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call Duncan

FAX COVER SHEET

DATE: OCT 20, 2000

NUMBER OF PAGES, INCLUDING THIS PAGE: 7

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Technology Making a Difference Where Americans Live

OCT 23 2000

Roger--

At the last meeting, you requested a report on PATH status, accomplishments and prospects for the future. Attached is a draft that Susan Wachner requested I run by you to make sure that this is what you had in mind. If you think there needs to be changes, please let me know and I will make them. Thank you for taking an interest in this program. I really appreciate your help and support.

Liz Burdock

**Progress of the Partnership for Advancing Technology In Housing
A Report to the White House
October 19, 2000**

Since its launching in May 1998, the PATH program has enjoyed many successes to date. PATH works to improve the nation's housing through the creation and dissemination of advanced housing technologies. PATH accomplishes its mission through three core components: **research and development** to create and evaluate housing technologies; **policy formulation** to develop solutions to the critical barriers that stand in the way of advanced housing technology adoption; and **information dissemination** to communicate the benefits of advanced housing technologies.

I. Program Participation, Strategic Planning, and Funding

PATH has received full funding in FY 1999 and FY 2000. PATH has also increased the industry and federal agency participation, has enjoyed the increased funding support of the federal agencies, and has completed a strategic planning process.

Increase in Program Participation

PATH enjoys a broad-based level of participation from industry. Industry participation has increased from 100 partners to well over 300 organizations, including Dow Chemical Company, Owens Corning, Lucent Technologies, Louisiana-Pacific Corporation, and Whirlpool Corporation. These private companies are engaged in one of PATH's three core components, but are taking an especially active role in policy formulation. Industry is working in conjunction with federal agency representatives to formulate recommendations for PATH's technology research and development investments and the elimination of barriers to technology adoption.

PATH enjoys participation from 12 federal agencies, including the key partner agencies—Department of Housing and Urban Development, the Department of Energy, the Department of Agriculture, the Federal Emergency Management Agency, and the Environmental Protection Agency. PATH coordinates the efforts of these federal agencies to avoid duplication of effort by building on the strength of existing programs. For example, PATH is utilizing EPA's *Energy Star* program and DOE's *Building America* program as a mechanism to reach both builder and consumer audiences.

Increase in Funding Opportunity

Agencies are beginning to take responsibility for implementing PATH goals by seeking their own funding and taking responsibility for core areas. DOE along with EPA has taken the lead on implementing the 50% energy efficiency goal in new homes and 30% energy efficiency in 15 million homes. NIST and USDA are taking the lead on increasing durability of housing by 50% and FEMA has taken the lead on reducing the 10% loss by natural disaster. Both USDA (\$1 million) and DOE (\$3 million) have requested additional funding for PATH in their own budgets for 2001. USDA, NIST, DOE will request funding for PATH-related activities in their 2002 budget requests.

Strategic Plan Development

With the contribution and input of the Federal Agency partners, PATH has undergone a complete strategic planning process to provide direction for the program, coordinate efforts put forth by agencies and develop a measurement criteria to provide quantitative benchmarks by which to gauge our progress. This report is being sent to Congress.

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II. Research and Development Efforts

PATH has been involved in a number of research and development programs to create and evaluate the next generation of housing technology.

For the first time, PATH worked with NSF to encourage leading academic researchers to examine housing technology development issues. An unprecedented grant program, the **National Science Foundation (NSF)** has awarded several proposals under its "Research on Advanced Technologies for Housing" initiative, an initiative that represents the academic and university-based component of PATH's mission. PATH contributed \$900,000 of its budgetary allocation and NSF provided funding of \$750,000, making the combined grant total more than \$1.5 million.

PATH CoRP Grants Awarded

PATH has announced the awardees of the PATH Cooperative Research Program (PATH CoRP), a research program administered by the National Institute of Standards and Technology (NIST) that forges multi-year cooperative research and development agreements with industry. The grants total nearly \$1.1 million for six industry projects that promise new products that meet two or more of the PATH goals as well as offer the highest return on the investment and have the promise to impact the home building industry in the shortest time frame. Industry participants in PATH CoRP will match the PATH funds with an additional \$984,000. The research and development grants will fund further development of the following technologies: roofing that cools and generates electricity; walls that snap together; super insulating panels created from coal power industry by-products; large-sized insulated steel forms for high-performance concrete foundations and walls; energy-saving, programmable thermostats; and system engineering building techniques that cut costs and improve the quality of rural and inner-city housing.

