scale commercialization, and global dissemination of innovative long-term technologies will enable us to meet the world's growing environmental and energy needs," said Burt. "Breakthrough technologies that will make a real difference in climate change will not be ready overnight. We need to focus on the long-term technological developments that will enable us to realize such a difference."

The two BRT initiatives are designed to jump start this process, said Burt. The first initiative involves working with government to identify and eliminate regulatory, trade, informational, infrastructure, and other obstacles to rapid technological innovation, commercialization, and dissemination. BRT will prepare a report of its findings and offer concrete, practicable recommendations to clear the path for innovation.

Next, BRT plans to invite government, the national labs and other research institutions, as well as members of academia to partner with The Business Roundtable in hosting a summit on technology transfer in the 21st century.

The summit will serve as the kick-off to identify concrete proposals and goals. BRT will engage those in the public and private sectors to identify proposals for improving the process of technology transfer, with a focus on increasing the value and involvement of the private sector in commercializing new technologies. The goal of the summit is to reach consensus on actions to accelerate technology development and transfer. A business/government partnership can provide early input on research and technology transfer to accelerate the movement of new and emerging technologies into the market.

"It is my hope that these initiatives will chart a course that will enable the public and private sectors to harness the great potential of technology to help address our concerns about climate change," said Burt.

Senators Frank Murkowski and Chuck Hagel and Congressmen John Dingell and Ron Klink joined BRT today in releasing its study. Burt applauded work by the four distinguished legislators "who share our long-term vision for realizing the vast technological potential that exists in this country. They are working diligently here in Washington to create the strategic focus, the policy environment, the economic incentives, and the legislation necessary to realize this vision."

BRT pledged its full support for S 882, the Murkowski-Hagel-Byrd legislation that would fund a R&D program to spur development of energy-saving technologies. "We feel this legislation, if enacted, will go far in promoting and accelerating technology development," said Burt.

"The Business Roundtable is excited about the promise innovative technologies hold in helping solve our concerns about climate change, and we are deeply committed to turning this promise into reality – to make the 21st century the most environmentally conscious and prosperous we have ever seen."

For a copy of BRT's study, visit our web site at **www.brtable.org**

The Business Roundtable is an association of chief executive officers of leading corporations with a combined workforce of more than 10 million employees in the United States. The chief executives are committed to advocating public policies that foster vigorous economic growth and a dynamic global economy.

# # #

CAST
COALITION TO ADVANCE SUSTAINABLE TECHNOLOGY
6060 S. WILLOW DRIVE, ENGLEWOOD, COLORADO 80111 303.713.2220

Dear Chief Executive Officer:

Recently, you may have heard about the CEO Coalition to Advance Sustainable Technology (CEO CAST), a new public policy organization of CEO's who share the view that environmental stewardship is compatible with sound and competitive business practices. I am writing to you today to formally introduce CEO CAST, describe its mission, and invite you to join this unique organization. I hope that after you read the attached materials, you will better understand CEO CAST's purpose and value.

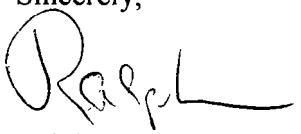
Achieving a proper balance between economic prosperity and environmental and public health concerns has always been a difficult challenge facing our government. CEO CAST was founded on the belief that innovative practices, driven by sound regulatory policies, which encourage creativity and economic efficiency, can create economic growth, jobs, and build competitive advantage.

As the twin pressures of economic and population growth place ever-growing demands on the planet's resources and environment, the innovative strength of U.S. industry can supply both solutions and opportunities. Innovative technologies lie at the center of efforts to protect the public health and environment and provide the means to supply cost effective solutions to the myriad problems facing our environment today.

Using a number of working groups, CEO CAST works to convey to businesses, the public, and to the policy makers, that economic growth and environmental stewardship are not mutually exclusive, and that environmental protection can go hand in hand with the creation of jobs, and the opening of new markets and new technologies. CEO CAST provides an open discussion forum for the industry leaders who create and use these innovative technologies and the senior government and elected officials who must choose to encourage and support such initiatives. I invite you to join this effort and look forward to working with you to develop an economic and environmental framework which will enable American industry to thrive well into the 21st Century.

If you have any questions, please contact Deana Perlmutter at (303) 295-7866.

Sincerely,



Ralph R. Peterson
President & CEO
CH2M HILL

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COALITION TO ADVANCE SUSTAINABLE TECHNOLOGY
6060 S. WILLOW DRIVE, ENGLEWOOD, COLORADO 80111 · 303.713.2220

Coalition to Advance Sustainable Technology Fact Sheet

What:
The CEO Coalition to Advance Sustainable Technology believes that innovative environmental practices, driven by sound regulatory policies which encourage creativity and economic efficiency, can create new economic growth, jobs, and building competitive advantage. Through our members' actions and experiences, CEO CAST will provide, advance and communicate models which demonstrate that innovative environmental stewardship is good business. We will serve as a sounding board to senior government and elected officials, providing recommendations which help shape sound government and regulatory policies that reinforce our beliefs.

Who:
CEO CAST is a consortium of CEO's from a broad spectrum of high technology, utility, industrial and environmental companies. Each member represents a firm or company that either develops technological solutions, or uses those advancements and innovations to achieve environmental compliance in their facilities. (See attached list).

How:
CEO CAST works to communicate the importance of technology and innovation in developing cost-effective solutions to environmental problems. The U.S. is a leader in environmental technologies and the Coalition seeks to maintain that leadership by working with the federal government, the business community, and other stakeholders. CEO CAST is organized into three subgroups, each focused on a particular area of concern:

Climate Change:

Lead: *Charles J. McDermott, CEO, The Citizens Companies*

The Climate Change subgroup will take a productive approach to addressing the issue of climate change. Our approach provides businesses with maximum flexibility in pursuing cost effective CO2 reductions and builds on management, measurement and reporting approaches common to successful firms. We will embrace five fundamental practices and will comply with some baseline performance standards. Additionally, we are developing a "First Movers" proposal designed to encourage, track, and credit companies' early efforts to meet and maintain the emission reduction standards contemplated in the Kyoto Protocol.

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Regulatory Reinvention:

Lead: Rose McKinney-James, CEO, CSTRR

The Regulatory Reinvention subgroup works on changing attitudes, regulatory processes and standards to encourage the adoption of new technologies and practices to alleviate environmental problems. This includes the development of new partnerships which bring innovative approaches into the reinvention process and outreach and mentoring by companies which have successfully utilized reinvention programs.

Exports:

Lead: Don Deieso, President and CEO, EA Engineering, Science and Technology

The export market for sustainable technologies is growing dramatically as developing nations take their place in the world economy. U.S. businesses are in a powerful position to take advantage of this great opportunity by providing the innovative and advance technologies for this purpose. The goal of the working group is to offer the Administration suggestions for removing the major regulatory, financial, and trade barriers which may interfere with increasing exports of these valuable technologies.

Research and Trade:

Lead: Bob Stempel, Chairman, Energy Conversion Devices

The R & D working group will focus on research, development and commercialization of sustainable technologies. The group will also make recommendations for improving the partnerships between industry and the national labs for developing and deploying sustainable technologies.

THE COALITION TO ADVANCE SUSTAINABLE TECHNOLOGY (CEO-CAST)

BACKGROUND INFORMATION

In December 1994, the Clinton Administration convened the first White House Conference on Environmental Technologies. As a milestone in the Administration's Technologies for a Sustainable Future Initiative, this conference provide a forum for industry leaders, policymakers, and representatives from academia, NGOs and state and local government to examine and develop policies designed to promote the development of and increase the demand for environmental technologies.

The initial conference produced the Rapid Commercialization Initiative, the Environmental Technology Verification Program, the Global Network for Environment and Technology (GNET), the Environmental Technology Trade Advisory Committee (ETTAC), and the National Environmental Technology Strategy. A series of follow-up events clearly illustrated the need for deeper industry involvement to ensure the effective implementation of the programs and goals identified in the conferences and in the national strategy.

In July 1997, a group of ten CEOs met to form a coalition to work on issues of critical interest to industry: global climate change, ozone and fine particulates, environmental technology exports, R&D, and regulatory reinvention. CEO CAST meetings since July have included Vice-President Gore, CEQ Chair, Katie McGinty, Energy Secretary Pena, EPA's Fred Hansen and other administration officials to solicit information on these issues.

The primary focus of the group is to ensure the development and deployment of innovative and cost-effective technological solutions to significant environmental problems. CEO CAST will demonstrate that aggressive environmental goals can be met without damaging the economy and that, environmental and technological leadership can create jobs, profits, competitive advantage, and export opportunities for U.S. firms.

CEO CAST membership currently includes CEOs from a variety of industry sectors. We anticipate that CEO CAST will grow to involve about 100 CEOs representing a variety of industry sections, small and large firms, and a range of expertise and interests – a cross section of American business.

There are two types of meetings held by CEO CAST: working meetings, and individual meetings. The working meetings are roll up your sleeves meetings held to work on issues and/or determine CEO CAST's course of action. The individual meetings are designed to obtain information from high level Administration and elected officials to present them our findings, reports or positions. Both meetings are of great importance and benefit to CEO CAST, as well as the individual CEO. Each member is expected to attend the meetings, although in the case of working meetings, a substitute may be sent.

THE NEED FOR SUCH A COALITION

There are few opportunities for those who innovate, develop and employ technologies and alternate strategies to effectively participate in the public policy debates surrounding environmental issues. Industry trade associations represent the position of the regulated community, while environmental and public health organizations protect their assigned interests. Frequently lost in the polarized positions and tactics of these special interest groups is a voice of industry which provides and uses these solutions. As a result, government decision-makers receive limited information on technology advancements; advancements which may lower the compliance costs of how they can adopt policies, which encourage control, monitoring, or pollution prevention measures, they are considering.

Without question, the policy discussions on environmental initiatives would be enriched by the participation of those who conceive, develop, and use alternate technologies. An open forum involving senior government officials would provide a unique opportunity for industry leaders to assist the administration in crafting a technology and regulatory agenda, shaped by industry input on a range of topics including regulatory reform, technology export, and the research development and commercialization of innovative environmental technology. Moreover, such a forum would enable the Coalition to demonstrate and communicate to decision-makers, the public and others, that environmental stewardship and economic development – done wisely – are not mutually exclusive.

OBJECTIVES AND STRUCTURE OF THE COALITION

The Coalition will provide a voice to, and be a resource for, industries, senior government officials, and senior elected officials on matters pertaining to the advancement of innovative technologies and strategies as solutions to environmental issues. The Coalition will consist of a select group of senior business leaders representing firms which either develop and provide technological solutions, or firms which have used, or would like to use, advancements and innovations to achieve more cost effective compliance in their facilities.

The Coalition will organize into working groups, which may more effectively pursue specific topics or issues of interest. The Coalition will not be structured or organized in a way, which may cause it to be considered as an advisory committee under the Federal Advisory Committee Act (FACA). Rather, the Coalition will primarily serve as a resource for senior government decision-makers. The Coalition will use its best efforts to enhance the administrative processes which impact a broad range of policies affecting the development and deployment of environmental technologies and to promote enlightened regulatory approaches which encourage economically efficient environmental solutions. Further, the Coalition will work to convey to industry, the public, decision-makers, and others that environmental stewardship and economic development need not be at odds, but rather can provide new economic growth, create new jobs, and open new markets for innovative technologies.

Those who serve in the Coalition will be guided by the principle that they are industry representatives and therefore will put the goal of good public policy ahead of the interests of their respective firms. The spirit of the group will remain constructive through the activities and proceedings following the highest order of a public-private partnership.

Partnership for Advancing Technology in Housing (PATH)
Near Term Publicity Events
Revised: May 25, 1999

Sorted by Date

Project	Location	Dates	Description/Current Status
Armory Park del Sol	**Tucson, AZ**	**Late June, 1999**	The Armory Park del Sol project represents one of the first commitments to the new Million Homes initiative as part of the Livable Communities agenda in which a blighted infill site will be developed with highly energy efficient, affordable homes using labor in part from a non-profit program to provide skills based training for homeless people. Groundbreaking on this site is scheduled for late June, 1999 and the timing is flexible.
Heather Hills *Home of the Future*	**Simi Valley, CA**	**June 28, 1999**	A PATH demonstration project sponsored by Southern California Edison and built by Beazer Homes with technical assistance by HUD. The ribbon cutting for this house is scheduled for June 28, 1999. The house features a range of innovative "green" building technologies that provide a higher performance house while reducing the cost of owning and operating the house.
Pine Ridge PATH Blitz Build	**Pine Ridge Reservation, SD**	**August 1999**	PATH will provide technical support this summer to a major "blitz build" project on the Pine Ridge Reservation in South Dakota where 50 homes will be built in the space of one week in early August and a "technology showcase" will demonstrate advanced technologies for the 350 visiting tribal leaders from around the nation. Housing conditions on Native American reservations nationwide are substandard. Pine Ridge offers an opportunity to break this cycle by promoting ways for families not only to own their own home but to live in a house that is energy efficient, comfortable and durable.
Marketable, Affordable, Durable and Entry-Level (MADE) Houses	**Bowie, MD**	**August 1999**	A major planning and design process involving builders, architects, research professionals, manufactured housing providers, product manufacturers and HUD led to the development of a design for four houses in the NAHB National Research Home Park near Washington, DC that are marketable, affordable, durable and entry-level. Groundbreaking is scheduled for August.
21st Century Townhouses in NAHB National Research Home Park	**Bowie, MD**	**Available for Press Events Anytime. 30 Minutes from DC**	Advanced housing technologies featured in the PATH program have been incorporated into a four unit townhouse project in the NAHB National Research Home Park in Bowie, MD. One of the houses features the first photovoltaic solar electric rooftop, in which the metal roofing for the house actually serves as the power plant for the home owners by converting sunlight into electricity. The solar electric rooftop blends in aesthetically with the other rooftops in the townhouse development. The HOMEBASE program is a communications infrastructure for the 200,000 companies involved in residential construction making it possible for them to learn more rapidly of the advances in technology that are becoming available.
Washington Square Seniors Townhouses	**La Plata, MD**	**Early Fall, 1999**	This is the opening of an 80-unit seniors townhome project in southern Maryland with promotional sponsorship from the Portland Cement Association. A range of innovative

Project	Location	Dates	Description/Current Status
			technologies – some of them concrete based – are featured in the units. The units are designed to require minimal utility bills, excellent indoor environment, acoustical isolation from nearby railroad tracks, resistance to high winds, and affordability.
PATH Advanced Wood Technology Demonstration House on the Mall	**Washington, DC**	**Late 1999 or Spring 2000**	The U.S. Forest Service, in conjunction with APA, The Engineered Wood Association and other participating PATH partners are planning to build a high-profile demonstration house on the Mall in Washington, DC in the fall. We expect extensive media coverage and large numbers of tours from the general public.
The International Builders Show and Exposition	**Dallas, TX**	**January 2000**	Over 70,000 builders, remodelers and product manufacturers attend the largest exposition of building products in North America each January. Advanced building products are demonstrated throughout the exposition and seminars demonstrate how to incorporate new technologies into their housing projects. This is the premier opportunity to address the 1700 member Board of Directors from around the country of the National Association of Home Builders.
The National Green Builders Conference	**Denver, CO**	**April 2000**	This is the first conference on resource-efficient construction for the mainstream home builder. It features leading-edge builders, developers, and practically minded building scientists focusing on the design, development, construction, marketing, and financing of homes that are environmentally-sensible and sought out by consumers. Over 450 builders attended in 1999.
Stapleton Airport Development	**Denver, CO**	**September 2000**	Stapleton Airport development is another National Pilot Project for the PATH program. Forest City Development was recently chosen as the developer of the site. It will be moving to land planning and building design in the coming year.
Playa Vista	**Los Angeles, CA**	**September 2000**	The press conference to announce the release of the Sustainable Development Guidelines for the Playa Vista project in Los Angeles was held on March 25. This is one of the five Presidential National Pilot sites for the PATH program. Over 500 homes in the first phase of sustainable development are scheduled to open at once in a major opening ceremony in September 2000.
Village Green	**San Fernando Valley, CA**	**No new publicity events currently planned.**	This is one of the PATH National Pilot site and is where President Clinton launched the PATH program on May 4, 1998. The Lee Group has now completed model homes for a ribbon cutting that was held on May 13. DOE A.S. Dan Reicher spoke at the event. Twenty production houses based on these advanced technology affordable model homes began construction in March.
Summerset	**Pittsburgh, PA**	**No new publicity events currently planned.**	A ground breaking ceremony was held for the Summerset National PATH Pilot Project on May 17 in Pittsburgh, PA. DOE A.S. Dan Reicher spoke at the event. Summerset is a "brownfields" site that will require environmental remediation in order to prepare the site for the sustainable development project within the city of Pittsburgh.
Civano	**Tucson, AZ**	**Houses under Construction.**	Civano is the large sustainable development project in Tucson that is one of the President's National Pilot sites for the PATH program. A community center and the models were

Project	Location	Dates	Description/Current Status
			included in a ribbon cutting ceremony in April 1999.

Trexler and Associates, Inc.

Designing Business Opportunities and Mitigation Solutions in Energy and Environment

MEMO

May 10, 1999

To: CAST Members

From: Mike Burnett

Subject: **Comparison of Lazio Discussion Draft and CAST Proposal**

I have reviewed the April 19 discussion draft of the Lazio bill. This memo provides a summary comparison of the Lazio bill and the CAST proposal.

1. **Lazio is a rate based approach which is approximately equivalent to the old CAST "Meet Kyoto" proposal.** I have come to this conclusion after algebraic analysis of both proposals. Under each approach, the baseline emissions rate is adjusted downward each year to create an annual emissions rate target. The current year emissions rate must beat this target in order to earn credits. The difference between the approaches is the extent of the adjustments involved in establishing the annual emissions target:

- CAST adjusts baseline emissions downward by 1%/year, which reflects the "business as usual" improvement rate in the overall emissions efficiency of the U. S. economy.
- The initial CAST proposal contained a "Meet Kyoto" target that adjusted the baseline emissions downward by 3%/year, which is the improvement rate necessary to put the U. S. economy on a track to meet the potential Kyoto target. This was considered by reviewers as too aggressive to attract significant voluntary business participation.
- Lazio adjusts the baseline downward by a percentage equivalent to the growth rate in the Gross Domestic Product. Assumably, the projected rate of the GDP is 2% to 3%. At a 3% growth rate, Lazio is essentially equivalent to the discarded CAST "Meet Kyoto" approach.

2. **Lazio uses physical output units, CAST uses dollars.** Lazio measures changes in output in physical units ("widgets"), while CAST measures changes in output in dollars. While CAST is based upon CO2/$ ratios, Lazio is equivalent to a CO2/widget ratio.

3. **Lazio uses "point of emissions," CAST uses "point of control."** Lazio uses a "point of emissions" focus, wherein the emissions reductions resulting from an industry's investments in

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increasing the efficiency with which it uses electricity accrue to the electricity generating company, not the industrial company making the efficiency investment. CAST uses a "point of control" focus, wherein the industry earns credits for increasing the efficiency with which it uses electricity, and the electric generating company earns credits for reducing the amount of CO2 emissions per kilowatthour generated.

4. **Lazio awards credits cumulatively, CAST awards credits annually.** Under Lazio, a company earns credits on its cumulative performance over a nine year period. Under CAST, a company earns credits annually during this period.

5. **Lazio includes notification of Congress once a "cap" has been reached, CAST has no cap but uses the sliding scale.** Lazio calls for the Administration to notify Congress when 365,000,000 tons of credits have been accrued. (This is on the order of 1% of U. S. allowable emissions during the Kyoto budget period.) CAST does not include a cap, but rather includes a sliding scale to ensure that the amount of credits earned is less than the volume of emissions reductions.

6. **Lazio awards credits to energy using equipment manufacturers, CAST provides these credits to purchaser.** Lazio includes a mechanism for awarding manufacturers of cars and energy-using equipment credits for making these more efficient. The draft bill includes a mechanism for avoiding double counting, but it is difficult to understand and needs work. Under CAST, the purchaser of the high efficiency equipment earns the credits, since its emissions rate would be reduced by the purchase.

7. **Sequestration undergoing revision.** Lazio includes language on sequestration that I have been told is under revision, so I'm not sure what is going on with this issue.

Questions on Early Action Crediting Legislation (S. 2617)

Submitted by: Coalition to Advance Sustainable Technology (CEO CAST)

Prepared by: Trexler and Associates, Inc.

February 1, 1999

The Coalition to Advance Sustainable Technology (CEO CAST), a new public policy organization of chief executive officers who share the view that environmental stewardship is compatible with sound and competitive business practices, respectfully submits the following questions regarding "The Credit for Voluntary Early Action Act (S. 2617)," introduced by Senators Chafee, Mack, and Lieberman on October 2, 1998.

CEO CAST is submitting these questions as a follow up to our January 20 meeting with Mr. Dan Delich, United States Senate Committee on the Environment and Public Works, the purpose of which was to discuss incorporating the CEO CAST early action crediting proposal into a revised version of S. 2617 to be submitted for the current Congressional session. The purpose of this submission is to ensure that CEO CAST accurately understands the early action crediting proposal embodied in S. 2617. This submission 1) presents a question regarding the treatment of an issue by S. 2617, 2) offers a tentative answer based upon CEO CAST's understanding of S. 2617, and 3) provides an answer as to how CEO CAST's "First Movers Coalition Climate Change Early Action Crediting Proposal" addresses the issue. It is felt that by structuring this submission in this format, CEO CAST is most effectively communicating its understanding of these issues, thereby enhancing the Senate staff's ability to respond to these questions. Please note that one of our goals with this submission is to clarify our understanding of the proposed legislation; it is possible that in some instances, our interpretation may not be aligned with the intent of the proposed legislation.

CEO CAST believes that it is important to focus on the voluntary nature of any early action crediting program, and to structure such a program so as to allow growing companies to participate without being penalized for the fact that they are supplying desirable products or are more efficient than their competitors, and so as to minimize the inappropriate awarding of credits to companies whose absolute emissions are falling simply to reduced economic activity. Furthermore, the "action" in early action crediting should be a precursor to receiving a credit, and any early action program should place the opportunity to earn credits in the hands of the entity having the most effective control over the affected emissions.

CEO CAST also believes that the industrial sector, under a properly designed early action crediting program, is in a position to significantly contribute to U. S. greenhouse gas (GHG) emissions reductions. The industrial sector is the largest end-use source of GHG emissions, exceeding even transportation. Industrial emissions embodied in the electricity generated to meet industrial needs is the largest source (over 1/3) of industrial end-use emissions, exceeding the emissions from industrial natural gas use or equaling the combined emissions from industrial coal and petroleum use (See the attached graph). Industrial electricity-related emissions are also approximately equivalent to the total direct emissions from the combined residential and

commercial sector. By any measure, industrial electricity-related emissions are significant. It is therefore important to structure any early action program to allow industry to earn credits for improving the efficiency with which it uses electricity. Such an approach allows industry to take a holistic approach toward evaluating its efficiency and emissions reductions options, which will tend to optimize efficiency investments. Finally, an industry should be able to earn credits for its electricity-related emissions without entering into contracts with its electricity suppliers.

Please note that we use the word "industry" as shorthand for an industrial company and "utility" as shorthand for an electric generating company supplying electricity to the industry.

1. **Which basic type of GHG mitigation is given highest priority by the proposal, efficiency in resource use or substitution of lower-carbon sources? Does the proposal provide equal encouragement to both end-use efficiency and repowering to mitigate electricity-related GHG emissions?**

Tentative Answer: The proposed legislation appears to be centered on substitution of lower-carbon sources, while it provides only an awkward mechanism for encouraging efficiency in resource use. More specifically, it appears to place a higher priority on repowering of high-carbon power plants than on efficiency use of electricity by the end user. It does not appear to provide equal encouragement to both end-use efficiency and repowering.

CEO CAST Proposal: The CEO CAST proposal places equal priority on encouraging efficiency in resource use, renewable energy, repowering, and sequestration. The proposal places the opportunity to earn credits in the hands of the entity with the greatest ability to improve emissions efficiency. Such efficiency can be achieved by industry at the end-use level, by utilities improving power plant operations and repowering to lower-carbon fuels, or by either industry or utilities through investment in renewable energy, and through sequestration.

2. **Who gets credit for investments in electrical end-use efficiency paid for by an industry?**

Tentative Answer: The proposed legislation appears to give the utility credit for the emissions reductions from end-use efficiency investments made by an industry. This is because the proposal uses a "point of emissions" approach. According to a footnote in the explanatory material, a utility can get credit for industrial efficiency improvements for which it pays, so long as the industry consents. But even absent agreement, the emissions reductions accrue to the utility, regardless of who pays for them. The explanatory material that other demand-side management could be covered through similar arrangements, but it is not clear how such arrangements would work. Absent a mechanism which places the credits associated with industrial end-use efficiency improvements with the industry, it is difficult to see how this mechanism would work. Since the emissions reductions reside with the utility by default, a utility would only have to refuse to assign credits to an industry in order to receive the credits, for which it had invested nothing.

For an industry to gain credits, it would need to negotiate a contract with its utility. However, as the electric industry is restructured, the number of power suppliers used by a single industrial company will likely increase significantly, and it will become increasingly difficult to determine which electric generating company is the source of its electricity. But in order to gain credits, an industry would be forced to identify and negotiate with all of the companies that are the ultimate source of generation of its electricity. This would likely prove to be impractical.

CEO CAST Proposal: The CEO CAST Proposal allows an industry to earn credits for investing in energy-efficient electric end-use equipment. A utility may enter into an agreement with a utility to provide funding for the equipment in exchange for the credits. The "point of control" focus" provides a logical separation between the utility and industry by allowing each to earn credits for taking the actions most within its sphere of control: repowering and power plant efficiency improvements for the utility and end-use efficiency for the industry.

3. Who gets credit when an industry purchases new energy efficient equipment?

Tentative Answer: The proposed legislation appears to provide an alternative mechanism by which credits for the purchase of new energy efficient equipment would go to the manufacturer rather than the industry. This is despite the fact that the industry would likely be charged a premium for the higher efficiency equipment. While the explanatory material uses autos and certain appliances as examples, not such restriction is contained in the proposed legislation.

If such an alternative proposal is not limited, it would be possible to consider all industrial GHG-emitting processes as occurring at the point of end use. If such an approach were applied to all industrial processes, then the credits associated with all industrial efficiency upgrades would accrue to the manufacturer of the efficient equipment, not the industry purchasing the equipment.

In addition, the proposed legislation appears to be inconsistent in that the crediting of the manufacturer rather than the purchaser of efficient new equipment is applied to end-use equipment only, not electric generating equipment. Thus, while a utility purchasing an efficient gas turbine would earn the resulting credits, an industry purchasing efficient end-use equipment would not.

Finally, if the alternative mechanism is not enacted, then the credit would go to the electricity generator, not the consuming industry. For example, an industry purchasing a state-of-the-art fleet of "certain appliances" would reduce electricity consumption, but would not earn credits. Rather, the emissions of its electricity supplier would be reduced, and the supplier would earn the credits.

This would even be the case when an industry displaced its electricity purchases through either direct ownership in a renewable electricity plant or through purchases of "green" power. In either case, the credits apparently would accrue to the original supplier of electricity, despite the significant increase in cost born by the industry resulting from its involvement in renewable energy.

In summary, it appears that the credits for industrial investments in energy-efficient equipment would accrue either to its electricity supplier (as a default) or to its equipment supplier (in the alternative case), not to the industry purchasing the equipment, assumably at a higher price.

CEO CAST Proposal: The CEO CAST proposal allows an industry to earn credits for its investments in energy-efficient equipment and allows an electric generating company to earn credits for its investments in energy-efficient generating plants. The manufacturers of energy-efficient equipment do not earn the credits.

Renewable electricity investments or purchases by an industry earn credits for the industry. In fact, in order to encourage the development of renewable energy technology, the CEO CAST proposal provides a 10% bonus for emissions reductions from renewable energy. Credits from renewable energy investments accrue to an electric generating company if the renewable electricity is melded into its general rate and not sold at a premium as "green power.

For equipment and automobile sales to the residential sector, which is not anticipated to participate in the early action program to a sizable degree, it might be appropriate to credit the manufacturer for emissions reductions due to efficiency improvements, if this is necessary to stimulate such improvements.

4. Does the proposal encourage industry to focus on both direct and indirect emissions when considering efficiency investments?

Tentative Answer: The proposed legislation appears to encourage industry to focus on direct emissions when considering efficiency investments. The emissions reductions from electricity-related efficiency gains are credited to the electricity supplier, while those relating to the industry's direct emissions from natural gas, petroleum, and coal are credited to the industry. This treatment will tend to cause an industry to focus more on efficiency improvements related to its direct emissions and less on those related to electricity. Such a piecemeal approach is likely to result in suboptimal efficiency investments.

CEO CAST Proposal: The CEO CAST proposal allows an industry to consider efficiency investments to reduce its direct and electricity-related emissions on a parity basis, since both types of emissions reductions accrue to the industry. This holistic approach will more likely optimize efficiency investments.

5. What is the profile of the type of company most likely to be attracted to participate in the proposed voluntary early action program?

Tentative Answer: The proposed legislation appears as if it would be most attractive to coal-burning utilities planning to both meet growth and replace existing power plants with gas turbines. The proposal is neutral to new growth, as long as gas turbines are used. Thus, the prerequisite for participation is building new turbines to meet load growth. Utilities meeting new growth with turbines will be able to earn credits by improving the efficiency of their existing

power plants, by repowering to lower carbon fuels, or by employing offsets. Utilities planning to use coal to meet load growth would be discouraged from participating, as would those likely to lose existing low-carbon sources, such as hydroelectric and nuclear power. These likely nonparticipants would need to employ a strategy of purchasing offsets to earn credits under the program.

The growth provision of the proposal allows a company to earn credits for reducing the emissions from its existing block of generation, so long as its growth is met by new gas turbines. Thus, a company could earn credits and still emit more than in its base year.

Another type of company that would be attracted is a high carbon utility which planned to grow no further and shut down its existing facilities. Such a utility could gradually reduce its generation as its customers improved their efficiency, and thereby earn ton-for-ton credits for the reductions paid for by its customers.

CEO CAST Proposal: The CEO CAST Proposal would be attractive both to growing industries and growing utilities, but would be less attractive to companies in either sector that were undergoing reduced economic activity.

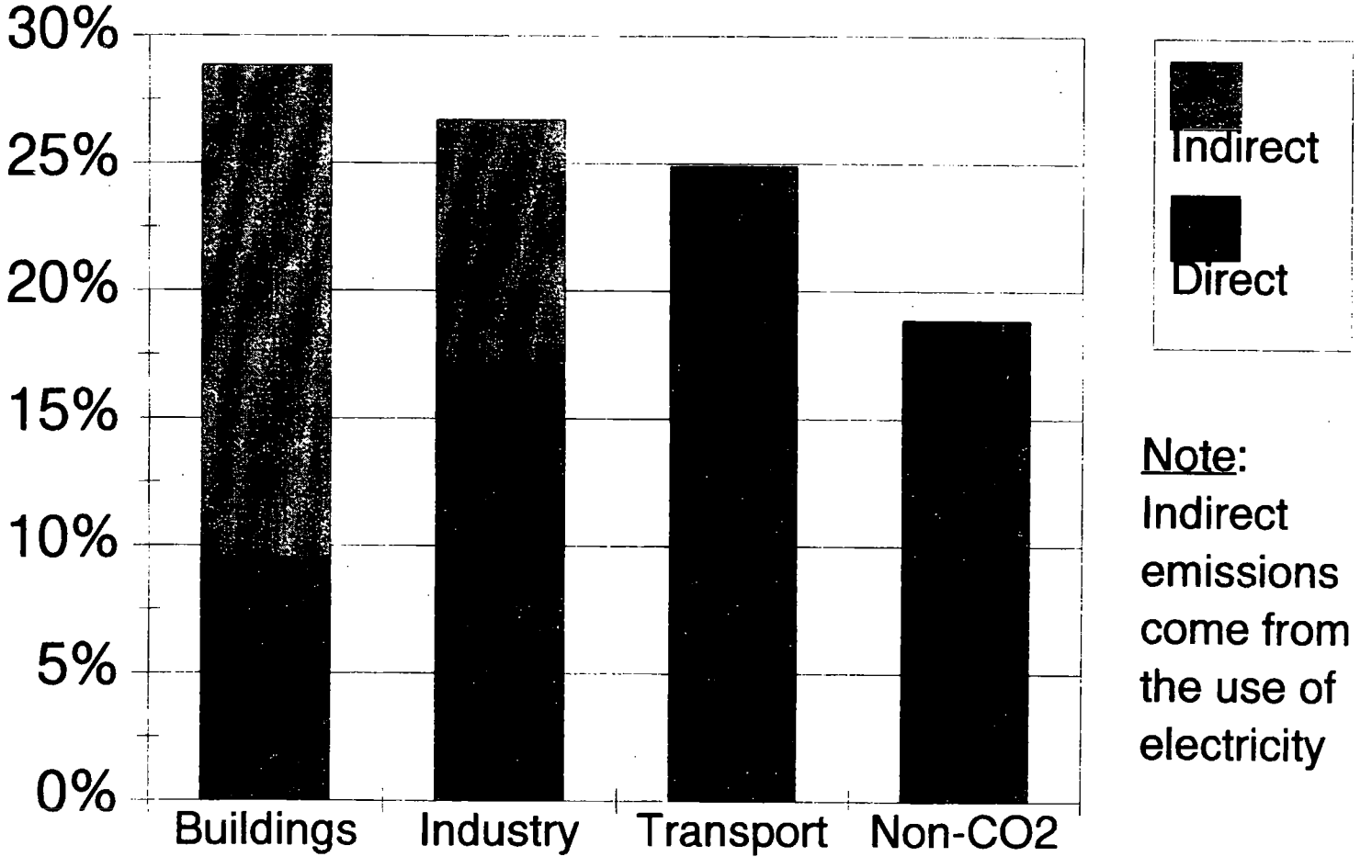
6. How is displacement of emissions from program participants to nonparticipants handled? How is displacement of emissions among participants handled?

Tentative Answer: The proposed legislation allows the earning of credits for the net emissions reductions for displacement of emissions from participants to nonparticipants. However, there appears to be a potential problem with the treatment of displacements among program participants. A utility who shuts down a coal plant and replaces it with a gas turbine gets credit for all of the emissions reductions associated with the shut down, not just the difference between the coal plant emissions and the gas plant emissions. Similarly, a utility could shut down a coal plant and choose not to replace it, earning full credit, while another utility could build a new gas turbine and not affect its ability to otherwise earn credits. In either case, more credits are awarded than net reductions occur in the atmosphere.

CEO CAST Proposal: The CEO CAST Proposal contains accounting rules for changes in vertical integration, including mergers, divestitures, and out-sourcing, which act to prevent "gaming" to gain inappropriate credits. CEO CAST would view "displacement" to non-participants as a form of out-sourcing, and use a baseline adjustment to prevent the awarding of undeserved credits. Under the CEO CAST Proposal, a utility shutting down a coal plant and replacing it with a gas turbine would show an emissions reduction equal to the difference between the two.

Percent of US GHG Emissions by Sector

Shows Direct & Indirect CO2 Emissions



Note: Indirect emissions come from the use of electricity

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CEO COALITION TO ADVANCE SUSTAINABLE TECHNOLOGY

(CEO CAST)

CLIMATE CHANGE

EARLY ACTION CREDITING PROPOSAL

Operating Plan for the Partnership for Advancing Technology in Housing (PATH) Program

February 15, 1999

Operating Plan for the Partnership for Advancing Technology in Housing (PATH) Program

I. Background

The Partnership for Advancing Technology in Housing (PATH) is a voluntary initiative that seeks to accelerate the creation and widespread use of advanced technologies to radically improve the quality, durability, environmental performance, energy efficiency, and affordability of our Nation's housing. It follows a 3-year, government and industry process to establish National Construction Goals for the residential construction industry. PATH program goals build on the consensus set of goals that were established through the National Construction Goals process and are documented in *Building Better Homes at Lower Costs: The Industry Implementation Plan for the Residential National Construction Goals.*

President Clinton formally launched the PATH program on May 4, 1998, at an affordable housing demonstration site in Los Angeles. Joining the President in launching the program was Donald Martin, the 1998 President of the National Association of Home Builders.

In support of this important initiative, Congress appropriated $10 million in the U.S. Department of Housing and Urban Development (HUD) budget for FY 1999. This $10 million, by itself, is not the entire PATH program. These funds will be used to leverage other private and public efforts, to coordinate research planning and implementation, and to disseminate technical information to the housing industry. The Conference Report requires that HUD "cooperate with other Federal agencies and the housing industry, and to engage in PATH activities that will provide research, development, testing, and engineering protocols for building materials and methods, as described in the Industry Implementation Plan of the Residential National Construction Goals." The conferees further directed HUD "to furnish the Veterans Administration (VA), HUD and Independent Agencies subcommittees with an operating plan for PATH, including specific and measurable goals, no later than December 31, 1998, and a draft evaluation report describing progress made toward meeting those goals no later than April 30, 1999." This operating plan incorporates input from HUD, the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), the U.S. Department of Commerce (DOC), the U.S. Department of Agriculture (USDA), the U.S. Department of Labor (DOL)/OSHA, the Federal Emergency Management Agency (FEMA), the U.S. Department of Transportation (DOT), and the National Science Foundation (NSF), in addition to manufacturer, builder, and remodeler input from the housing industry.

II. Management Plan

The PATH program is managed by HUD. Day-to-day management of the program is provided by a Director and his/her staff. The Director reports to the Assistant Secretary for Housing/FHA Commissioner. To accelerate the use of PATH technologies in its programs, HUD has established an intraagency working group composed of representatives from HUD's housing programs that will identify areas for cooperation. This group has been meeting monthly since November 1998.

Leadership of the overall policy direction for PATH is provided by HUD and DOE in cooperation with the PATH Interagency Council (PIC), composed of senior representatives from DOE, HUD, EPA, FEMA, DOC, and USDA. The PATH Director serves as executive secretary to PIC, which meets quarterly, beginning in November 1998. The purpose of the PIC is to provide Federal policy guidance; to monitor PATH progress, including individual agency contributions to PATH; and to identify targets of opportunity for participation by principals.

In addition to PIC, a Federal agency working group—with representatives from all the Federal agencies participating in PATH—has been established to facilitate day-to-day coordination of Federal activities pertaining to the program. The working group supports PIC in developing policy guidance for PATH, identifies individual agency contributions to PATH, establishes Federal agency technical assistance teams for specific PATH projects, and promotes PATH goals and initiatives within individual agencies. The Federal agency working group meets monthly and functions as a task force of the Construction and Building Subcommittee of the National Science and Technology Council, under the overall direction of the PATH Director. Secretariat duties for the working group are provided by the Secretariat for the Construction and Building Subcommittee.

A PATH Coordinating Council (PCC)—made up of representatives from the homebuilding, product manufacturing, insurance, and financial industries, in cooperation with PATH's Federal agency partners—provides general guidance to PATH management. The PCC has met twice and will continue to meet three times per year, with at least one of the meetings organized for and attended by senior principals from the participating organizations. The PCC's purpose is to provide private-sector input to PATH programs, to participate in PATH initiatives, and to stimulate industry to address PATH goals.

In conformance with congressional direction, HUD is developing a data collection and evaluation plan for PATH in cooperation with agency and private-sector partners. This data collection plan and evaluation criteria will provide the basis for a draft evaluation report due to Congress by April 1999.

III. Objectives and Goals

The objectives of the PATH program are to improve the quality, affordability, durability, and energy efficiency of today's new and existing homes; to strengthen the technology infrastructure of the United States; and to help create the next generation of American housing. These objectives and specific goals were developed by a residential working group convened to apply the National Construction Goals to the residential sector of the construction industry.

The residential sector working group convened a series of industry and government meetings to develop strategies that would help achieve the National Construction Goals. The group developed seven specific strategies and a set of action plans to help government and industry to achieve the national goals. This framework was used by the Administration to develop the PATH goals set forth by the President. The PATH program sets ambitious but achievable goals to be met by the year 2010.

During the next decade, the partnership aims to develop approaches, innovative housing components, designs, and production methods that will reduce by 50 percent the time needed to

move quality technologies to market. These technologies will make it possible to produce housing that is affordable and attractive. At the same time, these new technologies will, by the year 2010:

- Reduce the monthly cost of new housing by 20 percent or more.
- Cut the environmental impact and energy use of *new housing* by 50 percent or more and reduce energy use in at least 15 million *existing homes* by 30 percent or more.
- Improve durability and reduce maintenance costs by 50 percent.
- Reduce by at least 10 percent the risk of loss of life, injury, and property destruction from natural hazards and reduce by at least 20 percent residential construction work illnesses and injuries.

A baseline document was prepared for the PATH program that pulls together readily available data to help measure progress toward meeting these goals. This report, PATH *Baseline Data and Information Resource Guide,* is enclosed. Because much of the data is collected on a regional basis, we can tailor solutions that will match regional variations in climate and customs.

IV. Action Plans

Action plans for achieving these program goals are described below. The roles of potential PATH partners for each goal are also presented.

1. Reduce Cost of New Housing

Goal: By the year 2010, reduce the monthly cost of new housing by 20 percent or more.

Approach: Develop new technology and accelerate the use of existing technology that can reduce the planning, design, construction, operation, maintenance, repair, and replacement costs of housing, including technologies that can reduce costs through reductions in cycle time and technologies that increase quality and durability.

Action Items:

INITIAL

Technology Development and Evaluation

1. Challenge PATH partners and the housing industry to invest in coordinated research, development, and demonstration activities that will help to achieve PATH goals.
2. Put in place a process for recognizing significant advancements in technology, land use, and construction practices that will help achieve PATH goals and promote their adoption by the building industry.
3. Track and evaluate emerging technologies and alternative materials for their potential to reduce housing costs (first costs and life-cycle costs).

4. Develop a model for identifying and testing new technologies that, if accepted into practice, would help achieve PATH goals.
5. Work with manufacturers to test models for new technology prototypes.
6. Sponsor fundamental research through NSF at academic institutions that could lead to breakthrough technology applications relating to PATH goals.
7. Work with HUD program offices (Public Housing, Indian Housing, Community Planning and Development) to identify suitable HUD-assisted projects that can be PATH demonstrations and pilots, with near-term technical assistance to incorporate PATH technologies in new and rehabilitated housing on the Pine Ridge Reservation in South Dakota, various Colonias sites, and disaster mitigation in Puerto Rico after Hurricane Georges.
8. Conduct demonstrations of technologies that fit PATH goals relating to housing affordability.
9. Coordinate activities with DOE's Building America program (see Goal 2).
10. Provide technical assistance to identified PATH national pilot projects.

Federal Program Outreach/Regulatory Streamlining

11. Work with program offices to modify forthcoming NOFAs (Notices of Fund Availability) to make use of appropriate PATH technologies as a factor for selection.
12. Work with HUD program offices to review regulations and guidance material to encourage use of new technologies.
13. Develop a strategy and implement a targeted dissemination program to educate housing authorities, nonprofits, and other HUD grantees about the availability and proper application of appropriate PATH technologies.
14. Identify codes and standards and legal and institutional issues that will either help to accelerate adoption, or are impediments to adoption. More specifically, explore with the housing industry new or improved insurance and other programs that can reduce the fear of risk and the resulting liability that may result from the use of innovative building products.
15. Coordinate activities with EPA's ENERGY STAR® Homes program (see Goal 2).
16. Conduct an aggressive program of informational outreach to communicate program results and direction to the housing industry and the general public.