PATH Durability Research

PATH will accomplish its durability goal through much needed nonproprietary research -- research lacking in years past. In 1992, U.S. spending on housing technology research was less than one-half of one percent of the total value of new housing construction that year.¹

A key PATH partner, the USDA's Forest Products Laboratory (FPL) in Madison, Wisconsin, is researching wood and wood-based technology through the Advanced Housing Research Center. With 95 percent of housing framed from wood, increasing the durability of wood frame housing is critical to maintaining our Nation's housing stock. Increasing the marketability of reclaimed lumber as well as measuring high wind effects on residential buildings are among FPL's PATH Durability Research Project research priorities.

Working in close coordination with FPL is the Department of Commerce's National Institute of Standards and Technology (NIST). NIST is taking the lead for HUD in durability research through its PATH-D project. NIST's activities focus on developing new methods that will enable companies to better predict the service life of the building products they sell. This will enable those companies to significantly decrease the time required to assess the durability of their products. NIST is working with key segments of the building products industry to develop consensus based approaches to exploring the feasibility of a durability rating system.

First Technological Breakthrough

Building off HUD research and their \$500,000 commitment to explore ways of improving manufactured housing and delivering a mainstream product, the NextGen Home is the first technological breakthrough of

¹ "Domestic and International Housing Technology Research," 1994 Congressional Report

the PATH Program. By transforming the traditional design of the HUD-Code home and seeking out innovative mechanisms to improve energy-efficiency, this house demonstrates its affordability to a broad spectrum of potential buyers. The results of energy software simulations and on-site energy testing show that Next Gen is a very efficient house that will have a reduced demand on environmental resources over its lifetime.

III. Policy Formulation

PATH industry and government partners come together in working groups covering five issue areas: finance, insurance, technology, consumer education, and quality/labor. PATH has enjoyed a strong industry and federal agency participation in the working groups. Working side by side, industry and government participants are taking a close examination of the issues, exploring both the public and private sector sides of the barriers, and then offering action steps, strategies, and recommendations that will break down the barriers to advanced housing technology adoption as well as provide incentives to for housing innovation. The groups have approximately 20-30 participants each. The Working Groups' efforts have been fruitful, as outlined below:

Technology Roadmapping Working Group. The Technology Working Group has identified and ranked various technology options, with information technology considered to be the highest priority to move the housing industry forward and meet the PATH goals. The Working Group will initially concentrate on three technological approaches which show the most immediate promise in meeting PATH's goals: information technology; integrated wall panels; and whole house redesign. In addition the Working Group is establishing a separate initiative to roadmap technologies that can assist in meeting PATH's energy goals for existing homes.

Consumer Education Working Group. The Consumer Education Working Group is focusing on developing the most effective consumer messages as well as identifying the key industry stakeholders to create consumer awareness and develop demand for energy-efficient, durable, quality, affordable housing, which innovative technologies can help produce.

Insurance/Barriers Working Group. The Insurance Working Group is examining the issues surrounding homeowners' insurance and has offered recommendations, such as researching the idea of technology bundles and building a record of technology performance data, to reduce insurance premiums.

Finance Working Group. The Finance Working Group is analyzing and prioritizing their recommendations to improve FHA, Fannie Mae, and Freddie Mac Energy Efficient Mortgages (EEMs) products.

Quality/Labor Working Group. The Quality/Labor Working group has identified many important tools, such as a innovative construction management practices, which may reduce inefficiencies in the construction process and reduce overall housing costs.

PATH Oversight and Assessment

To assure that PATH receives the most objective and highest quality program, HUD asked the National Research Council of the National Academy of Sciences to established a special committee to monitor the PATH program, its progress and to make recommendations for improvement. NAS has assembled a

distinguished group of scholars and industry representatives to provide the PATH program with an independent, multi-year oversight and assessment of the program. The first report of this committee is expected late fall 2000 to be followed by additional reports as the program continues.