Testing and Evaluation

17. Conduct laboratory and short-term field testing and communicate the results and recommendations for product improvements back to manufacturers.
18. Deliver technical assistance to companies in making necessary improvements to their products so that they can gain code and market acceptance with their innovative products and systems.
19. Conduct evaluations and document the costs and performance attributes of PATH technologies that have been incorporated into recently completed demonstration projects.

Ongoing Activities

Technology Needs Assessment/Form PATH Partnerships

1. Develop a "technology roadmap" to identify technological advances and a strategy to meet PATH goals, and form partnerships between government and industry to focus on high-priority industry needs.

2. Track and evaluate emerging housing and land-use technologies and alternative materials for their potential to reduce housing costs (first costs and life-cycle costs).
3. Challenge private-sector and public-sector partners to invest in the necessary R&D to create breakthroughs in technology that can be brought into practice by 2010.
4. Develop partnerships with manufacturers and builders to develop and test new technologies that can help meet PATH goals.

Field Testing/Demonstrations

5. Conduct extensive field testing and evaluations with builders, remodelers, and product manufacturers on the installation and field performance of next-generation innovative products in meeting PATH goals.
6. Develop wide-ranging product and systems demonstrations throughout the U.S. in conjunction with local communities to evaluate methods for streamlining acceptance of advanced technologies and communicate the results to the industry and the general public.

Industry Outreach/Education

7. Conduct an aggressive program of building industry outreach through HOMEBASE, the USDA Cooperative Extension Service, and other vehicles to communicate results of the program to potential users.
8. Develop and evaluate methods for accelerating adoption of new housing technologies by builders and consumers.
9. Develop programs of education and training to show builders and remodelers how to incorporate the high-priority PATH technologies into practice.

Program Resources:	***Role:***
HUD	Identify high priority technologies Field testing/evaluations Wide-ranging demonstrations Dissemination of results
USDA	Technology identification/development Needs assessment Technology transfer
DOE	Technology development Technical evaluation and testing
EPA	ENERGY STAR® Homes program and labeling
DOC/NIST	Program evaluations Evaluation criteria Test methods Technical analysis Benchmarking environmental performance Streamline building regulatory process

Product manufacturers	Product development Prototype testing/evaluation
Builders/Remodelers	Identify technology needs Develop innovative practices Installation assessments Market assessments

Evaluation:

Baseline housing cost information is contained in the PATH report entitled *Baseline Data and Information Resource Guide,* published on May 1, 1998, and available through the U.S. Department of Housing and Urban Development. Performance measures to assess the progress toward achieving PATH goals related to monthly housing costs will use, among others, the data sources contained in this report.

2. Energy and Environmental Impact

Goal: By the year 2010, cut the environmental impact and energy use of *new housing* by 50 percent or more and reduce energy use in at least 15 million *existing homes* by 30 percent or more.

Approach: Focus on the development and evaluation of advanced, energy-efficient building technologies and approaches that can improve the energy performance and reduce the environmental impact of new and existing housing without negatively affecting housing affordability, durability, or indoor air quality.

Action Items:

INITIAL

Baseline Assessment/Technology Evaluation

1. Develop an environmental baseline that will enable the measurement of progress toward achieving PATH environmental goals.
2. Develop approaches for incorporating energy efficiency improvements into the remodeling of *existing* residences.
3. Evaluate emerging technologies for their potential to reduce home energy use without raising costs or negatively affecting durability or indoor air quality.

Technical Assistance/Demonstrations and Pilots

4. Deliver technical assistance to companies to make necessary improvements to their products in order to gain code and market acceptance with their innovative products and systems.
5. Deliver technical assistance to builders and home systems providers on energy-efficient construction practices that do not diminish indoor air quality.

6. Coordinate activities with the EPA ENERGY STAR® Homes program and DOE's Building America program.
7. Provide technical assistance to identified PATH pilot projects.
8. Conduct evaluations and document the costs and performance attributes of PATH technologies that have been incorporated into recently completed housing projects with Federal sponsorship.
9. Evaluate and delineate the appropriate role of deconstruction as an approach to reducing waste and recycling building materials.
10. Work on the Green Builder Model program and the Green Builder Conference scheduled for April 1999.

ONGOING

Needs Assessment/Form PATH Partnerships

1. Develop a "technology roadmap" to identify technological advances and a strategy to meet PATH energy and environmental goals, and form partnerships between Government and industry to focus on high-priority industry needs.
2. Challenge private-sector and public-sector partners to invest in the necessary R&D over the longer term to create breakthroughs in technology that can be brought into practice by 2010.

Field Testing and Evaluation

3. Conduct extensive field testing and evaluations with builders, remodelers, and product manufacturers on the installation and field performance of next generation innovative products in meeting PATH energy and environmental goals.
4. Institute a comprehensive program to achieve the targets for existing buildings.
5. Develop appropriate test methods for the evaluation of indoor emissions used in residential construction.

Conduct Demonstrations and Pilots

5. Develop wide-ranging product and systems demonstrations throughout the U.S., incorporating high-priority PATH technologies. Evaluate methods for streamlining acceptance of advanced technologies and communicate the results to the industry and the general public.
6. Provide technical assistance to identified PATH pilot projects.
7. Assess and compare emissions from materials used to construct residences.

Industry Outreach and Education

7. Perform regular evaluations of PATH program success in achieving goals.
8. Conduct an aggressive program of building industry outreach through HOMEBASE, the USDA Cooperative Extension Service, and other vehicles to communicate results of the program to potential users.
9. Develop education and training programs to show builders and remodelers how to incorporate the high-priority PATH technologies into practice.

Program Resources:	*Role:*
HUD	Identify high-priority technologies Field testing/evaluations Wide-ranging demonstrations Dissemination of results
DOE	Technology identification/development Field testing/evaluations Wide-ranging demonstrations Evaluations relating to energy use Dissemination of results
EPA	ENERGY STAR® Homes program Builder/remodeler/finance outreach Develop sales and marketing tools Develop environmental baseline Develop Model Green Builder programs Field testing/evaluations (climate change/IAQ) Construction waste/deconstruction programs Evaluations relating to environmental performance Research and demonstration efforts on indoor air quality
USDA	Technology development (VOC reduction) Technology transfer
DOC/NIST	Test method development Technical analysis Performance standards Benchmarking environmental performance Cybernetic building system measurements Advanced insulation measurement test methods
Product manufacturers	Product development Prototype testing/evaluation
Builders/Remodelers	Identify technology needs Develop innovative practices Installation assessments Market assessments

Evaluation:

In addition to the baseline information contained in *Baseline Data and Information Resource Guide,* published on May 1, 1998, and available through the U.S. Department of Housing and Urban Development, DOE's Energy Information Administration gathers extensive data on energy usage in residential housing. Performance measures to assess the progress toward achieving PATH goals related to energy costs will use, among others, the data sources contained

in this report. The *Baseline* report points out the lack of good current data on the environmental performance of housing, which will make it difficult to quantify improvements in the environmental performance of housing.

3. Improve Durability and Reduce Maintenance Costs

Goal: By the year 2010, improve durability and reduce maintenance costs by 50 percent.

Approach: Focus on developing an understanding of how building products will perform over time—by themselves and when they are integrated into building systems—and how more durable products can reduce maintenance requirements for homeowners.

Action Items:

INITIAL

Needs Assessment/Technology Evaluation

1. Analyze problems and issues that have been raised by builders and remodelers, placing calls to the HOMEBASE Hotline to determine high priority areas of need.
2. Conduct a statistical survey of the existing housing stock to identify the magnitude and occurrence rates of various performance problems in existing housing.
3. Evaluate alternative materials that can improve the durability of building systems while reducing homeowner maintenance requirements.
4. Evaluate emerging technologies for their potential to prolong the life of residential structures.
5. Conduct evaluations and document the costs and performance attributes of PATH technologies that have been incorporated into recently completed demonstration projects.

Field Testing and Analysis

6. Conduct research to improve performance of exterior building products.
7. Conduct extensive field testing and evaluations with builders, remodelers, and product manufacturers on the installation and field performance of innovative products and construction practices that contribute to enhanced durability and reduced maintenance and repair.
8. Based on the results of previous evaluations, identify a set of high-priority technologies that, if accepted into practice, would help achieve PATH durability goals.
9. Develop wide-ranging product and systems demonstrations throughout the U.S. incorporating high-priority PATH technologies. Evaluate methods for streamlining acceptance of advanced technologies and communicate the results to the industry and the general public.

ONGOING

Performance Assessment/Technology Development

1. Develop methods to determine long-term performance of products utilizing short-term test procedures and standardize them through the ANSI and ASTM processes. Test these procedures on innovative products promising durability and maintenance improvements.

2. Develop a " technology roadmap" that can identify technological advances and strategies needed to meet PATH durability goals and form partnerships between Government and industry to focus on high-priority industry needs.
3. Challenge private-sector and public-sector partners to invest in the necessary R&D to create breakthroughs in technology that can be brought into practice.

Field Testing/Demonstrations and Pilots

4. Conduct extensive field testing and evaluations with builders, remodelers, and product and home systems manufacturers on the installation and field performance of next-generation innovative products in meeting PATH durability goals.
5. Develop wide-ranging product and systems demonstrations throughout the U.S. in conjunction with local communities to evaluate methods for streamlining acceptance of advanced technologies and communicate the results to the industry and the general public.

Industry Outreach and Education

6. Conduct an aggressive program of building industry outreach through HOMEBASE and other vehicles to communicate results of the program to potential users.
7. Develop education and training programs to show builders and remodelers how to incorporate the high-priority PATH technologies into practice.
8. Perform regular evaluations of PATH program success in achieving goals.

Program Resources:	***Role:***
USDA/Forest Products Lab	Durability studies
DOC/NIST	Methods for predicting long-term performance Laboratory testing/evaluation Program evaluation Durability research program Cybernetic building system measurements Structural performance prediction
DOE/NIST	Develop test regime for new building products Accelerate market adoption of best technologies
Product manufacturers	Product development Prototype testing/evaluation
Builders/Remodelers	Identify technology needs Develop innovative practices Installation assessments Market assessments

Evaluation:

Data on maintenance and repair costs in residential housing is contained in the PATH report entitled *Baseline Data and Information Resource Guide*, published on May 1, 1998, and available through the U.S. Department of Housing and Urban Development. The data does not give a good picture of the occurrence rates of various performance problems in existing housing. Because a better baseline is needed to measure progress toward achieving PATH goals related to maintenance and repair, the Department of Commerce is developing testing and evaluation protocols for durability.

4. Reduce Risk from Natural Hazards and Construction Work Illness and Injury

Goal: By the year 2010, reduce by at least 10 percent the risk of loss of life, injury, and property destruction from natural hazards and reduce by at least 20 percent residential construction work illnesses and injuries.

Approach: Focus on developing and demonstrating products, systems, and techniques that can minimize the risk of fire in residential housing and cost-effectively withstand the forces of natural disasters (hurricanes, floods, and earthquakes). Develop training and outreach programs that will enable the residential construction industry to implement methods for reducing workplace illness and injury.

Action Items:

INITIAL

Disaster Mitigation

1. Develop an approach for systematically improving the quality of housing that is better able to resist the forces of natural hazards.
2. Evaluate alternative materials that can improve the ability of building systems to resist fire and natural disasters.
3. Evaluate emerging technologies for their potential to meet PATH goals of housing affordability and disaster mitigation.
4. Conduct demonstrations of disaster mitigation approaches that meet PATH goals in disaster-prone communities.
5. Deliver technical assistance on disaster relief in Latin American countries that were hit by Hurricanes Mitch and Georges.
6. Demonstrate disaster mitigation approaches in the rehabilitation of damaged housing and construction of new housing in the communities damaged by Hurricanes Mitch and Georges.
7. Conduct evaluations and document the costs and performance attributes of PATH technologies that have been incorporated into recently completed demonstration projects.
8. Conduct extensive field testing and evaluations with builders, remodelers, and product manufacturers on the installation and field performance of innovative products, designs, and construction practices that contribute to enhanced resistance to fire and natural disasters.

9. Based on the results of previous evaluations, identify a set of high-priority technologies that, if accepted into practice, would help achieve PATH disaster mitigation goals.
10. Develop wide-ranging product and systems demonstrations throughout the U.S. incorporating high-priority PATH technologies. Evaluate methods for streamlining acceptance of advanced technologies and communicate the results to the industry and the general public.

Worker Safety

11. Develop partnerships and other cooperative efforts with the PATH partners to identify and address significant workplace hazards, emphasizing those targeted by OSHA's performance goals.
12. Deliver an appropriate mix of interventions and compliance assistance tools to assist homebuilders in complying with OSHA safety regulations.
13. Develop a valid, standardized safety and health program evaluation measurement tool that can be used to assess the quality of a safety and health program. Use the results from application of the tool to assist homebuilders in implementing or improving their safety and health programs.
14. Make safety and health information and materials easily accessible to homebuilders and workers via the Internet and paper-based publications.
15. Develop and disseminate occupational safety and health training and reference materials that address the needs of small homebuilders and workers.

ONGOING

Disaster Mitigation

1. Develop a "technology roadmap" to identify technological advances and a strategy to meet PATH goals, and form partnerships between government and industry to focus on high-priority industry needs.
2. Track and evaluate emerging technologies that can increase disaster resistance while not reducing housing affordability.
3. Challenge private-sector and public-sector partners to invest in the necessary R& to create technologies that can be brought into practice by 2010.
4. Develop partnerships with manufacturers and builders to develop and test new, affordable, disaster mitigation technologies.
5. Establish pilot communities to demonstrate the constructability of tornado-safe, room shelter technology in residential structures.
6. Support pilot efforts to reduce monthly energy expenses in homes while concurrently reducing structural risk for natural hazards through the application of appropriate technologies, building practices, and property protection techniques.
7. In partnership with the manufactured housing industry, develop and implement better anchoring systems to resist high winds and seismic forces.

Worker Safety

8. Implement a method for acquiring data specially designed to measure incidence of residential construction workplace illness and injury.

9. Increase the use of technology-based training delivery systems (e.g., computer-based training and distance learning) to expand training opportunities for homebuilders and workers.
10. Track and evaluate emerging technologies that can improve worker safety while not reducing housing affordability.
11. Challenge private-sector and public-sector partners to invest in the necessary R&D over the longer term to create technologies that can be brought into practice by 2010.

Program Resources:	***Role:***
HUD	Postdisaster assessments Postdisaster technical assistance Research on technology developments Dissemination of results
USDA/Forest Products Lab	Wind resistance assessments Urban wildland/interface fire risk
FEMA	*Project Impact* disaster mitigation Disaster mitigation demonstrations Postdisaster mitigation demonstrations U.S. Fire Administration demonstrations/training/outreach
OSHA	Safety training for builders/remodelers
DOC/NIST	Housing performance standards Support to NES-BIC Residential fire safety research Program evaluation Cybernetic building system measurements Structural performance prediction Advanced wind standards
Product manufacturers	Product development Prototype testing/evaluation ISO-9000 quality programs
Builders/Remodelers	Identify technology needs Develop innovative practices ISO-9000 quality programs Installation assessments Market assessments

Evaluation:

The PATH baseline report contains data on fire and natural disaster incidence and losses that could be used to measure progress toward achieving PATH goals in fire and natural disaster reduction. OSHA maintains data on the incidence of illness and injury in the construction

industry but does not have the ability to disaggregate this data for incidence in residential construction.

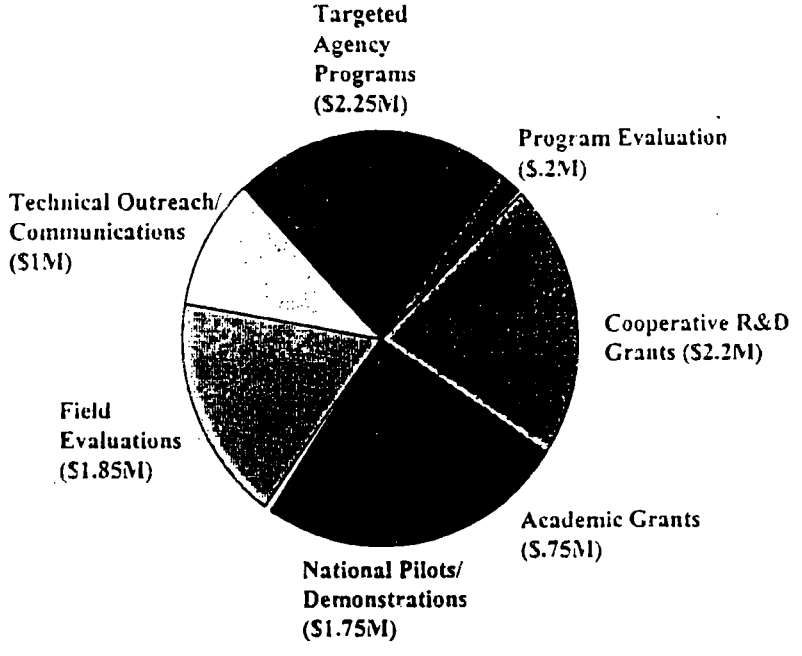
Communication Strategy:

An information and communications strategy is vital to the success of PATH's goal of advancing the use of housing technology. PATH's communications strategy promotes increased participation in PATH activities and promotes partners' efforts to achieve PATH goals. This multifaceted media effort—including the PATH Web site, brochures, newspaper and magazine articles, videos, conference exhibitions, and promotion on consumer-targeted television programs such as remodeling and homebuilding shows—will describe the importance of new housing and construction techniques, cite activities of partners using PATH technologies, and encourage industry as well as homeowner participation in the program. This communications strategy will be executed through the cooperative help of both agency and private-sector partners' public affairs offices.

V. Budget Planning & Milestones

In order for the $10 million of PATH funds to have maximum impact on meeting the ambitious goals of the operating plan, HUD, with its public and private partners, has developed a program of grants, contracts, and interagency transfers to address the most pressing needs. This program, combined with investments by other Federal agencies will challenge private industry to invest more in housing technology research, stimulate basic academic research, leverage other Federal dollars, and address the most pressing need for the dissemination of technical information throughout the decentralized, disparate housing industry. The following chart shows how PATH funds will be allocated in FY 1999.

PATH FY99 Budgeting ($10M)



This allocation of funds directly reflects operating plan priorities. For example, the $750,000 for academic grants will be matched with an equal or greater amount of NSF funds to stimulate needed basic research. This will be the first NSF competition directed at residential housing technology, illustrating how PATH funds can leverage the resources of other Federal agencies. The $1 million allocated for technical outreach responds to the priority in the operating plan given to improving the information infrastructure within the housing industry.

The operating plan requires HUD and its public and private partners to adhere to an ambitious agenda and schedule. A detailed action plan indicating all major program milestones will be

submitted to Congress as part of the April progress report. Included in this action plan will be a series of projected major milestones for FY 1999 and FY 2000.

Major PATH Program Milestones for FY 1999 and FY2000

Cooperative R&D Grants with Industry

FY 1999	FY 2000
Sign Cooperative Research and Development Agreements (CRADAs) with 15 private sector firms who are matching the $2.2M-Federal investment and developing technologies specifically directed at pressing technology needs .	Sign CRADAs with 15 additional firms who are developing technologies specifically directed at meeting the PATH goals. Promising new technologies will be incorporated into the field evaluation and demonstration activities.

Targeted Research Grants at Academic Institutions

FY 1999	FY 2000
Provide grants through NSF to 25 academic institutions for research directed at targeted research needs in the PATH program.	Provide grants through NSF to 25 additional academic institutions for research directed at targeted research needs in the PATH program. Feed results into the PATH field testing and demonstration initiatives.

National Pilot Projects and Demonstrations

FY 1999	FY 2000
Initiate broad-based technical assistance to at least 5 national well-recognized pilots that will demonstrate a wide variety of PATH technologies to a broad audience.	Continue providing technical assistance to the national pilot projects to demonstrate a wide variety of PATH technologies to a broad audience.
Provide technical assistance to 10 national demonstrations working with builders and developers at the subdivision level to demonstrate and evaluate PATH technologies.	Expand to 20 the number of national demonstrations featuring advanced technologies that can help the building industry meet the PATH goals.
Initiate PATH demonstrations with at least 2 Indian tribes and 2 Hope VI sites. As part of this effort, build at least 50 homes at Pine Ridge that use PATH technologies.	Continue providing technical assistance to the 2 Indian tribes and 2 Hope VI sites. As part of this effort, build 250 additional homes at Pine Ridge incorporating PATH technologies.

Demonstrate Nationally Applicable Recommended Rehabilitation Provisions (NARRP) in at least 2 communities and have NARRP included in the International Residential Code published by the International Code Council (ICC).	Demonstrate the NAARP in another 5 communities and work to get the NAARP adopted, either directly or through the adoption of model codes, in at least 20 communities.
Demonstrate the "Next Generation" Manufactured home in 3 developments with at least 1 manufacturer adding the advanced techniques to its product line.	Demonstrate the "Next Generation" Manufactured home in 3 additional developments with at least 3 manufacturers adding the advanced techniques to their product lines.
Build a set of four Marketable Affordable Durable and Entry-Level (MADE) homes in a model subdivision and evaluate cost, performance, and marketability of this concept.	Evaluate the installed costs and monitor the performance of the materials and systems incorporated into the MADE homes.
Demonstrate the application of disaster mitigation techniques in homes being retrofitted through DOE's Weatherization Program.	Evaluate the cost impacts of adding disaster mitigation techniques in homes retrofitted through DOE's Weatherization Program.
As a joint effort between HUD and FEMA, demonstrate the use, actual construction costs, and cycle-time impacts of "safe rooms" in 10 homes.	Document the actual construction costs and cycle-time impacts of "safe rooms" demonstrated in 10 homes.

Field Testing and Evaluations

FY 1999	FY 2000
Apply evaluation criteria to the 200 technologies that have been identified by the program to date and determine a subset of 25 technologies with near-term potential to help the housing industry meet PATH goals. Incorporate these technologies into field evaluation and demonstration activities.	Apply evaluation criteria to another 100 technologies that will be identified by the program and determine a subset of 25 additional technologies with near-term potential to help the housing industry meet PATH goals. Incorporate these technologies into field evaluation and demonstration activities.
In cooperation with the model codes and the National Evaluation Service, develop evaluation plans for at least 25 emerging technologies and complete the comprehensive evaluation of at least 10 technologies.	Develop evaluation plans for 30 additional emerging technologies and complete comprehensive evaluations of at least 25 technologies.
Evaluate with builders and remodelers the field performance of 15 innovative technologies prior to their widespread adoption.	Evaluate with builders and remodelers the field performance of 25 additional innovative technologies prior to their widespread adoption.

Technical Outreach/Communications

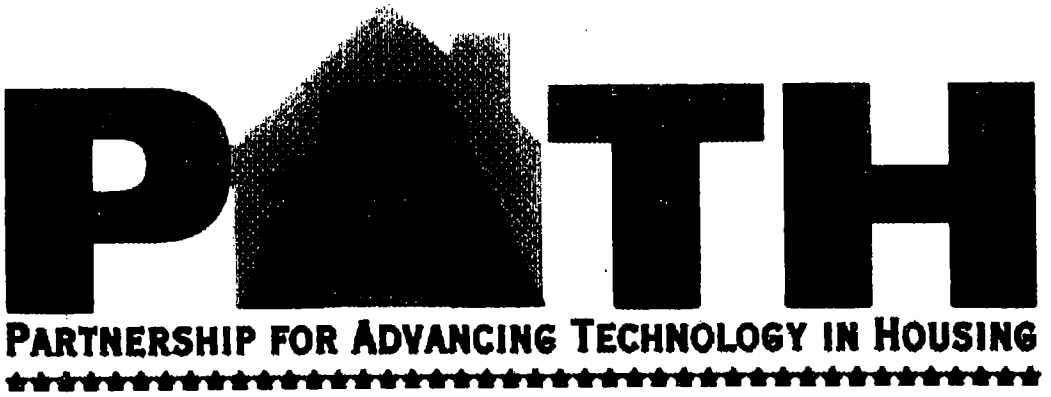
FY 1999	FY 2000
Establish HOMEBASE as the primary source of reliable technical information for the housing industry by providing a toll-free technical hotline to at least 8,000 builders and remodelers per year, a technical newsletter to at least 70,000 firms quarterly, a comprehensive Catalog of Building Products and Services published on CD-ROM and on the Internet that is distributed to at least 60,000 firms annually, and a technical Web site with useful technical information on emerging homebuilding technologies.	Expand HOMEBASE services to include a comprehensive search tool for builders and remodelers seeking documented information on the performance of advanced products and systems, a distance-learning component to provide educational seminars to the widest possible audience (delivery of 12 technical seminars through the distance-learning tool), and advanced ISO-9000 training techniques for builders and their contractors.
Promote outreach through industry venues including conferences, periodicals, and existing homebuilder programs.	Promote outreach through industry venues including conferences, periodicals, and existing homebuilder programs.
Develop a major consumer outreach component for the PATH program that will introduce the general public to the benefits of living in a "high-performance home that is less expensive to own and operate."	Expand the consumer education and awareness campaign by coordinating the communications resources of PATH participating agencies and their industry partners.

Targeted Agency Programs

FY 1999	FY 2000
Document the cost and performance results of the projects funded under the DOE Building America program.	Continue documenting the cost and performance results of the projects funded under the DOE Building America program and disseminate lessons learned to the building industry and consumer audiences.
Incorporate the full spectrum of PATH goals and Federal resources into additional Building America sites as selected.	Incorporate the full spectrum of PATH goals and Federal resources into additional Building America sites as selected.
Conduct an industrywide needs assessment through NIST and industry partners of durability issues in residential construction and produce a research and technology agenda.	Conduct research projects based on high-priority needs identified in the needs assessment and assign priority areas in the NIST/PATH CRADA process for needed technology development.
Conduct a research needs assessment for wood product use in housing in cooperation with university and industry researchers.	Conduct research projects based on the results of the wood industry needs assessment and provide priority areas to NSF to include in the targeted grants for academic institutions.
With other PATH partners, university and industry researchers, USDA Forest Service will continue distribution of research findings and conduct a conference/ workshop on durability issues in housing.	Conduct additional conferences/workshops on durability issues in housing through USDA Forest Service.

Program Evaluation

FY 1999	FY 2000
Set up a procedure through DOC/NIST for measuring progress toward meeting PATH goals.	Conduct an annual evaluation of progress toward meeting PATH program goals.
Conduct an independent evaluation of the operations of the PATH program.	Conduct an independent evaluation of the operations of the PATH program.



PROGRAM PLAN

WHAT IS PATH?

The Partnership for Advancing Technology in Housing (PATH) is a new initiative to:

- improve the quality and affordability of today's new and existing homes;
- strengthen the technology infrastructure of the United States; and
- help create the next generation of American housing.

Initiated by the Administration through the Office of Science and Technology Policy, PATH is a public/private partnership which joins together key agencies in the federal government - HUD, DOE, DOC, FEMA and EPA - with leaders from the home building, product manufacturing, insurance and financial industries. HUD has been designated the lead federal agency for the partnership.

GOAL

PATH's primary goal is to ***accelerate the creation and widespread use of advanced technologies in order to radically improve the quality, durability, environmental efficiency and affordability of our Nation's housing***.

EXPECTED RESULTS

Expected results from the PATH effort are: increased housing affordability; increased durability; lower construction and financing costs; lower carbon emissions through improved energy efficiency; fewer construction injuries; fewer disaster losses; and accelerate development and increased market acceptance of new housing technologies.

OBJECTIVES AND STRATEGIES

Objective #1

Increase utilization of advanced technologies in today's new and existing homes.

In order to further the use of new technologies in housing, it is essential that, as a first step, we focus on stimulating the use of innovative technologies **now** to improve the performance of **today's housing.** A large number of advanced, cost-effective technologies are already available but generally unused. Many more emerging technologies can, with Partnership assistance, soon be in the housing marketplace.

In discussions with industry leaders a consensus has emerged that PATH must concentrate its initial efforts on expanding awareness and use of these technologies in the housing marketplace. To accomplish this objective a three part strategy has been proposed .

Strategy 1

Identify, evaluate and promote emerging technologies which meet PATH criteria.

Increased awareness of available technologies - what they are, what they cost, how they function, who has tried them and where they can be procured - is a critical first step to their increased use. Therefore the Partnership must provide credible information on these technologies to potential users throughout the country and become, in effect, the national resource for information on advanced technology in housing.

In FY 98, PATH will create a national inventory of emerging technologies in the housing industry. Information will be collected on a wide range of innovations; from new materials, components, and systems to entire houses and even subdivisions. In addition to private industry, the Partnership will look for technologies developed by the national laboratories and other public agencies. This data will be compiled into a comprehensive advanced technology data base - the only one of its kind in the U.S. - and will be used to create a "State of the Nation's Housing Technology" report.

In its first year, PATH will also establish a major new website **(http//www.pathnet.org)** that will become the national source for information on innovation in the home building industry. The technology data base will form the core of the site and will be widely promoted by PATH and its Partners.

Strategy 2

Identify, document and promote "best practice" applications of PATH technologies.

To convince builders and remodelers to consider new technologies, PATH will need "real world" examples of how these technologies have been installed and used by others. A key Partnership service will be to provide access to a wide range of such examples in the form of **best practice** case studies.

As a first step, PATH will identify home builders and manufacturers nationwide who are successfully applying PATH technologies. These applications will be documented, posted on the PATH web site and promoted to builders and manufacturers across the country. Several of these case studies will also be selected for special promotion through a PATH **Spotlight On** effort. Each Spotlight project will be documented in detail and will be the focus of a sustained public relations effort. While the prime audience for the "best practice" data base will be the home building community, the main audience for the Spotlight effort will be the public at large.

In its first year, PATH will also identify and become a central source of information on national, regional and local programs which promote "best practice" applications of PATH technology. Such programs, by providing recognition, technical assistance and/or financial incentives to cutting edge builders, offer unique opportunities for introducing advanced technologies into the housing marketplace. PATH will help builders and consumers gain access to these programs nationwide.

Strategy 3

Implement pilot projects - at sites throughout the country - which demonstrate "real world" applications of PATH technologies.

Finally, PATH will provide technical and other assistance to projects under construction or development which can serve as national showcases of PATH technologies and approaches. Though pilot project efforts will be modest in 1998, they are expected to grow in 1999.

Objective #2

Strengthen the technology infrastructure of the United States.

Because the housing industry is so large and disaggregated , it is difficult for any technology, least of all those that are truly innovative, to quickly gain widespread market acceptance. As a result, it can take from 10 to 25 years for a new housing product or technique to achieve full market acceptance. Such long time frames delay current returns on investment and, as a consequence, discourage new investment, particularly in innovative or advanced technologies.

Through a sustained and sophisticated information dissemination program, coupled with a concerted effort to remove barriers to the use of new technology , Objective # 2 seeks to significantly reduce the "time-to-market" for new housing technologies and, in the process, strengthen the housing technology sector as a whole.

Strategy 1

Develop a comprehensive, national system for distributing information on advanced technologies - from innovators to producers to builders to occupants and back again.

To address the lack of credible information on housing technology , PATH will, starting in FY 98, begin the process of establishing and maintaining a nationally recognized information infrastructure responsive to the technology needs of builders, manufacturers, financial and regulatory officials, federal agency grantees, insurers and consumers. Elements of this system will include: supporting an expansion of the NAHB Research Center's existing "Home Base" effort; mounting a sustained public relations and education campaign concerning PATH activities and technologies; providing regular PATH updates to all Partners and related organizations; convening conferences, teleconferences and other events to provide information on PATH and its technologies; and maintaining and expanding the PATH website.

Strategy 2

Identify, evaluate and develop strategies to remove barriers to the application of innovative housing technologies nationwide.

Lack of information is only one barrier to the adoption of innovative housing technologies. There are also a large number of institutional barriers that discourage builders from trying new products or techniques. These include

liability concerns, the lack of a clear national system for the evaluation of new products and systems, the prescriptive nature of codes and local code approvals, regulatory confusion, and risk aversion. PATH's Partners consider identification and removal of these barriers to be one of the core objectives of PATH's overall mission.

To begin to address these issues, PATH will: analyze its technology and "best practice" data bases to identify barriers to adoption/diffusion; convene expert groups to discuss these barriers and develop strategies for overcoming them; coordinate with efforts such as the National Evaluation Service's Building Innovation Center and the International Residential Code; and initiate the development of performance criteria for new building products.

In FY 98 PATH plans to convene at least one national forum on the institutional barriers to innovation in the housing industry. The forum will focus on one specific issue, such as liability, and will mark the beginning of a year long effort to define the issue in detail, describe its impact on the Nation, and recommend actions that can be taken to overcome the barrier and/or reduce its impact.

Strategy 3

Stimulate cooperative private/public R&D on advanced technologies which meet PATH criteria.

To support the development of new technologies, particularly those just reaching the prototype stage, PATH will encourage and support collaborative research with and among PATH Partners. A critical effort will be to analyze the extensive activities of the Federal agency partners in order to begin eliminating duplication and developing a cooperative R&D agenda. This effort will be closely coordinated with PATH's private sector Partners.

In order to foster specific collaborative research efforts, PATH will conduct periodic conferences with industry in selected technology areas. PATH will also encourage individual companies to undertake research to accelerate the achievement of specific PATH objectives. In FY 99 and beyond, PATH will seek to advance greater private/ pubic collaboration, particularly in areas of non-proprietary research, and will explore creating a "small innovators" grant program.

Objective #3

Stimulate development of new technologies that will create the next generation of American housing.

This objective focuses further in the future than either Objective 1 or 2. It asks the question, "What should the house of 2015 be like, and what should we be doing now to prepare for it?" The initiatives PATH undertakes to address this question will not only provide valuable insight for those engaged in preparing for the future of housing, but will also help guide core PATH activities into the next century.

Strategy 1

Identify the technology advances needed to create the next generation American home.

Through continued expansion of the PATH technology data base, through meetings with private and pubic research labs, and through a series of conferences and symposia , PATH will collect expert opinion on the nature and technical structure of the "next generation American home." Based on these assessments, and drawing heavily on input from its public and private Partners, PATH will identify the technological advances needed create such "next generation" homes.

As part of this process PATH intends to organize a national **Conference on the Future of the American House** in early 1999. The conference will serve as a national forum for defining the "next generation American home" and will help establish a national agenda for housing technology R&D.

Strategy 2

Stimulate collaborative R&D on "next generation" technologies.

Once the needed technology advances have been identified, PATH will support new collaborative R&D initiatives with and among PATH partners. This effort will require the active participation of not only private industry but also research universities and national laboratories.

Strategy 3

Implement pilot "next generation home" projects at sites throughout the country.

As new technologies are developed, PATH will support cooperative demonstration projects to showcase their application in "next generation" homes.

A Report on Progress Toward Meeting the Objectives Outlined in the Operating Plan for the Partnership for Advancing Technology in Housing (PATH)

April 22, 1999

PATH PROGRESS REPORT

This report responds to a request made in the Conference Report accompanying the VA, HUD and Independent Agencies Appropriation Act of 1999. In Conference, Congress requested both an operating plan for the Partnership for Advancing Technology in Housing (PATH) as well as a draft evaluation report describing progress towards meeting PATH goals. The operating plan was previously submitted on March 11, 1999.

The following status report was developed in response to that request. The report was cooperatively developed by all the participating PATH Federal partners. The report is a highly detailed plan that not only sets forth all the very specific actions that are presently or soon will be initiated by the PATH program, but also milestone dates for completing such actions and descriptions of their current status.

The plan in this report closely follows the structure of the PATH Operating Plan. The first column restates the objectives for each goal that were included in the PATH Operating Plan. The second column provides statements of planned near term actions. This is followed by milestone end dates, sponsoring agencies, and industry participation. The last column provides a status report of progress in completing the planned actions.

Each objective in the report was previously identified in the Operating Plan as essential towards meeting PATH's overall goals. Each of the actions in the plan is targeted at meeting both the PATH operating objectives as well as the overall goals of the PATH program.

Identifying and measuring progress in meeting the Operating Plan is the first step in developing an overall evaluation plan for the PATH program. In this regard, the Department has requested the National Research Council of the National Academy of Sciences to establish a multi-year oversight and assessment process for PATH. This thoroughly independent review will review the goals of the PATH program; the approach proposed to meet the goals and the likelihood of achieving them; and over time, an evaluation of the progress that has been made toward achieving the goals. To this end, the National Research Council may also develop performance measures specifically tailored to the PATH program.

To assure that PATH achieves both the stated actions of the plan as well as its overall objectives, The Department plans to develop similar progress reports in each year of the program.

Partnership for Advancing Technology in Housing (PATH)
A Report on Progress Toward Meeting the Objectives Outlined in the PATH Operating Plan
Revised: April 22, 1999

PATH Goal #1: Reduce the monthly cost of new housing by 20 percent or more.

Objectives from the PATH Operating Plan	Planned Near Term Actions	Milestone End Date	Sponsoring Agencies	Industry Participation (footnote)	Status of Progress in Completing Planned Actions
1. Challenge PATH partners and all of the housing industry to invest in coordinated research, development and demonstration activities that will help achieve PATH goals.	• Obtain R&D investment commitments from five industry partners by 9/30/99 totaling $2 million dedicated to the achievement of PATH goals.	9/30/99	HUD	See note below.[1] See note below.[2]	• Cooperative Agreements in place with NAHB Research Center and work began in April.
	• Provide leveraged cooperative research and development grants to industry based on a competitive program addressing high priority technology needs relating to the tough PATH performance and cost goals.	6/30/99	DOC/NIST		• Interagency agreement totaling $1.5M with NIST for government/industry cooperative research program is in process. Announcements by July 1, 1999.
2. Put in place a process for recognizing significant advancements in technology, land use and construction practices that will help achieve PATH goals and promote their adoption by the building industry.	• Recognize innovative applications of new technologies through Secretarial awards.	3/31/99	HUD		• Building Innovation in Housing Awards made and book published.
		1/1/00	HUD		• Annual Secretarial awards with Professional Builder magazine.[3]
		On-going	PATH		• Providing PATH awards to major new projects.
	• Identify at least 200 emerging technologies that could help the building industry to accomplish the PATH goals.	3/31/99	PATH		• PATH web site established (www.pathnet.org).
	• Recognize innovative home building and remodeling processes through awards programs.	On-going	DOE	See note below.[1]	• National Housing Quality, National Remodeling Quality, and EnergyValue Housing Awards given annually to innovative building firms.
	• Conference on 21st Century Building Technologies scheduled for Orlando, FL in June	6/30/99	HUD	See note below.[4]	• PATH supporting University of Florida in planning this conference.
3. Track and evaluate emerging technologies and alternative materials for their potential to reduce housing costs (first and life cycle costs).	• Apply evaluation criteria to the 200 technologies that have been identified by the program to date and determine a subset of 25 technologies with near term potential to help the housing industry meet PATH goals.	3/31/99	HUD		• Evaluation criteria complete. First round of builder evaluations underway (3/2/99). 130 of the 200 technologies have been listed on PATH and HomeBase web sites. Items with highest priority are proceeding through the evaluation process.
	• In cooperation with the model codes and the National Evaluation Service's Building Innovation Center (NES-BIC), develop evaluation plans for at least 10 emerging technologies and complete the comprehensive evaluation of at least one technology.	12/31/99	DOC/NIST	See note below.[5]	• NIST contract with NES-BIC initiated and technology selection process is underway.

[1] Dow Chemical and the Wood Truss Council of America are investing approximately $617K in cooperative research over a three year period.
[2] Portland Cement Association, American Iron and Steel Institute and NAHB are investing approximately $366K in cooperative research.
[3] NAHB and NAHB Research Center provide the awards in conjunction with Professional Builder magazine with sponsorship from private sector firms and some federal agencies.
[4] University of Florida is matching PATH funding to make this conference possible.

Objectives from the PATH Operating Plan	Planned Near Term Actions	Milestone End Date	Sponsoring Agencies	Industry Participation (footnote)	Status of Progress in Completing Planned Actions
	• In conjunction with the NES-BIC, plan and develop a generic evaluation plan for same type technology.	3/31/00	DOC/NIST		• NIST contract with NES-BIC initiated and generic technology selection process underway.
4. Develop a model for identifying and testing new technologies that, if accepted into practice, would help achieve PATH goals.	• Develop protocols for evaluating emerging technologies • Refine test method to measure the thermal conductivity of vacuum insulation panels.	12/31/99 9/30/99	DOC/NIST DOC/NIST	See note below.[6]	• Durability protocol under development. • Work in process.
5. Work with manufacturers to test the model for new technology prototypes.	• Identify generic technology and 10 products for further evaluation.	6/30/99	DOC/NIST		• NES-BIC is working on this.
6. Sponsor fundamental research through NSF at academic institutions that could lead to breakthrough technology applications relating to PATH goals.	• Working together with the National Science Foundation (NSF), establish a residential buildings research program and award at least 25 grants to universities for basic research addressing PATH goals.	9/30/99	NSF/HUD		• HUD in process of transferring $750K to NSF to assist in funding this initiative. NSF is providing matching funds for this initiative.
7. Work with HUD program offices (Public Housing, Indian Housing, CPD) to identify suitable HUD-assisted projects that can be PATH demonstrations and pilots, with near term technical assistance to incorporate PATH technologies in new and rehabilitated housing on the Pine Ridge Reservation in South Dakota, various "Colonias" sites, and disaster mitigation in Puerto Rico resulting from Hurricane Georges.	• Initiate PATH demonstrations with at least 2 Indian tribes. As part of this effort build at least 50 homes at Pine Ridge that use PATH technologies. • Select second Indian tribe for demonstrations • Initiate PATH demonstrations with two HOPE VI sites. • Select two CPD programs to initiate PATH demonstrations.	8/15/99 6/30/99 4/30/99 5/30/99	HUD HUD HUD HUD		• Planning underway for a Blitz Build project in Pine Ridge involving 50 homes during the week of August 1, 1999. • No additional sites have been selected to date. • Holyoke, MA HOPE VI project identified as likely candidate. Planning underway. • Potential HOME project identified in Texas. • Disaster work covered under Goal 4.
8. Conduct demonstrations of technologies that fit PATH goals relating to housing affordability.	• Develop a series of demonstration projects with builders on PATH technologies. • Investigate options for manufacturing housing components and sub-systems which assemble easily on the job site, utilize low-cost, flexible manufacturing techniques, yet maintain high standards for precision and reliability. • Demonstrate Nationally Applicable Recommended Rehabilitation Provisions (NARRP) in at least 2 communities and have NARRP included in the International Residential	9/30/99 9/30/99 9/30/99	HUD HUD HUD	See note below.[7]	• Task Order in place to develop demonstration projects for PATH program. 5 builders have committed to conduct evaluation projects incorporating technologies identified by the PATH program. 12 will be in place by September. Demonstrations in Simi Valley, CA and Yonkers, NY and Rochester, NY have been completed. • Task Order in place with VPI for a study on industrializing the building site • Code change was prepared by NAHB Research Center and submitted to the IRC for hearings in March 1999. NCSBCS will disseminate information

[5] The NES-BIC was established by the three model code organizations to provide a national evaluation system for innovative products.
[6] Dow Chemical has a cooperative research and development agreement with NIST on measurement sciences.
[7] Demonstration projects in planning stages with Bruce Davis Construction in southern Maryland and the John Wesley Miller Companies in Tucson, AZ.
[8] NAHB Research Center and the National Housing Endowment are sponsoring joint research on affordable durable technologies by building four demonstration homes in the NAHB National Research Home Park in 1999 with funding support from industry partners.