II. Information Dissemination

A key component of advancing housing technologies is effectively getting information out about these technologies. PATH accomplishes this task by having a presence at key conferences, developing marketing materials and having a voice in the media.

PATH Press

PATH has enjoyed substantial press coverage in the last few months. Stories on PATH have appeared in such major publications as the Washington Post, Philadelphia Inquirer, Builder Magazine, Professional Builder, Fine Homebuilding, Popular Science, Environmental Design and Construction, and Modern Homes Developer. PATH demonstration sites will be featured on Michael Holligan's *Your New House* on the Discovery Channel.

Web site hits. The PATH web site receives more than 32,000 hits per month. The amount of total page hits has increased a total of 21,000 hits from last year.

Report dissemination. PATH has sent out 20,014 reports and documents in the last year, not including the PATHways newsletter. PATH has sent 4,000 publications in the last month alone, including a wide array of documents such as:

- ☐ A Builder's Guide to Marketable, Affordable, and Durable Entry-level Homes (MADE) To Last
- ☐ Building Better Homes at Lower Costs: The Industry Implementation Plan for the Residential National Construction Goals
- ☐ Building Innovation for Homeownership
- ☐ Innovations at the Cutting Edge--New Ideas in Manufactured Housing
- ☐ The Rehab Guide, Volumes 1- 8

Conference Sponsorship and Presence

In 2000, PATH has sponsored numerous conferences, which were well received and well attended, including the Green Builder Conference in Denver, CO (4/5-4/8), Hands On Builder Technology Lab in Tucson, AZ (5/22-5/23), and the US Conference of Mayors & Habitat for Humanity Home Build in Seattle, WA (6/10).

The Hands On Builder Technology Lab, co-sponsored by Fannie Mae and Builder Magazine, was an extremely successful event, with over 100 participants. The two-day conference was a break away from traditional venues where participants simply hear about technologies through a panel format. Hands-On Builder enabled builders to explore a community that has successfully embraced advanced housing technologies as well as participate in interactive sessions with subject experts and key industry leaders.

PATH is playing a key role in the Journal of Light Construction's JLC Live Show in Las Vegas, the Forest Products Lab Durability & Disaster Mitigation Conference in Madison, WI, and the Model Remodel Construction at the Remodelers' Show in Detroit, MI.

V. Looking Forward

With all of these accomplishments under its belt and vibrant growing network in place, PATH has laid the framework to fulfill its role of coordinator of Federal Housing Research and Development programs and be facilitator for a holistic approach to improving our nation's housing. In the coming year, PATH will focus its

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attention to the institutionalization of the program—working to strengthen working relationships between agencies at all staff levels and building on linkages with our five key partners—HUD, DOE, EPA, FEMA, USDA. PATH will continue to move towards achievement of its goals by continuing expansion of the program, entering into national demonstrations with Federal Agencies and industry to solve critical housing issues, utilizing EPA and DOE programs to take our message to consumers, and creating state and local PATH partnerships to better serve community needs. We also continue to work with industry through cooperative research agreements.

The future of PATH looks very bright – PATH has bipartisan support. The FY 2001 budget looks secure. The federal agency and industry partners have not only renewed their commitment to the program, but have increased their involvement and support of the program. With the active participation of the PATH partners, the PATH program will help make great strides towards a better housing future for all Americans.

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Council on Foundations ?
Journal of Philanthropy

Meeting Notes
August 15, 2000

Attendees:

Duncan Moore, OSTP, Associate Director for Technology
Raymond Downs, OSTP, Senior Policy Analyst
Susan Wachner, HUD, Assistant Secretary for Policy Development & Research
David Engel, HUD, Director of Office Research, PD&R
Liz Burdock, HUD, PATH Executive Director

I. Management of The Program

- 1) Susan Wachter started the meeting with saying how pleased she was to be managing the PATH program. She stated that she enjoyed her work on PATH because it was not just affordable housing, but the combination of all goals. The essence of PATH is that it is everything combined together – PATH focuses not only on one attribute, but PATH is an integrated organization focusing on the accomplishment of several goals..
- 2) Duncan Moore stated he pleased to see Susan's commitment and enthusiasm for the program, but voiced his concern about PATH's needed institutionalization within HUD that could withstand an administration change. He wants to ensure that career employees will be in place to operate the program and committed to staying in the job until next summer. He believes that regardless of the outcome of the election that it will be well into the summer before political appointees are hired to help oversee the program.
- 3) Susan Wachter responded that PATH was being placed clearly within the Office of Policy Development and Research (PD&R) and that David Engel was in charge of the technology group with PD&R. She stated that Liz Burdock had just recently converted to a government employee and would be reporting directly to the A/S for PD&R as a Senior Advisor.

Duncan Moore wanted to know if DOE had approved of this new management structure. Susan related that she had spoken informally with Dan Reicher, but that she needed to meet formally to discuss it with him. She invited Duncan to this meeting to be held September 11th at 2:00 p.m.

II. Relationship Between HUD and DOE

- 1) Duncan Moore asked if there had been a response to Dan Reicher's letter to Bill Apgar.
- 2) Susan Wachter stated that it was decided that the best response was not a written response, but a personal visit. To address these issues, she has met with Dan Reicher to begin resolve some of the difficulties between the agencies. One outcome of the meeting was an agreement to conduct a National Weatherization Pilot.

III. PATH FY 2001 Budget

- 1) Duncan Moore requested a status update of the PATH budget.
- 2) Dave Engel reported that the House had written \$10M, which was \$2 M short of the \$12M requested, and the Senate had not marked up yet.
- 3) Both Dave Engel and Liz Burdock believe that PATH will be fully funded in the end.
- 4) Duncan Moore noted that PATH was not mentioned in the authorizing language.
- 5) David Engel suggested that OSTP help NIST move their request for PATH through DOC.
- 6) The NRC evaluation was discussed and Duncan Moore thought that this was a good idea, but cautioned about how to interact with the panel especially in light of an Administration transition.

IV. Agency Cooperation

- 1) Ray Downs mentioned that he thought agency involvement was extremely important especially given the change in administration. It was important for agencies to stay committed to the PATH program.
- 2) There was unanimous agreement that agency support was essential. Liz Burdock has several suggestions

for increasing agency involvement in PATH such as letting DOI and EPA manage the consumer outreach of the program; and farming out evaluations of the technologies submitted to the inventory to agency labs.

- 4) Duncan Moore wants to hold a PIC meeting to discuss agency cooperation and FY2002 budget proposals. This idea will be discussed at the meeting with Dan Reicher. Possible dates include October 2nd & 3rd.
- 5) It was mentioned that HUD should invite its OMB examiners to tour PATH Demonstration sites.

V. Industry Involvement

- 1) Duncan Moore suggested that Industry should interact more with the PIC. He suggested using PGNV as a model and setting an operational steering group.
- 2) Susan Wachter stated she wanted to get a stronger connection between PATH and University engineering schools.

VI. Next Steps

- 1) Susan Wachter, Duncan Moore are scheduled to meet with Dan Reicher at DOE on September 11th at 2:00. Topics for discussion will include: PATH management structure and PIC meeting.
- 2) Liz Burdock will develop a memo outlining suggestions for greater agency involvement.
- 3) Ray Downs will send PGNV Operational Steering Group structure to Liz Burdock.

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PATHways

Technology making a difference where Americans live

Builders and Homebuyers Beginning To "Think Green"

"The future of home building is green building," says Charlie Ruma, former president of the National Association of Home Builders (NAHB). Green building is designing, building, and operating homes to use materials, energy, and water efficiently, while safeguarding occupants and the environment from adverse impacts.

Homes shelter us from the environment, but they also influence the environment in many significant ways. Every year—in the United States alone—housing accounts for more than 30 percent of total energy consumption and produces nearly 20 percent of all greenhouse gas emissions. The average home produces more air pollution than the average car. Housing construction, renovation, and demolition generate approximately 58 million tons of waste per year, while homeowners use an estimated 23.5 billion gallons of water per day.