Objectives from the PATH Operating Plan	Planned Near Term Actions	Milestone End Date	Sponsoring Agencies	Industry Participation (footnote)	Status of Progress in Completing Planned Ac
	Code published by the International Code Council (ICC).				to 20 local governments on the advantages of NARRP.
	• Demonstrate the "Next Generation" Manufactured home in 3 developments with at least one manufacturer adding the "next generation home" to their product line.	9/30/99	HUD		• HUD issued Task Order to Steven Winter Ass to complete this work.
	• Build a set of four Marketable Affordable Durable and Entry-Level (MADE) homes in a model subdivision and evaluate cost, performance and marketability of this concept.	9/30/99	HUD	See note below.[8]	• Cooperative Agreement in place with NAHB Research Center to sponsor research in MADI houses. Construction expected to begin by 8/3
9. Coordinate activities with DOE's Building America program (see Goal 2).	• Transfer lessons learned from Building America projects to PATH evaluation activities.	4/30/99	DOE		• No action yet.
10. Provide technical assistance to identified PATH national pilot projects.	• Initiate broad based technical assistance to at least five national pilot projects focusing on the PATH affordability goal.	4/30/99	HUD/DOE	See note below.[9]	• HUD is transferring funding to DOE to suppo broadening of technical assistance for the nati pilots.
11. Work with program offices to modify forthcoming NOFAs (Notice of Fund Availability), including Super NOFAs, to make use of appropriate PATH technologies as a factor for selection.	• Participate in preparation of overall Super NOFA. • Choose appropriate programs and prepare specific text for incorporation in Super NOFA	9/30/99 11/30/99	HUD HUD		• Planning for FY00 NOFA starts in 9/99. • Planning for FY00 NOFA starts in 9/99.
12. Work with HUD program offices to review regulations and guidance material to encourage use of new technologies.	• Designate program office contacts to work on regulations and guidance material. • Review regulations and guidance material with each office to identify obstacles and prepare revisions.	4/30/99 6/30/99	HUD HUD		• Memo prepared for Assistant Secretaries requ contacts for PATH program. • Review expected to be completed by July 199
13. Develop a strategy and implement a targeted dissemination program to educate housing authorities, non-profits and other HUD grantees of the availability and proper application of appropriate PATH technologies.	• Establish a new building technology dissemination program specifically targeted to HUD grantees, non-profits and housing authorities. • Develop publication on "Energy Resources for HUD Staff" • Create a centralized search tool for builders and remodelers that will make it easier for them to understand applicable federal, state and local programs applicable to housing.	5/15/99 5/30/99 6/30/99 6/30/99	HUD HUD HUD HUD		• Plan currently under development by Aspen S • Participation planned for PATH in HUD "Bes Practices Conference • Currently being drafted. • Both PATHNET and HomeBase web sites established PATHNET web site being re-des
14. Identify codes and standards and legal and institutional issues that will either help to accelerate adoption, or conversely, are impediments. More specifically, explore with the housing industry new or improved insurance and other programs that can reduce the fear of risk and resulting liability that may result from the use of innovative building products.	• Fully establish, jointly with the three model code organizations, a National Evaluation Service Building Innovation Center and start the evaluation of at least 10 ten innovative technologies.	12/31/99	DOC/NIST		• The National Evaluation Service has received funds to conduct these evaluations.
	• Document the experiences of communities that have undergone "regulatory streamlining" processes in conjunction with HUD and the National Conference of States on Building Codes and Standards (NCSBCS).	April 1999 9/30/99	HUD HUD		• Web site on-line citing 100 case studies. A Na Conference on Regulatory Streamlining is plan NCSBCS for April in Virginia. • PATH has established a Barriers/Insurance Iss working group to address this issue and has iss

[9] IBACOS team provides support to Civano, Playa Vista and Summerset; Steven Winter Associates' CARB team provides support to Stapleton Airport; and, Building Science Corporation's team provides support to Village Gr

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Objectives from the PATH Operating Plan	Planned Near Term Actions	Milestone End Date	Sponsoring Agencies	Industry Participation (footnote)	Status of Progress in Completing Planned Actions
	• Develop new legislation or federal programs to reduce liability and risk. • In conjunction with the insurance industry, study practical options (including new test methods, product certifications, and demonstrations of innovative insurance rate structures) for reducing risk and, therefore, home insurance rates through the use of innovative new products and building processes.	9/30/99	HUD		"white paper" on product liability for review. • This will also be addressed through the PATH Barriers/Insurance Working Group.
15. Coordinate activities with EPA's ENERGY STAR Homes program (see Goal 2).	• Develop a program and policy agreement between PATH and EPA Energy Star.	4/30/99	EPA		• Draft agreement developed.
16. Conduct an aggressive program of informational outreach to communicate program results and direction to the housing industry and the general public.	• Establish HOMEBASE as the primary source of reliable technical information for the housing industry by providing a toll-free technical hotline to at least 8,000 builders and remodelers per year, a technical newsletter to at least 70,000 firms quarterly, a comprehensive Catalog of Building Products and Services published on CD-ROM and Internet that is distributed to at least 60,000 firms annually, and a technical web site with useful technical information on emerging home building technologies.	3/31/99	HUD	See note below.[10]	• HomeBase is up and running. A technical hotline fields over 8,000 calls annually from builders and remodelers. Spanish language assistance was recently added. Outreach tools include a quarterly CD-ROM, a technical web site, and a quarterly technical newsletter distributed to 70,000 firms. Periodic forums are held with builders and manufacturers to discuss pressing issues in the industry.
	• The PATH program will develop and implement a communications plan which will focus on delivering information on program activities and results to the industry trade press and the general media. The program will coordinate the communications activities of the various partners in PATH.	4/30/99	HUD/PATH		• PATH has created a full service web site at www.pathnet.org to provide information on the program's activities and a newsletter is under development.
	• Promote outreach through industry venues including conferences, periodicals, and existing home builder programs.	On-going	HUD/PATH		• PATH is exhibiting at the Green Builders Conference, NAHB Show, and the Remodelers Show. • Activities are underway.
	• Develop marketing tools for builders to promote PATH technology and homes.	9/30/99	EPA		• Activities are underway.
	• The USDA Cooperative State Research, Education and Extension Service (CSREES) will conduct outreach activities in "green" construction, environmental landscape management, and the energy and environmental advantages of using new technologies.	9/30/99	USDA/ CSREES		
17. Conduct laboratory and short-term field testing and communicate the results and recommendations for	• Conduct cooperative R&D with industry partners.	On-going	HUD	See note 1.	• Cooperative R&D projects with DOW and Wood Truss Council of America were initiated in 4/99.

[10] HomeBase is sponsored by eight product manufacturing firms/trade associations, the National Association of Home Builders, and three agencies of the federal government. Private sector funding exceeds $400K annually

Objectives from the PATH Operating Plan	Planned Near Term Actions	Milestone End Date	Sponsoring Agencies	Industry Participation (footnote)	Status of Progress in Completing Planned Actions
product improvements back to manufacturers.		On-going	HUD	See note below [11]	• Conduct research with NAHB in improving engineering performance and affordability of wood structures.
		On-going	HUD	See note below [12]	• Cooperative research initiative launched with Manufactured Housing Alliance to develop steel applications and installation techniques.
	• Conduct laboratory testing on affordable, durable technologies	On-going	DOC/NIST		• NIST is conducting laboratory tests on selected products.
	• Conduct field testing on specific technologies.	On-going	HUD	See note below.[13]	• Field testing of technologies meeting PATH evaluation criteria underway with five builders.
	• Develop test methods and evaluation procedures for wood-based building materials for more efficient code approval and acceptance	On-going 10/00	USDA/FS USDA/FS		• Work in progress with $15K of USDA/FS funding. • $500K IAA with Forest Products Laboratory for research on wind resistance and durability of wood products.
	• Develop shear design criteria to support allowable stress design and reliability-based design building codes.	10/00	USDA/FS		Work in progress with $20K of USDA/FS funding.
18. Deliver technical assistance to companies in making necessary improvements to their products so that they can gain code and market acceptance with their innovative products and systems.	• Provide technical assistance to firms who are developing products relating to the PATH goals.	9/30/99	HUD		• NAHB Research Center is conducting with home builders three projects to improve the cost-effectiveness of steel, ICF's, and other lumber saving technologies.
19. Conduct evaluations and document the costs and performance attributes of PATH technologies that have been incorporated into recently completed demonstration projects.	• Building America to develop documentation on cost and performance.	6/30/99	DOE	See note below.[14]	• Documentation is underway.
	• Develop procedure for evaluating the performance of PATH demonstrations and field tests.	4/30/99	HUD		• Procedure for documenting performance evaluations created.

PATH Goal #2: Cut the environmental impact and energy use of *new housing* by 50 percent or more and reduce energy use in at least 15 million *existing homes* by 30 percent or more.

Objectives from the PATH Operating Plan	Planned Near Term Actions	Milestone End Date	Sponsoring Agencies	Industry Participation (footnote)	Status of Progress in Completing Planned Actions
1. Develop an environmental baseline that will enable the measurement of progress toward achieving PATH environmental goals.	• EPA's ENERGY STAR Homes Program, in conjunction with other offices within EPA, will establish an environmental baseline by July, 2000.	6/30/00	EPA		• No action yet.
2. Develop approaches for incorporating energy efficiency improvements into the remodeling of *existing* residences.	• Working with industry, identify at least 2 new technologies that could cost-effectively and significantly reduce energy consumption in existing housing.	6/30/00	HUD		• HUD has funded a cooperative research agreement with NAHB Research Center and Dow to develop new technologies for existing buildings.

[11] The Housing Affordability Through Design Efficiency (HATDE) program is managed by NAHB Research Center and receives funding from a broad cross-section of public and private sources.
[12] The Manufactured Housing Alliance is a broad based industry organization consisting of major manufacturers, the Manufactured Housing Institute, and utility companies.
[13] Projects in planning stages with Centex Homes, Carl Franklin Homes, Buddy Hughes Construction, Asdal Builders, and American Structural Composites.

[14] The DOE *Building America* program provides technical assistance to innovative building projects across the country through four teams: IBACOS Consortium, Consortium for Advanced Residential Buildings (CARB), Building Science Consortium, and the Hickory Consortium. For a listing of private sectors sponsors of these teams, see Appendix A.

Objectives from the PATH Operating Plan	Planned Near Term Actions	Milestone End Date	Sponsoring Agencies	Industry Participation (footnote)	Status of Progress in Completing Planned Actions
		12/31/99	HUD		• HUD planning to develop a Technology Roadmap for new and existing buildings.
	• Improve the energy efficiency of 67,000 low income homes in FY 99.	12/31/99	DOE		• Weatherization program in operation.
	• The ENERGY STAR Program will develop a marketing plan to promote energy efficiency in existing homes by September, 1999, identify metropolitan areas for pilot projects, and assess the best approach for achieving a 30 % reduction in energy efficiency in existing homes.	9/30/99	EPA		• EPA marketing plan under development.
3. Evaluate emerging technologies for their potential to reduce home energy use without raising costs or negatively impacting durability or indoor air quality.	• Verify the performance of alternative home ventilation strategies.	9/30/99	EPA		• Initiated a study with NAHB Research Center to assess the effectiveness of alternative home ventilation strategies.
		12/31/99	HUD/ DOC/NIST		• Study underway with NIST on improving ventilation in manufactured homes.
	• Develop and disseminate computer software which enables simplified compliance with building codes.	4/30/99	DOE		• Software entitled "MEC-CHECK" is available.
	• Develop improved computer tool to help building designers include energy efficiency options in multi-family buildings.	9/30/99	DOE		• Work in progress.
	• Assess performance of housing insulation systems for energy efficiency, moisture movement and durability.	On-going	USDA/FS		• Work in progress with $45K of USDA/FS funding.
	• Continue evaluation of VOC emissions from particleboard and MDF.		USDA/FS		• Work in progress with $40K of USDA/FS funding.
4. Deliver technical assistance to companies in making necessary improvements to their products so that they can gain code and market acceptance with their innovative products and systems.	• Continue to develop and demonstrate new technologies such as residential fuel cells and advanced windows that have residential housing applications.	On-going	HUD	See note below.[15]	• NAHB Research Center is conducting multiple demonstrations of ICFs, ACC, composite materials, and other technologies. Also, the Research Center is working with 3 companies on new product development and approval (ASC, Dow, Plug Power)
		On-going	DOE		• DOE supports extensive research and development through the National Laboratories.
	• Prepare a "white paper" on the role of home automation systems to address PATH goals relating to energy and environmental efficiency, cost, maintenance and repair.	9/30/99	DOE		• Not yet started.
5. Deliver technical assistance to builders and home systems providers on energy efficient construction practices that also do not diminish indoor air quality.	• The ENERGY STAR Homes Program will have 15,000 ENERGY STAR Homes constructed during 1999.	12/31/99	EPA	See note below.[16]	• Energy Star Homes program is on target to reach 15,000 homes during 1999.
	• EPA's ENERGY STAR Home's builder recruitment program will incorporate the PATH initiative in all builder presentations by July, 1999.	6/30/99	EPA		• Underway.

[15] The technology demonstration work is jointly sponsored by private sector companies and HUD.
[16] The Energy Efficient Building Association is reformatting and expanding on existing information and is developing new information.

Objectives from the PATH Operating Plan	Planned Near Term Actions	Milestone End Date	Sponsoring Agencies	Industry Participation (footnote)	Status of Progress in Completing Planned Actions
	• Expand Building America to include over 100 industry members, indirectly transferring innovations to 150,000 production homes.	9/30/00	DOE		• Over 70 industry members are participating in the program to date. There is no estimate yet on impact on housing production.
	• Develop and implement training programs for builders for delivery in twenty communities in FY99 enabling them to take maximum advantage of new energy efficient technologies.	6/30/99	DOE		• Advanced technology builder training being conducted by NAHB Research Center for DOE.
	• Assist ten communities to institutionalize green building and energy efficient building technologies.	9/30/99	EPA/DOE		• EPA working with communities interested in developing model green builder programs
	• Work on the Green Builder Model Program and the National Green Builder Conference scheduled for April 1999.	12/31/99	EPA/DOE		• NAHB Research Center has developed a Model Green Builder Program and is producing an electronic model for easier use by builders/designers.
		April, 1999	EPA		• National Green Builder Conference was held on April 8-10 in Denver.
	• Develop the preliminary plan for a Healthy Homes Initiative and submit to Congress.	4/9/99	HUD/EPA		• Plan submitted to Congress.
6. Coordinate activities with the EPA ENERGY STAR Homes program and DOE's Building America program.	• Provide technical documentation of Building America program results to include in the EPA ENERGY STAR Homes program.	6/30/99	EPA		• NAHB Research Center is producing a guidebook based in part on Building America results showing successful ways to put ducts into conditioned space.
7. Provide technical assistance to identified PATH pilot projects.	• Expand federal participation in the PATH pilot projects to include all participating federal agencies.	4/6/99	DOE (lead)	See note below.[17]	• April 6 meeting between five National Pilot project teams and nine participating federal agencies held to broaden pilot projects to address all PATH goals
		4/30/99	DOE/HUD		• HUD is issuing an Inter Agency Agreement with DOE to expand the federal role in each of the five National Pilot projects.
8. Conduct evaluations and document the costs and performance attributes of technologies that have been incorporated into recently completed housing projects with federal sponsorship.	• Develop an OMB-approved study design by July 1999 for evaluating the cost and performance attributes of a statistical sampling of homes built under the Energy Star homes program and begin the evaluation process by September 1999.	7/31/99	EPA		• Plan was submitted to OMB for approval
	• Conduct an evaluation and document the cost and performance results of the projects funded under the Building America program.	9/30/99	DOE		• No action yet.
9. Evaluate and delineate the appropriate role of deconstruction as an approach to reducing waste and recycling building materials.	• Evaluate differing approaches toward building deconstruction for optimal materials conservation.	9/30/99	EPA		• NAHB Research Center is providing technical assistance to multiple deconstruction projects for EPA.
		9/30/00	HUD		• HUD is issuing a Task Order to study market potential of deconstructed materials. Work to begin

[17] The *Building America* program provides technical assistance to the PATH National Pilot Projects.

Objectives from the PATH Operating Plan	Planned Near Term Actions	Milestone End Date	Sponsoring Agencies	Industry Participation (footnote)	Status of Progress in Completing Planned Actions
		9/30/00	HUD/USDA		in June 1999. • HUD has issued an IAA to the Forest Products Laboratory to create a rating system for deconstructed lumber.
10. Work on the Green Builder Model Program and the Green Builder Conference scheduled for April 1999.	• See item 5 above	12/31/99	EPA DOE		• See item 5 above.

PATH Goal #3: Improve durability and reduce maintenance costs by 50 percent.

Objectives from the PATH Operating Plan	Planned Near Term Actions	Milestone End Date	Sponsoring Agencies	Industry Participation (footnote)	Status of Progress in Completing Planned Actions
1. Determine high priority areas of need in residential construction relating to durability	• Analyze problems and issues that have been raised by builders and remodelers placing calls to the HOMEBASE Hotline.	6/30/99	HUD/ DOC/NIST		• NIST/NAHB-RC held a Durability Summit on March 31, 1999. Issues were based on a review of HomeBase data. A system has been initiated whereby the HomeBase database is reviewed on a quarterly basis to continue to identify durability issues.
	• Develop draft housing durability/service life prediction protocol for use by NES-BIC and others.	3/31/00	DOC/NIST		• NIST contract with NES-BIC is in process.
	• Develop draft housing durability research agenda and initiate research activities.	9/30/99	DOC/NIST		• Durability Summit held in March 1999 to develop a durability research agenda.
2. Identify the magnitude and occurrence rates of various performance problems in existing housing.	• Conduct a statistical survey of the existing housing stock.	9/30/00	HUD		• HUD has issued an RFP to conduct an initial pilot survey over the next 18 months.
3. Evaluate alternative materials that can improve the durability of building systems while reducing homeowner maintenance requirements.	• Conduct a research needs assessment for alternative materials use in housing.		HUD		• HUD has issued a cooperative agreement to the NAHB Research Center to conduct work in this area.
	• Begin work on a research needs assessment for wood product use in housing -- conducted in cooperation with university and industry researchers.	12/99	USDA/FPL		• Work in progress at USDA/FS
4. Evaluate emerging technologies for their potential to prolong the life of residential structures.	• Develop process for evaluating performance of a limited number of applications of new technologies prior to their widespread adoption.	6/30/99	HUD		• Performance evaluation plans are being developed for technologies being used in the NAHB Research Center demonstration projects.
5. Conduct evaluations and document the costs and performance attributes of PATH technologies that have been incorporated into recently completed demonstration projects.	• See Goal 1, Objective 19.	5/30/99	DOE HUD		• See Goal 1, Objective 19.
6. Conduct research to improve performance of exterior building products.	• Initiate research to reduce the time to measure the photo-degradation of paints	On-going	DOC/NIST		• Work being conducted through NIST's coatings research program.
	• Conduct research on durability of building material adhesives, material properties of composites under cyclic temperature and humidity conditions, durability of water-	On-going 9/30/00	USDA/FS USDA/FS		• Work in progress with $105K of USDA/FS funding. • $500K IAA with Forest Products Laboratory for research on wind resistance and durability of wood

Objectives from the PATH Operating Plan	Planned Near Term Actions	Milestone End Date	Sponsoring Agencies	Industry Participation (footnote)	Status of Progress in Completing Planned Actions [1]
	borne, water-repellent preservatives and other low VOC water-repellent finishes.				products.
	• Evaluate mechanical properties of treated lumber under conditions of high temperature and humidity.	10/00	USDA/FS		• Work in progress with $25K of USDA/FS funding.
	• Evaluate the durability of reinforced glulam beams.	10/00	USDA/FS		• Work in progress with $25K of USDA/FS funding.
7. Conduct extensive field testing and evaluations with builders, remodelers, and product manufacturers on the installation and field performance of innovative products and construction practices that contribute toward enhanced durability and reduced maintenance and repair.	• Begin evaluations of technology and construction process options that can improve construction durability.	7/31/99	HUD		• Over 130 technologies have been included in the PATH technology inventory. An evaluation procedure was developed using building industry input for initial screening. Up to 12 promising technologies will be evaluated in the field by builders this summer.
	• Develop a Building Innovation Center through NES that can perform evaluations on emerging technologies.	6/30/99	DOC/NIST		• NIST is initiating program activities since funding from HUD made available in March 1999.
	• Refine draft guides on structural safety and serviceability, functionality, durability, indoor atmosphere, acoustics and economics as components of performance standards for housing.	9/30/99	DOC/NIST		• Work is proceeding with ASTM E6.66 using both HUD and NIST funding.
8. Based on the results of previous evaluations, identify a set of high-priority technologies that, if accepted into practice, would help achieve PATH durability goals.	• Durability research data to be produced in Computer Integrated Knowledge Systems	10/31/00	DOC/NIST		• Durability research program planning has been initiated.
	• Distribute technical information to university based housing research centers.	On-going	HUD		• NAHB Research Center is working closely with the 18 member Consortium of University-Based Housing Research Centers to disseminate research findings among consortium members and the building industry.
	• With other PATH partners, university and industry researchers, USDA Forest Service will continue distribution of research findings and conduct a conference/workshop on durability issues in housing.	Fall, 1999	USDA/FS		• Work in progress at USDA/FS.
9. Develop wide ranging product and systems demonstrations throughout the U.S. incorporating high-priority PATH technologies and evaluate methods for streamlining acceptance of advanced technologies and communicate the results to the industry and the general public.	• Develop and build both site-built and manufactured homes that meet multiple PATH goals.	9/30/00	HUD		• Construction on 4 Marketable, Affordable, Durable, Entry-Level (MADE) homes is scheduled to begin this summer outside of Washington, DC.
		9/30/99	HUD		• Construction of the "Next Generation" manufactured home prototype.