Green-building techniques deliver lower operating costs, less maintenance, more comfortable heating and cooling, and a healthier indoor environment—qualities that are highly attractive to homebuyers. That is why, increasingly, builders and homebuyers alike are beginning to think green. To appeal to cost-conscious and ecologically minded homebuyers, savvy builders are beginning to build in "green appeal" in as many aspects as possible. Encouraging green building helps PATH to meet four of its cornerstone goals.

Energy efficiency. Homes can be designed to conserve energy by:

- Properly orienting sites for the proper mix of solar exposure and shading.
- Using alternative energy technologies, such as solar and wind energy, where appropriate.

(continued on page 2...)



PATH Looks to the Future

Welcome to a new edition of PATHways as we begin the new millennium. We are looking forward to another great year for the Partnership for Advancing Technology in Housing (PATH)—with many outstanding events and programs in store.

The Department of Housing and Urban Development and PATH kicked off 2000 with a presentation at the National Association of Home Builders' International Builders' Show in Dallas, Texas. PATH had record numbers of visitors at its exhibit booth and cosponsored the successful Carl Franklin Technology Demonstration Home, which featured advanced housing technologies that are making housing affordable for more American families. PATH hosted an exciting event at the Demonstration Home that drew the attendance of Dallas Mayor Ronald Kirk and Assistant Secretary for Housing-Federal Housing Commissioner William C. Apgar (see page 5 for more information on this event).

Inside our new issue you will find an update on one of the six Industry and Government Working Groups. They are examining critical issues that impact the adoption of new technologies and are proposing strategies to solve these issues. You will also find a section on PATH Programs in Action, where you can see how advanced housing technologies are used by builders in real life demonstrations. Please take a look at the calendar of events on the back cover. It describes an important event set for April 5-8 in Denver, Colorado—the National Green Building Conference.

HUD is proud to take a leadership role in PATH, because we are working to create a brighter future for American housing and millions of American families.