PATH Goal #4: Reduce by at least 10 percent the risk of loss of life, injury and property destruction from natural hazards and reduce by at least 20 percent residential construction work illness and injuries.

Objectives from the PATH Operating Plan	Planned Near Term Actions	Milestone End Date	Sponsoring Agencies	Industry Participation (footnote)	Status of Progress in Completing Planned Actions

Objectives from the PATH Operating Plan	Planned Near Term Actions	Milestone End Date	Sponsoring Agencies	Industry Participation (footnote)	Status of Progress in Completing Planned Actions
1. Develop an approach for systematically improving the quality of housing that is better able to resist the forces of natural hazards.	• Evaluate how PATH technologies may reduce incidence of property and casualty claims on home owners insurance, and whether such reduction may offer innovative insurance products for homeowners.	6/30/99 6/30/00 On-going	FEMA FEMA FEMA	See note below.[18]	• Expansion of the FEMA program with Fannie Mae to 10-15 states. • Expand the program nationwide. • FEMA is working with insurance industry groups to develop insurance incentives (discounts, deductible reductions/waivers, etc.) for properties using disaster resistant technologies in the construction process.
2. Evaluate alternative materials that can improve the ability of building systems to resist fire and natural disasters.	• Study alternative affordable strategies and products for fire suppression in existing housing.	9/30/00	DOC/NIST		• HUD is sponsoring this work at NIST which is just starting.
3. Evaluate emerging technologies for their potential to meet PATH goals of housing affordability and disaster mitigation.	• Review FEMA materials for impact on affordability. • Develop methods of evaluating structural performance, including the connections of wood-frame housing after natural disasters and develop low-cost methods of repair	6/30/99 On-going	HUD USDA/FS		• The Housing Affordability Through Design Efficiency program sponsored by HUD and industry partners has initiated this review. • Work in progress with $65K of USDA/FS funding.
4. Deliver technical assistance through HUD on disaster relief in Latin American countries that were hit by Hurricanes Mitch and Georges.	• Deliver technical assistance through HUD on disaster relief in Latin American countries that were hit by Hurricanes Mitch and Georges.	6/30/99 5/30/99	HUD HUD		• Initial technical assistance has been provided to countries hit by Hurricane Mitch. Additional work dependent on Congressional funding. • HUD is providing seminars on disaster resistance.
5. Demonstrate disaster mitigation approaches in the rehabilitation of damaged housing and the construction of new housing in the communities damaged by Hurricanes Mitch and Georges.	• As part of rebuilding assistance in Central America, demonstrate at least 10 innovative technologies that can make homes more disaster resistant yet remain affordable to the Central American housing market.		HUD		• Demonstration work dependent on Congressional funding.
6 Conduct evaluations and document the costs and performance attributes of PATH technologies that have been incorporated into recently completed demonstration projects.	• Conduct pilot demonstrations of FEMA's Tornado Saferoom technology in 10 homes. • Conduct pilot demonstrations of the incorporation of mitigation and energy efficiency technologies and practices through DOE's Weatherization Program.	10/99 10/99	FEMA FEMA		• HUD has transferred PATH funds to FEMA to initiate the pilots. • HUD has transferred PATH funds to FEMA to initiate the pilots.
7. Conduct extensive field testing and evaluations with builders, remodelers, and product manufacturers on the installation and field performance of innovative products, designs, and construction practices that contribute toward enhanced resistance to fire and natural disasters.	• Conduct building performance evaluations in the aftermath of Presidentially declared disasters to determine the effectiveness of certain building technologies and practices used in that area. • Document "success stories" associated with the use of mitigation technologies and practices (i.e , the reduction of damages). • Begin evaluations of technology and construction process options that can improve disaster resistance.	On-going On-going 7/31/99	FEMA FEMA HUD		• FEMA has developed an internet based collection database for mitigation success stories and is conducting benefit/cost analysis on some mitigation efforts. • FEMA has established "Building Performance Assessment Teams" to deploy to selected disaster areas. • Over 130 technologies have been included in the PATH technology inventory. An evaluation

[18] FEMA has an agreement with Fannie Mae to develop and deliver a non-collateralized mitigation loan product available to homeowners through Fannie Mae-sponsored mortgage transactions. The product is being piloted in Florida.

Objectives from the PATH Operating Plan	Planned Near Term Actions	Milestone End Date	Sponsoring Agencies	Industry Participation (footnote)	Status of Progress in Completing Planned Actions
					procedure was developed using building industry input for initial screening. Up to 12 promising technologies will be evaluated in the field by builders this summer.
	• Develop improved disaster resistant installation technologies for manufactured housing.	12/31/99	HUD		• HUD has issued a cooperative agreement with the Manufactured Housing Alliance to investigate technical solutions for new manufactured housing
		12/31/99	HUD		• HUD has issued a task order with Steven Winter Associates to investigate retrofit solutions
	• Identify and characterize residential fire hazards and examine mitigation technologies. Develop test protocols.	5/31/00	DOC/NIST		• Work initiated at NIST.
8. Based on the results of previous evaluations, identify a set of high-priority technologies that, if accepted into practice, would help achieve PATH disaster mitigation goals.	• Conduct building performance evaluations in the aftermath of Presidentially declared disasters to determine the effectiveness of certain building technologies and practices used in that area.	On-going	FEMA		• FEMA has established "Building Performance Assessment Teams" to deploy to selected disaster areas.
9. Develop wide ranging product and systems demonstrations throughout the U.S. incorporating high-priority PATH technologies and evaluate methods for stream lining acceptance of advanced technologies and communicate the results to the industry and the general public.	• Conduct demonstrations in disaster prone communities of disaster mitigation approaches that meet PATH goals.	9/30/00	HUD		• FEMA's *Project Impact* is working in local communities to showcase disaster mitigation strategies.
10. Develop partnerships and other cooperative efforts with the PATH partners to identify and address significant workplace hazards, emphasizing those targeted by OSHA's performance goals.	• Continue implementing the HomeSafe Partnership with the Home Builders Association of Metropolitan Denver. The Partnership has a ten point program based on actual accident experience to address specific hazards causing fatal and serious accidents and a design solution for managing the risks inherent in the residential home building industry (OSHA).	On-going	DOL/OSHA		• Program is up and running. Additional partnerships are under development.
11. Deliver an appropriate mix of interventions and compliance assistance tools to assist home builders in complying with OSHA safety regulations.	• Provide expert assistance to small and medium employers, including residential contractors and other employers with no more than 250 employees (OSHA).	9/30/99	DOL/OSHA		• Over 3,000 consultation site visits were completed in FY98. A larger number of consultations are projected for FY99.
	• Develop a focused inspections guidance document for the construction industry (OSHA).	On-going	DOL/OSHA		• Work is underway.
12. Develop a standardized, valid safety and health program evaluation measurement tool which can be used to assess the quality of a safety and health program. Use the results from application of the tool to assist home builders in implementing or improving their safety and health programs.	• Implement a method for acquiring data specially designed to measure incidence of residential construction workplace illness and injury.	On-going	DOL/OSHA		• OSHA is working with Colorado St. University on developing this methodology.
	• Develop Safety and Health Program Partnerships with the American Subcontractors' Association, the Painting and Decorating Contractors of America and the National Electrical Contractors of America to promote an automated (computerized) system to assist member contractors to	On-going	DOL/OSHA		• OSHA is reviewing the interactive video training programs that have been developed by these associations.

Objectives from the PATH Operating Plan	Planned Near Term Actions	Milestone End Date	Sponsoring Agencies	Industry Participation (footnote)	Status of Progress in Completing Planned Actions [1]
	develop site-specific safety and health programs for their sites, and provide recognition for contractors who use this automated system.				
13. Make safety and health information and materials easily accessible to home builders and workers via both the Internet and paper based publications.	• OSHA will continue developing and delivering safety and health information through its web site, the OSHA CD-ROM, Compliance Advisors Software, and the Job Safety and Health Quarterly.	On-going	DOL/OSHA		• OSHA is continually updating and revising information.
14. Develop and disseminate occupational safety and health training and reference materials which address the needs of small home builders and workers.	• The train-the-trainer construction outreach program organizations include construction trade unions, construction associations, and insurance companies. • The NAHB Research Center training grant provides training and specialized materials to builders and contractors in 50 communities. Additional training through the National Safety Council/United Brotherhood of Carpenters training grant and the Scaffolding Training Partnership. • Disseminate the *Jobsite Safety Handbook* for small contractors, jointly produced by OSHA and NAHB, the *Construction Regulations for the Home Building Industry* manual, pocket cards on OSHA requirements for use in the field by supervisors and workers, and *Fatal Facts* and hazard information bulletins to alert home builders to hazards.	8/31/99 3/31/99 3/31/99	DOL/OSHA DOL/OSHA DOL/OSHA		• Train-the-trainer materials are under development by NAHB Research Center. Train-the -trainer sessions will be held during the summer of 1999. • Over 24 eight-hour training seminars have been held throughout the US to date. Another 26 are under development for other cities. • The Handbook and other OSHA safety materials were added to the *Catalog of Building Products* that is distributed on CD-ROM and the Internet. The CD-ROM version is provided to all seminar attendees.

PATH

PATH is a partnership between industry and government to speed the creation and widespread use of advanced technologies in order to radically improve the quality, durability, energy efficiency, environmental performance, and affordability of our Nation's housing.

PATH works to:

- ☆ improve the quality and affordability of today's new and existing homes;
- ☆ strengthen the technology infrastructure of the United States; and
- ☆ help create the next generation of American housing.

PATH works by:

- ☆ providing builders and consumers with the latest information on innovative building materials, processes, and systems;
- ☆ showcasing innovative housing projects that can serve as models for builders and owners across the country;
- ☆ promoting focused, cooperative housing research among industry, government, and university partners; and
- ☆ tackling institutional barriers to innovation—from risk and liability concerns to the lack of effective product evaluation systems.

Evaluates New Housing Technologies

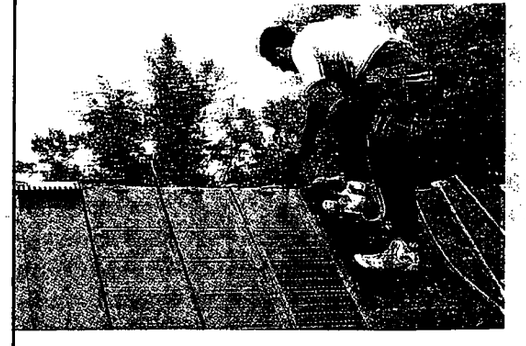
- ☆ **PATH** offers hands-on assistance to builders who are willing to evaluate the installation and performance of promising new housing technologies, products, and systems that meet PATH goals.
- ☆ **PATH** extends technical assistance to developers and communities interested in "real-world" applications of new housing technologies.
- ☆ **PATH** offers feedback to manufacturers on changes needed to improve their products' ability to meet PATH goals.

Drives New Building Product Development

- ☆ **PATH** identifies innovations, discoveries, and products in the Federal Government's multibillion-dollar research efforts that the housing sector can use or commercialize.
- ☆ **PATH** fosters cooperative housing research, testing, and evaluation among partners in private industry, research universities, and national laboratories.
- ☆ **PATH** tackles institutional, regulatory, and financial barriers—such as lack of training, outdated building codes and bureaucratic products approval systems—that discourage builders from trying new products and technologies.
- ☆ **PATH** helps shape the national housing research and development agenda through sponsorship of a biennial Conference on the Future of the House.

Provides Information that Builders and Remodelers Need

- ☆ **PATH** gathers the latest data on advanced housing technologies and products including installation details, benefits, costs and limitations, codes and regulatory issues, and industry contacts as well as provides case histories of how specific innovative building technologies are being used in the field.
- ☆ **PATH's** website, *www.pathnet.org*, serves as an Internet gateway to the latest housing information—offering links to housing industry technical resources; descriptions of Federal housing programs; and news of housing technology advances made by private and public sector partners.
- ☆ **PATH** works closely with the NAHB Research Center's HOMEBASE program which communicates housing technology news to builders and remodelers through a *Directory of Innovative Products*, a *Catalog of Building Products*, a quarterly technical newsletter, a toll-free technical hotline, and an "Ask an Expert" service via the Internet.



Goals By The Year 2010

PATH will:

- ☆ reduce the monthly cost of new housing by 20 percent or more;
- ☆ cut the environmental impact and energy use of new housing by 50 percent or more and reduce energy use in at least 15 million existing homes by 30 percent or more;
- ☆ improve durability and reduce maintenance costs by 50 percent; and
- ☆ reduce by at least 10 percent the risk of loss of life, injury, and property destruction from natural hazards and decrease by at least 20 percent residential construction work illnesses and injuries.

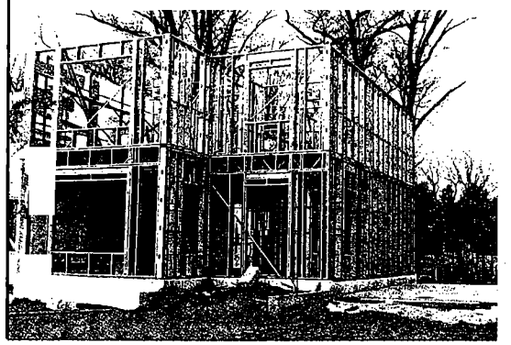
This is a time for us to ask how can we take advantage of the good times we have and the changes that are going on to meet the long-term challenges of America. . . . That's what this PATH project is all about. It will be the most ambitious effort ever to help private homebuilders and homeowners make cost-effective decisions that will pay big dividends throughout the 21st century. . . . The power of this partnership is growing every day.

—President Bill Clinton
Remarks at the Launching of PATH
May 4, 1998

Technology making a difference where Americans live

PATH's Participating Organizations

- ★ **PATH's** participating organizations direct the initiative through their commitment of time, resources, and leadership.
- ★ **PATH's** private sector partners include home builders, product manufacturers, insurance and financial companies, and associations.
- ★ **PATH's** public sector partners include the Departments of Agriculture, Commerce, Defense, Energy, Housing and Urban Development, Labor, and Transportation; the Environmental Protection Agency; the Federal Emergency Management Agency; the National Science Foundation; and the White House Office of Science and Technology Policy. State and local officials committed to facilitating the use of new technologies in housing projects within their jurisdictions also participate in the program.
- ★ **PATH's** primary role in efforts to move new technology into the marketplace is to act as catalyst, facilitator, and "remover of barriers." Industry itself develops and deploys the technologies for the next generation of housing.



PATH is a true private/public partnership with the potential to significantly advance the technology base of housing in the United States. Everyone who participates gains—builders and remodelers, manufacturers, and government. Participation is a win-win situation for all concerned, especially America's homeowners.

—Andrew Cuomo, Secretary
Department of Housing
and Urban Development

For further information visit PATH's Web site:

www.pathnet.org

To find out how to become a **PATH Partner,** contact:

PATH
PARTNERSHIP FOR ADVANCING TECHNOLOGY IN HOUSING

Office Location:	Suite 7110 470 L'Enfant Plaza, SW Washington, DC 20024
Mailing Address:	Suite B133 451 Seventh Street, SW Washington, DC 20410
Phone Number:	(202) 708–4277
Fax Number:	(202) 708–4250
E-mail:	pathnet@pathnet.org

By working together, we're going to bring America homes that are safer, more affordable, more durable, more energy efficient, more comfortable. And we're going to do it through the power of innovation and through the power of the marketplace.

—Vice President Al Gore
Remarks About PATH
May 15, 1998

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Partnership for Advancing Technology in Housing
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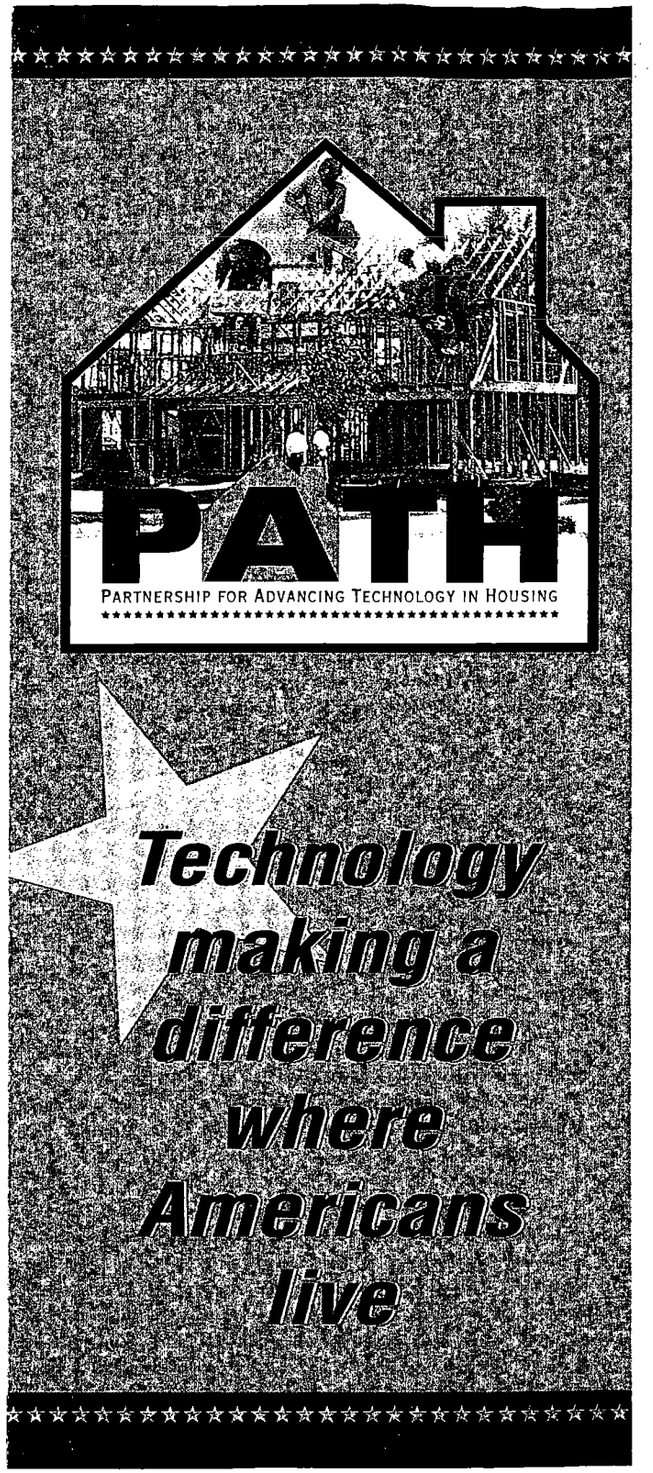

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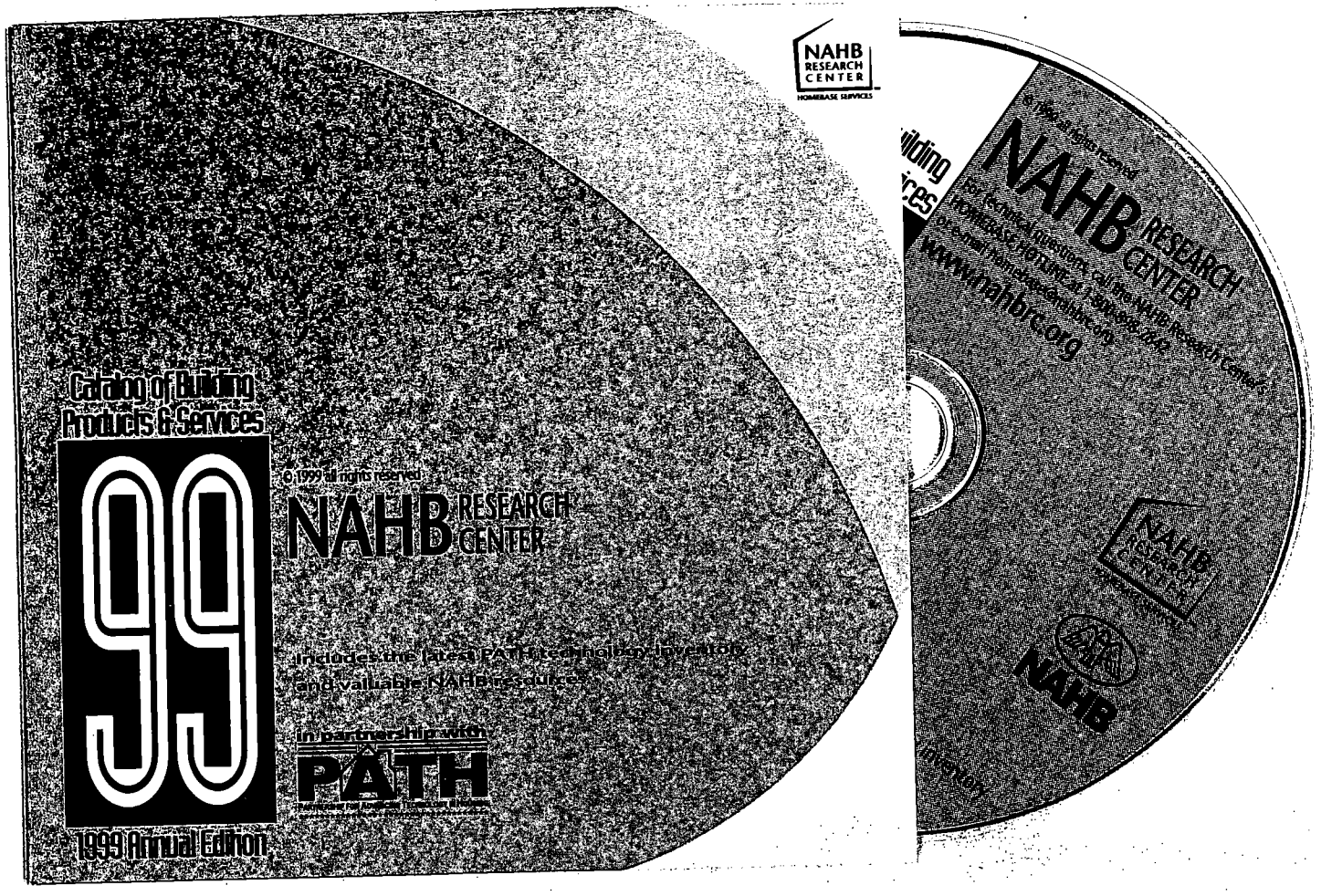
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Business Roundtable Embraces Attempts To Curb Warming

* * *

CEOs Seek National Summit To Discuss Ways of Using Energy-Saving Devices

By JOHN J. FIALKA
Staff Reporter of THE WALL STREET JOURNAL

WASHINGTON – Citing "dramatic" changes in energy-related technology that can help U.S. industry curb global warming, the Business Roundtable is calling for a national summit on how business and government might speed the development and use of energy-efficient devices.