—Andrew Cuomo
Secretary, Department of Housing and Urban Development



**TDG****The Dutko Group***A Public Policy Management Firm*

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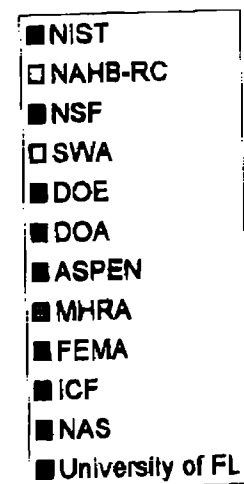
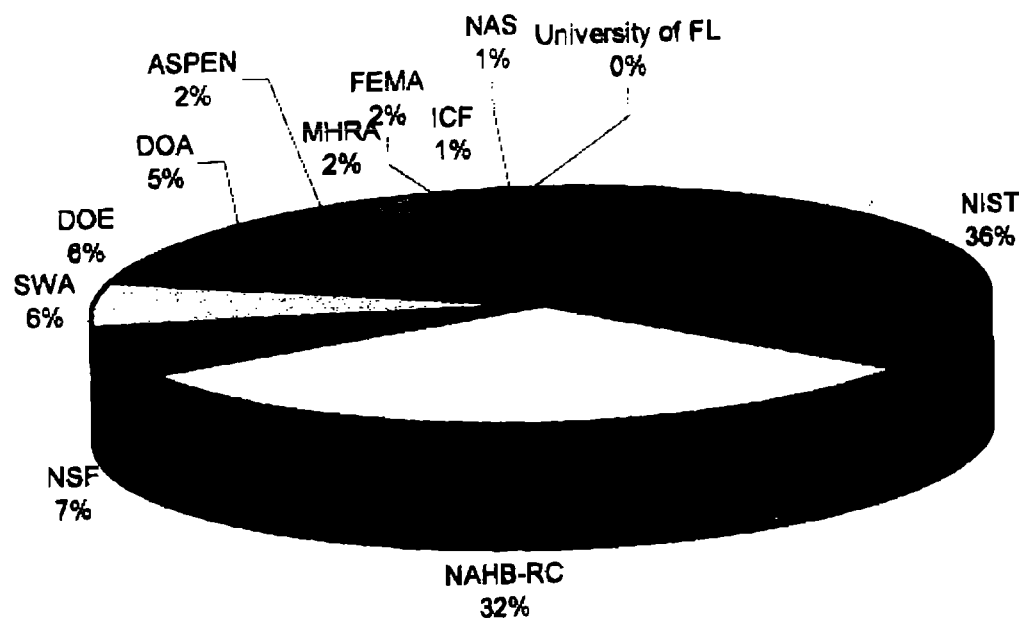
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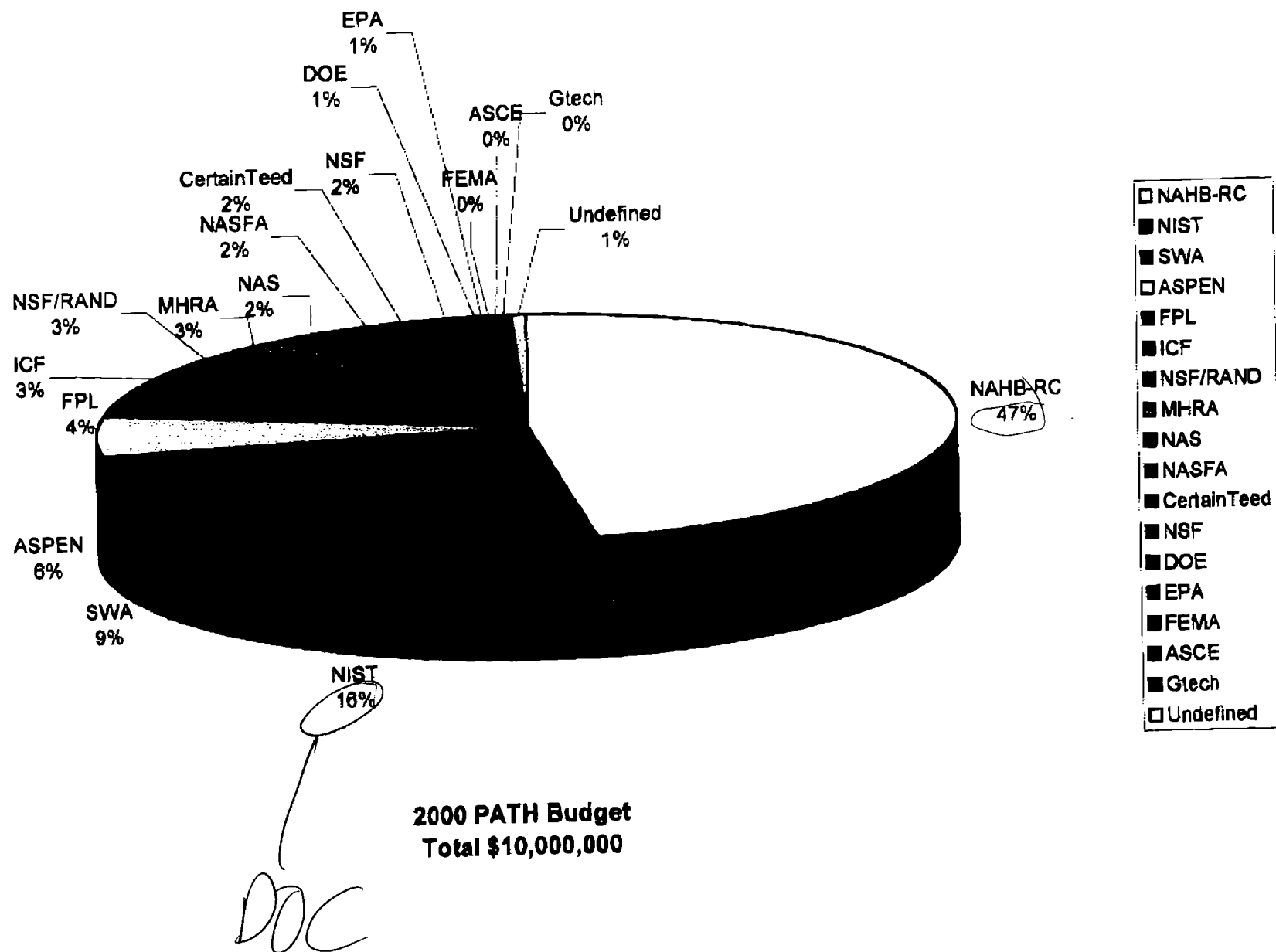
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Memo to follow