The Roundtable, which represents chief executives of more than 200 of the largest U.S. companies, will issue the results of a survey of its members today on Capitol Hill. It said "long term technologies in every sector hold enormous potential" to help combat climate change.

These include: automobiles able to travel 80 miles on a gallon of gas, fuel made from waste products, and special laser beams that cut logs and shape textiles. Most would lessen climatic change by generating less carbon dioxide and other gases. Such gases are thought to be artificially warming the earth's atmosphere by trapping more of the sun's heat—the so-called greenhouse effect.

Robert N. Burt, chairman of the FMC Corp. and head of a Roundtable task force on the environment, said the group believes many of the new technologies make good business sense because they will cut production costs. "The fact that it will help us prepare for reducing climate change is like frosting on the cake." Previously the group has stressed that moves to curb emissions might wreck the booming U.S. economy.

Mr. Burt said the group remains opposed to U.S. ratification of the Kyoto treaty on climate change because the survey indicates that most of the technology will take two decades or more to get into common use. The Kyoto treaty calls for industrial nations to begin cutting emissions between 2008 and 2012.

Roger S. Ballentine, who handles climate-change issues for the White House, said the Clinton administration regards the Roundtable survey as a positive step because it supports many aspects of the president's five-year, $6.5 billion budget request to accelerate government research into energy-efficient technology. "These are programs that just make sense. The fact that the Roundtable has just proposed this from a business perspective is heartening," he said.

Republicans on Capitol Hill have stymied the Clinton package, calling it a "backdoor attempt" to gain ratification for the Kyoto treaty. Mr. Burt said that while there may be some "similarities" with its new survey report, the Roundtable has taken no formal position on the Clinton proposals. Members of the group remain deeply split over emissions trading and other incentives offered by the treaty to help create markets for energy-saving technology, he said.

He said the Roundtable wants to help sponsor a national summit on ways to speed the transfer and use of new technology after the 2000 election. "We need a more stable, bipartisan environment on this. It may be a difficult thing to do."

Fred Krupp, president of the Environmental Defense Fund, a New York environmental group, called the Roundtable's latest stance "hypocritical" because it opposes the treaty while asking for government aid.

THE WALL STREET JOURNAL
WEDNESDAY

Comments on S.882, Murkowski/Hagel Climate Change Bill & BRT Report

We are gratified to see that Senators Murkowski and Hagel recognize that climate change is a serious issue that needs to be addressed and we welcome the bill's emphasis on promoting the research and development of technologies to reduce or sequester the greenhouse gases that cause global warming.

We similarly welcome today's report issued by the Business Roundtable ("The Role of Technology in Responding to Concerns About Global Climate Change", July 1999). Here too there is a large overlap much of what the BRT is proposing and what the Administration has proposed. In particular, we applaud the report's emphasis on:

- the "potential for additional or more rapid implementation of near-term energy-efficient technologies, both domestically and internationally."

- identifying opportunities to remove government barriers to technology diffusion.

- the importance of "accelerating the emergence of technologies relevant to global climate change" through improved public/private research partnerships.

We think it is self-evident that supporters of the Murkowski bill and the BRT proposals should strongly support the Administration's package of investments and tax incentives, which includes:

- a vigorous effort to **accelerate the research, development and deployment of energy efficient technologies and renewable energy**. These efforts include both medium and long-term research as well as more immediate programs like those encouraging the use of high-efficiency Energy Star products and Green Lights. These programs were funded at over $1 billion in FY 99, with nearly $1.4 billion requested for FY 00.

- a **five-year package of tax incentives** to encourage the purchase of clean energy products;

At the same time, neither the Murkowski bill nor the BRT proposals should be seen as a substitute for the broad range of activities that the Administration is carrying on both domestically and internationally to address climate change. In addition to the investment and tax incentive package outlined above, these include:

- a bill to **restructure the electricity industry** that is projected to save 40-60 million metric tons of carbon per year;

- a set of **working industry partnerships** with sectors including autos, home building, steel, chemicals and forest products;

- an **energetic diplomatic effort** to complete the unfinished business of the Kyoto Protocol and bring about the meaningful participation of key developing countries;

- a **$1.7 billion program in scientific research** to improve our understanding of the forces that shape the Earth's climate.

We are pleased that Senators Murkowski and Hagel have clearly stated that the $200 million a year proposed R&D authorization program would be *in addition* to federal efforts already underway to address climate change. But the real question for Congress is how much it agrees to appropriate for clean energy efforts that are good for business, good for consumers, good for U.S. competitiveness, and good for our energy security.

We are also concerned that the bill would not give businesses real, bankable credit for taking early action to reduce greenhouse gases. It proposes steps to improve the voluntary reporting of greenhouse gas emissions, but businesses deserve more: they deserve real credit when they take real action.

Finally, regarding the Kyoto Protocol, it must be remembered that the Administration has said from the beginning that the Protocol is a work in progress -- a vital and significant accomplishment that embodies the fundamentally market-based approach that the United States fought for -- but a treaty that needs more work. In particular, a number of key provisions need to be further fleshed out and, most important, there needs to be greater participation by developing countries. Until that unfinished business is finished, the Administration has made clear it won't submit the Protocol for ratification. It is not in the best interests of the United States to give up on this process.

Our strategy should be to keep working on the diplomatic front to complete Kyoto so that it can be ratified, and to keep working on the domestic front on win-win steps to promote research, innovation, the diffusion of clean energy products and voluntary industry actions to reduce and sequester greenhouse gases.

DRAFT
TO: Rosina, Mike, Jeff Seabright, David Gardiner
FROM: Sam Baldwin
RE: Possible Press Release per the Business Round Table Announcement
DATE: July 16, 1999

We are pleased to see the Business Round Table report, "The Role of Technology in Responding to Concerns About Global Climate Change."

We agree with the Business Round Table when they say:
- "In every sector of the economy, the long-term prospect for new and emerging technologies hol potential for greater productivity, safety, convenience, and greater energy and carbon efficiency
- "the deployment of more energy-efficient technologies and the development of new and breakth technologies constitutes the most effective response to concerns about possible changes in our climate"

The BRT singled out technologies, including:
- Transport: "electric drives, hybrid-electric and fuel-cell vehicles" "alternative fuels...such as eth methanol, compressed natural gas, and even converting natural gas directly to ultraclean liquid f Advances in biotechnology hold promise for converting biomass to fuel.
- Buildings: "computer-aided design...smart windows, combined heat and power, microturbines fuel cells, advanced control systems. Advanced lighting systems
- Fossil energy: integrated coal gasification combined cycle
- Renewables: wind, solar, geothermal, superconductors, power electronics
- Carbon sequestration, both geological and biological

The BRT also identified barriers in the following areas:
- Market-oriented factors in setting priorities for basic federal research funding
- Mechanisms to advance public/private applied research partnerships while protecting commerci interests
- Issues relating to cost and risk sharing at the pre-commercial phase

The BRT also "believes that there may be potential for additional or more rapid implementation of term energy-efficient technologies both domestically and internationally, that can modestly reduce emissions

We disagree with the BRT when they say that the "Kyoto Protocol in its current form" ... "would h negative impact on the U.S. economy and [it] would bring no significant global environmental bene
- This statement ignores the flexibility mechanisms that the United States successfully negotiate the protocol that will allow the protocol's timetables and targets to be met at the lowest possibl

The Administration has focused particular attention on the development of technology to address th climate change issue, as well as:
- **maximizing economic benefits** to the United States by ensuring a low cost and reliable source clean energy supplies and developing global energy markets;
- **minimizing security risks and costs** to the United States of possible oil supply disruptions an risk of nuclear proliferation; and
- **addressing local and regional environmental problems** such as urban air quality and region deposition.

The Administration has accomplished this by developing a strong energy technology R&D portfolio, drawing from the expert guidance provided by the President's Committee of Advisors on Science and Technology study, *Federal Energy Research and Development for the Challenges of the Twenty-First Century*, November 1997. A comparison across these budgets is provided below.

The Business Round Table emphasized improving vehicle energy efficiency through advanced materials, hybrid and fuel cell power systems, and others. This is the focus of the Administrations Partnership for New Generation of Vehicles, yet the Senate and House are cutting funding back to or even below the FY98 level.

Similarly, energy efficiency in buildings, industry and transport (including PNGV) is being capped at or below current levels.

Finally, solar and renewable energy offers huge potential, as noted by the Business Round Table, but the House and Senate are cutting it below current funding levels.

BUDGET COMPARISONS

BUDGET	FY98 Actual	FY99 Actual	FY2000 Request	FY2000 Senate	FY2000 House
PNGV (DOE portion)	123	134	150	121	125
Energy Efficiency (includes Buildings, Industry, Transport, FEMP, Weatherization)	612	692	838	696	683
Solar and Renewable Energy (net)	272	336	399	279	301

BUDGET	FY98 Actual	FY99 PCAST	FY99 Request	FY99 Actual	FY2000 PCAST	FY2000 Request	FY2000 Senate	F H	0
Energy Efficiency									
--Buildings R&D									
--Industry R&D									
--Transport R&D									
Energy Efficiency	430	615	617	502	690	615			
Renewable Energy R&D	294	475	389	336	585	398			
Prior Year Balances	-24		-17						
Office of Science									
Total Renewable Energy	270	475	372						
--State/local Grants									
--Other									
TOTAL Energy Efficiency and Renewable Energy									

TALKING POINTS ON BUSINESS ROUINDTABLE REPORT

- Reading through a draft of the BRT report ("The Role of Technology in Responding to Concerns About Global Climate Change" July 1999) it seems clear to me that there's a high degree of consistency between the BRT approach on climate change and the Administration's.

- More specifically, we think there is a very large overlap between much of what the BRT is proposing and what the Administration has proposed as part of its Climate Change Technology Initiative (CCTI). Is this the way you see it?

- In particular:

  - The BRT notes the "potential for additional or more rapid implementation of near-term energy-efficient technologies, both domestically and internationally, that can modestly reduce carbon emissions." The Administration agrees; that is why a host of EPA and DOE programs are aimed at more rapid diffusion of these technologies. Additional funding for these programs is included as part the of the CCTI.

  - The BRT further proposes to undertake a study to identify specific programs and opportunities to remove government barriers to technology diffusion. The Administration agrees; that's why we have engaged is vigorous round of consultations with energy-intensive industries over the past 1 ½ years aimed, in part, at finding ways to overcome some of these barriers. We welcome further attention to this issue.

  - The BRT notes the importance of "accelerating the emergence of technologies relevant to global climate change" through improved public/private research partnerships. The Administration agrees; that is why we continue to solicit business input on how to refine and improve such efforts as the Partnership for Advancing Technology in Housing (PATH), the Partnership for a New Generation of Vehicles (PNGV), and Industries of the Future. Additional funding for these and other public/private research partnerships on energy efficient technologies are included as part of the President's CCTI.

- Understanding that we disagree on Kyoto, we just want you to be aware that there really is a broad range of support for the general approach and many of the specific measures you are proposing and that that support includes the Administration. We also hope you don't move forward in such a way as to give the impression that you are aligned with those who propose that we not do anything on climate change.

Comments on S.882, Murkowski/Hagel Climate Change Bill

We are gratified to see that Senators Murkowski and Hagel recognize that climate change is a serious issue that needs to be addressed and we welcome the bill's emphasis on promoting the research and development of technologies to reduce or sequester the greenhouse gases that cause global warming.

However, the bill should not be seen as a substitute for the broad range of activities that the Administration is conducting both domestically and internationally to address climate change, including:

- a vigorous effort to accelerate the research, development and deployment of energy efficient technologies and renewable energy. These efforts include both medium and long-term research as well as more immediate programs like those encouraging the use of high-efficiency Energy Star products and Green Lights. These programs were funded at over $1 billion in FY 99, with nearly $1.4 billion requested for the next year."

- a five-year package of tax incentives to encourage the purchase of clean energy products;

- a bill to restructure the electricity industry that is projected to save 40-60 million metric tons of carbon per year;

- a set of working industry partnerships with sectors including autos, home building, steel, chemicals and forest products;

- an energetic diplomatic effort to complete the unfinished business of the Kyoto Protocol and bring about the meaningful participation of key developing countries;

- a $1.7 billion program in scientific research to improve our understanding of the forces that shape the Earth's climate.

We are also pleased that Senators Murkowski and Hagel have clearly stated that the $200 million a year proposed R&D authorization program would be *in addition* to federal efforts already underway to address climate change. In short, we welcome the additional authorization, but the real question for Congress is how much it agrees to appropriate for clean energy efforts that are good for business, good for consumers, good for U.S. competitiveness, and good for our energy security.

We are concerned that the bill would not give businesses real, bankable credit for taking early action to reduce greenhouse gases. It proposes steps to improve the voluntary reporting of greenhouse gas emissions, but businesses deserve more: they deserve real credit when they take real action.

Finally, regarding the Kyoto Protocol, there appears to be a good deal of confusion. The Administration has said from the beginning that the Protocol is a work in progress -- a vital and

significant accomplishment that embodies the fundamentally market-based approach that the United States fought for -- but a treaty that needs more work. In particular, a number of key provisions need to be further fleshed out and, most important, there needs to be greater participation by developing countries. Until that unfinished business is finished, the Administration has made clear it will not submit the Protocol for ratification. It is not in the best interests of the United States to give up on this process.

Our strategy should be to keep working on the diplomatic front to complete Kyoto so that it can be ratified, and to keep working on the domestic front on win-win steps to promote research, innovation, the diffusion of clean energy products and voluntary industry actions to reduce and sequester greenhouse gases.

U.S. DOMESTIC CLIMATE CHANGE PROGRAM

The U.S. is undertaking a vigorous plan for reducing domestic greenhouse gas emissions. This plan, outlined by President Clinton in October 1997, emphasizes win-win initiatives designed to cut emissions by increasing energy efficiency; developing new, cleaner energy technologies; working with industry and others to promote sensible solutions; and employing market-based mechanisms to ensure cost-effective reductions. Important elements of President Clinton's plan include:

Clean Energy Investments and Incentives. The Climate Change Technology Initiative -- a vigorous program of tax cuts and research and development aimed at improving energy efficiency and spurring the use of renewable energy sources -- represents an additional $6.3 billion over 5 years ($3.6 billion in tax cuts and $2.7 billion in new investment). In response to the President's climate change request, the Fiscal Year 1999 appropriations bills include over $1 billion for investments in U.S. energy efficiency and renewables -- a 25% increase over last year. Included in this package are additional funds for:

- ***Partnership for a New Generation of Vehicles,*** a government-industry effort to develop safe, attractive, affordable cars that are three times as fuel efficient as today's autos. Similar efforts are underway to develop cleaner, more efficient diesel engines for both light and heavy trucks.
- ***Partnership for Advancing Technology in Housing,*** a partnership with the homebuilding sector to build new homes that are 50% more energy-efficient and retrofit at least 15 million existing homes to make them 30% more energy efficient within the next decade.
- ***Energy Star Buildings and Green Lights***, voluntary programs that encourage individual building owners, developers and managers to install energy efficient lighting and maximize energy savings. Buildings that are in the top 25% in energy efficiency qualify for an "Energy Star Buildings" label. Major buildings that have already signed up include: the Empire State Building, the World Trade Center, and Chicago's Sears Tower.
- ***Renewable Energy*** research partnerships to accelerate price reductions and improve performance in areas such as wind, photovoltaics, geothermal, biomass, and hydropower, and for the President's Million Solar Roofs initiative, that aims to install solar panels on one million U.S roofs over the next 10 years.

Industry Consultations. Senior White House staff are meeting with top management from key industrial sectors, including, to date, aluminum, steel, forest products, utilities, cement and natural gas pipelines to encourage voluntary efforts to cut emissions. These sector-by-sector consultations identify opportunities to remove barriers to the development and widespread use of energy efficient technologies and practices. The President has made clear his commitment to provide appropriate credit to firms that take action to reduce emissions before the Kyoto Protocol's first commitment period.

Electricity Restructuring. In March, the Administration introduced its electricity restructuring proposal that, by encouraging competition, will save consumers $20 billion a year on electricity bills, and reduce greenhouse gas emissions by roughly 25 to 40 million metric tons per year.

Federal Energy Use and Procurement. The President's plan includes making substantial improvements in the Federal government's own use and procurement of energy. In July, the President announced the first four elements of his plan focusing on the building sector.

Climate Change Action Plan. In 1993, following the United States' ratification of the U.N. Framework Convention on Climate Change, President Clinton launched the Climate Change Action Plan (CCAP). The CCAP focused on promoting voluntary initiatives across a wide array of industries and sectors of the economy to reduce greenhouse gas emissions. Example of the CCAP, not discussed above, include: Climate Challenge, Climate Wise, Industries of the Future, Motor Challenge, Voluntary Aluminum Industrial Partnership, Energy Star Products, Energy Efficiency Standards for Equipment and Appliances, WasteWise, Methane Reduction Programs, Energy Smart Schools, State and Local Climate Change Program and U.S. Country Studies Program.

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Energy Technology R&D: Critical Investments for Our Nation

The fiscal year 1999 budget request for DOE energy programs calls for increases to support cost-shared research, development, and pre-commercial deployment of clean, efficient, and cost-effective energy technologies. These programs focus federal resources and cost sharing from private industry in key areas that provide critical national benefits, stimulate complementary private investments and leverage market forces. They will result in energy cost savings to consumers, enhanced industrial competitiveness, lessened dependence on oil, a healthier environment, and development of advanced technologies for the huge emerging global market in clean energy.

Key Accomplishments

- In its 1997 review of the national energy R&D portfolio, the *President's Committee of Advisors on Science and Technology* targeted energy efficiency, renewable energy, clean fossil energy production, advanced nuclear energy and supporting fundamental research for substantial increases in funding. The Committee reported that R&D investments in energy efficiency technologies have contributed to improvements in the use of energy that save U.S. consumers about $170 billion each year.

- *Availability of Technologies*: Over 50 transportation technologies that increase efficiency and alternative fuel use are commercially available. Over 104 industrial energy saving technologies supported by DOE are now in the marketplace -- saving $1.8 billion since 1985. Consumer savings from just five building efficiency technologies -- advanced windows, electronic ballasts, efficient refrigeration compressors, advanced oil furnace burners, and building energy software -- total more than $30 billion since 1978. These savings are more than three times the entire energy efficiency R&D budget since 1980.

- *Federal sector*: Reduced federal energy costs today have saved taxpayers more than $800 million per year as a result of efficiency and renewable energy projects.

- *Industries of the Future*: Partnerships have been signed with the metal-casting, glass, aluminum, forest products, steel, and chemical industries and include industry visions and technology roadmaps. Work in this area has led to better focused R&D strategies to develop more efficient technologies.

- *Transportation Technologies*: The Partnership for a New Generation of Vehicles resulted in prototypes developed by Chrysler, Ford and General Motors which dramatically improve fuel efficiency and emissions characteristics without sacrificing safety, performance or cost. Ford's P2000 concept makes use of advanced materials to reduce the weight of a full-size vehicle by 40%. Combined with an advanced direct-injection engine, the P2000 is projected to deliver 63 miles per gallon. Using the innovative EV-1 drivetrain, General Motors displayed both series and parallel hybrid concepts. Chrysler unveiled a parallel hybrid that offers state-of-the-art hybrid electric vehicle (HEV) technology and uses and advanced diesel direct injection engine.

- *Buildings Technologies*: The Partnership to Advance Technologies in Housing (PATH) initiative was launched this month by the President in association with federal agencies and the Home Builders of America to increase whole building efficiency.

- *Energy Star*: In addition to the numerous appliance and windows manufactures who have signed on to the Energy Star program, DOE funded a study in Bern, Kansas which proved that in more than 100 homes, replacing existing washers with Energy Star high-efficiency clothes washers saved on average 58% of energy and more than 40% of water.

- *Photovoltaics*: Manufacturing R&D resulting from cost-shared R&D with industry, has reduced average manufacturing costs for DOE partners by 50 percent and is expected to decline by another 75 percent by 2000.

- *Solar Thermal Power Applications Research*: Cost-shared R&D resulted in prototype dish/engine system and power tower heliostats. The Solar Two Power Tower Project in Barstow, California achieved a record power output of 11 megawatts and demonstrated for the first time its unique ability to collect solar energy during the day and yet generate solar power at night.

- *Modular Biopower Systems Development*: Cost-shared R&D resulted in systems ranging from 5 kW to 5 MW which have enormous potential for remote power generation - especially in developing countries - where biomass feedstocks are the often the most economic energy feedstock.

- *Ethanol production*: Cost-shared R&D resulted in the world's largest and most advanced plant to produce transportation ethanol from cellulosic biomass located at BC International in Jennings, Louisiana.

- Wind energy has been the fastest growing source of electricity worldwide for the last several years, and total equipment sales in the business are approaching $2 billion per year.

FY 1999 Budget Goals

The FY 1999 budget request for energy efficiency technologies, clean energy technologies and supporting research and basic science is designed to build on accomplishments and meet the following goals:

- by 2004, develop mid-sized cars capable of 80 miles per gallon and two-third reductions in emissions, with no compromises in safety, comfort, performance or cost -- through the Partnership for a New Generation of Vehicles;
- by 2010, improve the efficiency per unit output of the nation's most energy intensive industries and cut energy-related emissions and waste by 25 percent from projections;
- by 2010, improve the energy efficiency of the nation's new homes by 50 percent; new commercial buildings by 30 to 50 percent; and existing buildings by 20 percent; and
- by 2005, improve energy efficiency in Federal buildings by 30 percent over 1985 levels.
- by 2010, triple the use of advanced renewable energy technologies;

- by 2010, make available cost-effective, low-emissions power systems with efficiencies of 70% for natural gas, 60% for coal and 85% for combined heat and power;
- by 2010, improve the reliability and performance of operating nuclear power plants to 86% efficiency while avoiding premature plant shutdowns; and
- maintain a strong national science and technology knowledge base that is the foundation for future energy technologies and develop advanced, long-term technology solutions.

F. Carter Smith for The New York Times

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STRANGLED LIFELINE

A special report.

His medicine was unavailable. An unexpected nationwide shortage of the drug had hit.

For more than three months, Mr. Valestrino went untreated. Chills, fevers and fatigue set in. Finally, he tried a different brand of the drug, only to suffer severe side effects. For much of this month, sickness has kept him from work. Last week, his fiancée tearfully told him she had never before understood the gravity of

INDUSTRIAL GROUP

PLANS TO BATTLE CLIMATE TREATY

AIMS TO RECRUIT SKEPTICS

Draft Proposal Seeks to Depict Global Warming Theory as a Case of Bad Science

By JOHN H. CUSHMAN Jr.

WASHINGTON, April 25 — Industry opponents of a treaty to fight global warming have drafted an ambitious proposal to spend millions of dollars to convince the public that the environmental accord is based on shaky science.

Among their ideas is a campaign to recruit a cadre of scientists who share the industry's views of climate science and to train them in public relations so they can help convince journalists, politicians and the public that the risk of global warming is too uncertain to justify controls on greenhouse gases like carbon dioxide that trap the sun's heat near Earth.

An informal group of people working for big oil companies, trade associations and conservative policy research organizations that oppose the treaty have been meeting recently at the Washington office of the American Petroleum Institute to put the plan together.

Joe Walker, a public relations representative of the petroleum institute who is leading the project, said in an interview that the plan had been under consideration for about two months and was "very, very tentative." Mr. Walker said no industry executives had yet been approached to pay for it.

But an eight-page memorandum that he wrote shows in detail how some industry lobbyists are going about opposing the climate treaty.

It is a daunting public relations task. Whenever the treaty's advocates, including the Clinton Administration, discuss global warming, they present the science as essentially settled and unchallengeable, and they compare dissenting scientists to discredited apologists for the tobacco companies. That view has become widely accepted among reporters and the public.

Although mainstream scientists do identify considerable uncertainties in their climate predictions, which are based on computer models, they are increasingly confident that global warming is a serious problem and often say that the uncertainties do not justify inaction.

Based on the latest science, most of the world's nations agreed in Rio de Janeiro in 1992 that industrial

A Euro Primer

Starting next year, most of Western Europe will take the first step toward unifying its economic system by adopting one currency, the euro.

THE COUNTRIES

Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain

KEY DATES

May 2, 1998 European exchange rates are likely to be fixed for Jan. 1, 1999

Jan. 1, 1999 All banks and stock exchanges begin using euros.

Jan. 1, 2002 The euro goes into circulation.

July 1, 2002 National currencies no longer accepted.

Israel Is Still Special In Americans' Eyes

As Israel prepares to celebrate its 50th anniversary, most Americans continue to have a positive view of the country, saying that Israel is vital to the interests of the United States and a reliable ally, according to a nationwide poll by The New York Times.

About half of Americans regard Israel as a "special place." And a strong majority of Americans sympathize with Israel over the Palestinians in the effort to achieve peace in the Middle East.

Jewish respondents register even stronger support for Israel than do Americans as a whole. More surprising perhaps, American Jews look more favorably on the idea of creating a Palestinian homeland than other Americans do, apparently because they have delved more deeply into the issue.

NEXT PIVOT
TOWARD TH

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By EDMUND L. A

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...he European Automobile Manufacturers Association, which includes Ford of Europe and G.M.'s ... produce cars with an average fuel economy of 27.5 miles per gallon. The requirement for light trucks, a category including pickup trucks, sport ... truck gas mileage standards in the United States. The auto makers, meanwhile, are conducting research into electric vehicles and other tech-

Industrial Group Plans to Fight Climate Treaty

Continued From Page 1

nations should cut emissions of greenhouse gases, and the treaty was modified last year to require further reductions in emissions to levels well below those of 1990, over the next 10 to 15 years. But the United States Senate has not yet agreed to that treaty provision, which could require deep reductions in American consumption of fossil fuels.

Documents describing the proposal to undermine the mainstream view were given to The New York Times by the National Environmental Trust, whose work in support of the global-warming treaty is financed by philanthropic organizations, including the Pew Charitable Trusts, the biggest of the nation's pro-environment grant makers.

Phil Clapp, the president of the environmental trust, said he obtained the papers from an industry official. Exposing the plan at this stage, Mr. Clapp said, would probably ruin the effort to raise money to carry out the plan.

Industry representatives confirmed that the documents were authentic, but emphasized that the plans had not been formally approved by participating organizations. The document listed representatives of the Exxon Corporation, the Chevron Corporation and the Southern Company as being involved. Representatives of Chevron and Southern acknowledged attending meetings on the project; the Exxon representative could not be reached for comment.

The draft plan calls for recruiting scientists to argue against the Administration, and suggests that they include "individuals who do not have a long history of visibility and/or participation in the climate change debate."

But among the plan's advocates are groups already linked to the best-known critics of global-warming science.

They include the Science and Environment Policy Project, founded by Fred Singer, a physicist noted for opposing the mainstream view of climate science. Frederick Seitz, another prominent skeptic on global warming, is involved with two other groups mentioned in the plan: the George C. Marshall Institute, where Dr. Seitz is chairman, and the Advancement of Sound Science Coalition, where he is on the science advisory board.

On Monday, the National Academy of Sciences disassociated itself from the most recent effort to drum up support among skeptical scientists. That effort came in the form of a statement and petition on global warming circulated by Dr. Seitz, a physicist who was president of the academy in the 1960's.

Critics of the 'greenhouse effect' would be backed up with $5 million.

The petition, attacking the scientific conclusions underlying the treaty on climate change, was accompanied by an article that was formatted to resemble one that might have been published in the academy's prestigious peer-reviewed journal. It was not.

The draft plan, recently discussed at the oil industry offices, calls for giving such dissenters on climate science "the logistical and moral support they have been lacking."

It also calls for spending $5 million over two years to "maximize the impact of scientific views consistent with ours on Congress, the media and other key audiences."

It would measure progress by counting, among other things, the percentage of news articles that raise questions about climate science and the number of radio talk show appearances by scientists questioning the prevailing views.

The document says that industry's polling, conducted by Charlton Research, has found that while Americans see climate change as a serious threat, "public opinion is open to change on climate science."

Supporters of the plan want to raise money quickly to spend much of it between now and the November negotiating session in Buenos Aires, where important details of the international treaty are to be decided.

A proposed media-relations budget of $600,000, not counting any money for advertising, would be directed at science writers, editors, columnists and television network correspondents, using as many as 20 "respected climate scientists" recruited expressly "to inject credible science and scientific accountability into the global climate debate, thereby raising questions about and undercutting the 'prevailing scientific wisdom.'"

Among the tasks, the petroleum institute's memorandum said, would be to "identify, recruit and train a team of five independent scientists to participate in media outreach."

What the industry group wanted to provide, the memorandum said, was "a one-stop resource on climate science for members of Congress, the media, industry and all others concerned."

The industry group said it wanted to develop "a sound scientific alternative" to the Intergovernmental Panel on Climate Change, a large group of scientists advising the United Nations that has published the most authoritative scientific assessments of global warming. That panel has predicted that the next century will bring widespread climatic disruptions if actions are not taken to reverse the accumulation of greenhouse gases in the atmosphere.

The draft plan suggests that despite industry efforts to convince the public that the climate treaty would be costly to carry out and unfair to the United States, the treaty remains popular partly because environmentalists are winning the debate on the science.

"Indeed, the public has been highly receptive to the Clinton Administration's plans," the memorandum said. "There has been little, if any, public resistance or pressure applied to Congress to reject the treaty, except by those 'inside the Beltway' with vested interests."

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Climate Change Technology Initiative Allies

DOE'S ENERGY EFFICIENCY/RENEWABLE ENERGY PROGRAMS

1. Buildings: $47.7 million in new programs over FY98 enacted.

Appliances--

- Alliance to Save Energy (appliances, insulation, lighting)
  -- Honeywell (MN)
  -- Johnson Controls (WI)
  -- Owens Corning (NY)
  -- Johns Manville
  -- GE
  -- Phillips
  -- Sylvania

- American Home Appliance Manufacturers (appliances)
  -- GE
  -- Whirlpool
  -- Amana
  -- Frigidare
  -- Maytag

Natural Gas Heat Pumps & Hot Water Heaters

- American Gas Assn. -- (gas heat pump r&d) (nationwide membership)
  -- Brooklyn Union Gas (NY)
  -- So Cal Gas
  -- PSE&G (NJ)
  -- Wepco (WI)
  -- PG&E (CA)

- Interstate Natural Gas Assn. (Pipelines)
  -- Enron (TX)
  -- ANR/Coastal (TX, LA, MI)
  -- Duke/Pan Energy (NC, TX)
  -- Columbia (VA, WV)

Electronics

- Electronics Industries Alliance.
  -- United Technologies
  -- Lucent Technologies
  -- Motorola
  -- Phillips/Magnavox

-- Intel

Heating & Cooling

- American Refrigeration Institute
  -- Carrier (CT, NY, TN)
  -- York Int'l

2. INDUSTRIAL EFFICIENCY: $30 million above FY98 enacted.

Industries of the Future
Motor Challenge

- American Iron & Steel Inst.
  -- Bethlehem Steel
  -- USX
- Aluminum Assn.
  -- Alcoa
  -- Reynolds
- American Forest & Paper Assn.
  -- Weyerhauser
  -- Champion
  -- Georgia Pacific
- Council for Chemical Research
  -- Dow
  -- DuPont
  -- Monsanto
- National Petrochemical and Refining Assn.
  -- BP
  -- Amoco
  -- Shell
  -- Chevron
- [Glass]
  -- Vistean
  -- Libby Owens Ford
  -- Corning
- National Mining Assn.
  -- Peabody
- American Foundry Society
- National Assn. Of Die Casters
- Steel Founders Society
- Soybean Assn.
- Nat'l Corngrowers Assn.
- Wheatgrowers
- Cargill
- Union Camp

3. TRANSPORTATION TECHNOLOGIES: $52 million requested over FY98.

Partnership for a New Generation of Vehicles

-- GM
-- Chrysler
-- Ford

4. SOLAR & RENEWABLES: $100 million over FY98 enacted.

Million Solar Roofs
Solar R&D

- Solar Energy Industries Assn. (Scott Sklar)
  -- BP Solar
  -- Solarex
  -- Amoco/Enron
  -- Seimens Solar
  -- Spire Corp.
  -- Golden Photon
  -- Cummins
  -- Duke Solar

Wind R, D & D

- American Wind Energy Assn.
  -- Zond/Enron Wind
  -- Bergey Windpower
  -- U.S. Windpower?
  -- Kennetech?
  -- PacifiCorp
  -- Northern States Power

Biomass

-- *[tbd]*

Geothermal

-- Unocal
-- Calpine
-- Oxbow
-- Transamerica Geothermal

Hydropower

- National Hydropower Assn.
  -- Duke Energy
  -- APPA
  -- Lower Co. River Auth.
  -- Salt River Project

Advanced Technologies

-- Allied Signal
-- International Fuel Cells
-- Ballard Corp.

TAX INCENTIVES: NINE PROPOSALS

1. Tax Credit for Energy Efficient Building Equipment

- Fuel Cells
  - -- United Technologies
  - -- Ballard
  - -- General Public Utilities
- Electric heat pump water heaters
  - -- EEI
  - -- most investor owned electic utilities
- advanced natural gas and electric residential heat pumps
  - -- EEI
  - -- most investor owned electric utilities
  - -- AGA
  - -- most local gas distributors
- advanced central air conditioners
  - -- Trane/American Standard
  - -- Carrier (United Technologies)
  - -- Amana
  - -- GE?

2. Tax Credit for Purchase of New Energy Efficient Homes

- -- Anderson Windows
- -- Owens Corning
- -- Johns Manville
- -- Honeywell
- -- Johnson Controls
- -- Carrier
- -- Amana
- -- GE
- -- American Institute of Archetects?
- -- Homebuilders Assn.?

3. Tax Credit for High Fuel Economy Vehicles

- -- [unclear support at this time: Treasury consulting w/ GM, Ford, Chrysler, Nissan, Toyota, Honda & Volkswagon]

4. Equalize Treatment of Parking and Transit Benefits

- -- *[TBD]*

5. Investment Tax Credit for Combined Heat & Power

-- Trigen
-- Sycom
-- Caterpiller
-- [Steel]
-- [Chemicals]
-- [Pulp/Paper]
-- [Coke]
-- A&E firms? Equipment? Construction?
[Such as Flour Daniel, Babcock & Wilcox, Sargent & Lundy, Burns & Roe]
-- GE
-- ABB
-- Allied Signal
-- Westinghouse? [Seimens?]

6. ***Tax Credit for Replacement of Certain Circuit Breakers***

-- EEI & most investor owned electrics
-- ABB
-- GE

7. ***Tax Credit for PFC & HFC Recycling Equipment***

-- TBD

8. ***Tax Credit for Rooftop Solar Equipment***

-- Solar Energy Industries Assn. (Scott Sklar)
-- BP Solar
-- Solarex
-- Amoco/Enron
-- Seimens Solar
-- Spire Corp.
-- Golden Photon
-- Cummins
-- Duke Solar

9. ***Extend Wind & Biomass Tax Credit***

-- American Wind Energy Assn.
-- Zond/Enron Wind
-- Bergey Windpower
-- U.S. Windpower?
-- Kenneteeh?
-- PacifiCorp
-- Northern States Power

-- Biomass TBD

only options on resolution

Strike
loan SOS
increase function total } 50 votes
set aside $ for reserve fund and later } 60 votes
activity authority committee

The Washington Post

AN INDEPENDENT NEWSPAPER

A Few Brave Firms

THE DEBATE about global warming has featured too much name-calling and too little attention to practical solutions. Many U.S. corporations and their lobbyists have devoted more effort to belittling the science than to soberly preparing for the consequences. So it's encouraging to welcome a new player to the debate, the Pew Center on Global Climate Change. Funded initially by a $5 million grant from the Pew Charitable Trusts and headed by a former Clinton administration official, Eileen Claussen, the center intends to focus on research, public education and—most of all—figuring out what can and can't be done about this very real problem.

What's most heartening about this effort is the list of major corporations that have signed on as advisers to the center. For many of them, it has taken some courage to step out from the crowd of stone-throwers and commit themselves to pragmatic consideration of climate change, and to how they may participate in—and perhaps profit from—solutions.

These companies are not contributing money to the center, it's important to note, and they're not mostly firms that obviously stand to gain if climate change is taken seriously. On the contrary, they include mostly companies that will have to adapt and change considerably: gas and oil firms Sunoco, British Petroleum and Enron; power generators American Electric Power Co., Intercontinental Energy Corp. and U.S. Generating Co.; giant aerospace firms Boeing and Lockheed Martin; appliance makers Maytag and Whirlpool Corp.; the Toyota car maker; United Technologies, which has aerospace, automotive and other interests; and the consumer and chemical giant 3M.

It's not that these companies, coming together as the Business Environmental Leadership Council, have endorsed anything you could call radical. But they "accept the views of most scientists that enough is known about the science and environmental impacts of climate change for us to take actions to address its consequences." That sensible statement alone is enough to set them apart, and even no doubt subject them to some abuse from their competitors; you'll note there's no American auto maker on the list. In the long run, these forward-looking companies' willingness to accept the inevitable and begin dealing with it will doubtless give them a competitive advantage. In the short run, they deserve some credit for forthrightness.

A Wrong-Way Congress

INCREASINGLY, THIS Congress seems headed in wrong directions. Bills that ought to pass are meeting resistance, sometimes on the part of the leadership even when they appear to have majority support. Proposals that ought not pass are meanwhile gaining ground; so at least it seems. A budget break-out has become a distinct possibility. Both parties are preoccupied, not so much with the substance of what [illegible] and half denouncing the (Democratic) excesses of the last campaign, with cause. But Mr. Lott led a filibuster against reform legislation when it appeared to have a majority in the Senate. Mr. Gingrich had to be threatened with a discharge petition before he would let similar legislation come up for a vote, now scheduled for next month. He will [illegible]

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JAMES W. M

Innovation WORKS
Manufacturing Technologies For a Better World

98-122

FOR IMMEDIATE RELEASE

NEWS CONTACTS
KERRY LYNN SCHMIT (202) 637-3089
DAVID SHAPIRO (202) 637-3109

NAM TO SHOWCASE INDUSTRY'S ENVIRONMENTAL INNOVATORS ON EARTH DAY

WHAT: ***Innovation Works: Manufacturing Technologies for a Better World*, a one-of-a-kind celebration of industry's environmental successes in honor of Earth Day, sponsored by the National Association of Manufacturers and its research and education affiliate, The Manufacturing Institute.**

The event will feature dozens of exhibits and demonstrations from companies such as Ford, Motorola, Goodyear, Lucent Technologies, Corning and Toyota. Exhibit highlights include prototype electric cars, natural gas-powered vans, award-winning student inventions, recycling innovations, earth-saving manufacturing processes and much more.

Hundreds of students from around the country will attend to see first-hand how U.S. industry's technological innovations are leading the way to a better, cleaner environment. Thousands more students nationwide will participate via the Internet (*www.iworks.org*) through a live "cybercast" of event highlights and will learn more in their classrooms about industry's environmental efforts and challenges using unique lesson plans prepared in conjunction with the event.

WHEN: Earth Day
Wednesday, April 22, 1998
9:00 a.m. – 4:00 p.m.

WHERE: The National Mall
Between 3rd and 4th Streets, SW, on Jefferson Dr.
(East of the Smithsonian's Air & Space Museum)

FOR MORE INFORMATION: Contact Kerry Lynn Schmit, the NAM's Director of Public Relations, (202) 637-3089

Innovation WORKS
Manufacturing Technologies For a Better World

TENTATIVE SCHEDULE OF EVENTS
APRIL 22, 1998

9:00-9:15	**Official Opening of Event – Main Stage** Welcoming remarks by Ladd Biro Senior Vice President, Marketing and Member Communication, NAM
9:15-10:30	Students/public view exhibits
10:30-11:15	**Close-Up Forum #1 – Main Stage** *Industry & Environment: Bridging the Gap* How government can help support industrial innovation and technology for the environment. Panelists: – Steve Harper, Intel – Industry Representative – Politician or staffer
11:15-Noon	**Cybercast Tour of Exhibits Led by NAM President Jerry Jasinowski** Highlights of top exhibits, featuring interviews with exhibitors and a commentary by Jasinowski on how each highlighted exhibit reinforces the NAM's larger environmental goals.
Noon-12:45	**Official Program/Introduction of Special Guests – Main Stage** – Jerry Jasinowski – Industry Leaders – Political Guests
12:45-2:00	Students/Public view exhibits
2:00-2:45	**Close-Up Forum #2 – Main Stage** *Teens & Industry: Preparing for the Millennium* Educational forum on education and training needed for rewarding careers in manufacturing Panelists: Anthony Carnevale (invited) CEO/representative from exhibiting company
3:00 – 3:30	**Student Q & A – Main Stage** Exhibitors take questions from student participants
3:30-4:00	**Closing Remarks – Main Stage**

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Manufacturing Technologies For a Better World

EXHIBITORS

The Aluminum Association
AMP Incorporated
Air-Conditioning and Refrigeration Institute
Allegiance Healthcare Corporation
Berner International Corporation
Corning Incorporated
Decotex 2000 Corporation
Ford Motor Company
Goodyear Tire & Rubber Company
ICI Americas Inc.
Lucent Technologies
Maytag Corporation
Motorola, Inc.
National Mining Association
Nissan North America
Photographic and Imaging Members Association
Tennaco Inc.
Texaco (NY)
Toyota Motor Sales, USA, Inc.
UNICOR - Federal Prison Industries
USDA - United States Department of Agriculture
Xerox

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