1999 PATH Budget
Total \$10,000,000



1999 Budget Totals	
NIST	\$3,900,000
NAHB-RC	\$3,425,000
NSF	\$750,000
SWA	\$700,000
DOE	\$700,000
DOA	\$520,000
ASPEN	\$245,000
MHRA	\$220,000
FEMA	\$200,000
ICF	\$150,000
NAS	\$150,000
University of FL	\$30,000
\$10,990,000	



2000 Budget Totals	
NAHB-RC	\$4,738,000
NIST	\$1,580,000
SWA	\$900,600
ASPEN	\$589,367
FPL	\$425,000
ICF	\$300,000
NSF/RAND	\$275,000
MHRA	\$250,000
NAS	\$249,500
NASFA	\$162,000
CertainTeed	\$150,000
NSF	\$150,000
DOE	\$50,000
EPA	\$50,000
FEMA	\$30,000
ASCE	\$25,000
Gtech	\$25,000
Undefined	\$50,533
\$10,000,000	

Research

Wood

\$675,000

Steel

\$162,000

\$837,000

fund credit subsidy. Likewise, the Committee recommends the request of \$211,455,000 for administrative expenses. This is the same level as last year, however, in fiscal year 2000, \$147,000,000 in unobligated balances were used to reduce the appropriated level of budget authority, an offset that is not available in fiscal year 2001. Additionally, the Committee recommends the request on limiting direct loans to \$50,000,000, which is the same level as the fiscal year 2000 appropriation. Finally, as requested, \$33,500,000 of the \$144,000,000 provided for administrative contract expenses, is transferred to the Working Capital Fund.

GOVERNMENT NATIONAL MORTGAGE ASSOCIATION
GUARANTEES OF MORTGAGE-BACKED SECURITIES

LOAN GUARANTEE PROGRAM ACCOUNT

(INCLUDING TRANSFER OF FUNDS)

	Limitation of guaran- teed loans	Administrative ex- penses
Fiscal year 2001 recommendation	\$200,000,000,000	\$9,383,000
Fiscal year 2000 appropriation	200,000,000,000	9,383,000
Fiscal year 2001 budget request	200,000,000,000	9,383,000
Comparison with 2000 appropriation	0	0
Comparison with 2001 budget request	0	0

The guarantee of mortgage-backed securities program facilitates the financing of residential mortgage loans insured or guaranteed by the Federal Housing Administration (FHA), the Department of Veterans Affairs (VA) and the Rural Housing Services program. The Government National Mortgage Association (GNMA) guarantees the timely payment of principal and interest on securities issued by private service institutions such as mortgage companies, commercial banks, savings banks, and savings and loan associations which assemble pools of mortgages, and issues securities backed by the pools. In turn, investment proceeds are used to finance additional mortgage loans. Investors include non-traditional sources of credit in the housing market such as pension and retirement funds, life insurance companies and individuals.

As the budget requests, the bill recommends language to limit loan guarantee commitments for mortgage-backed securities to \$200,000,000,000. This is the same level as fiscal year 2000. In addition, the request of \$9,383,000 is provided to fund administrative expenses, which is the same level appropriated in fiscal year 2000.

Language requested by the Administration to provide \$40,000,000 for administrative contract expenses is not provided.

POLICY DEVELOPMENT AND RESEARCH

RESEARCH AND TECHNOLOGY

Fiscal year 2001 recommendation	\$40,000,000
Fiscal year 2000 appropriation	45,000,000
Fiscal year 2001 budget request	62,000,000
Comparison with fiscal year 2000 appropriation	-5,000,000
Comparison with fiscal year 2001 budget request	-22,000,000

The Housing and Urban Development Act of 1970 directs the Secretary to undertake programs of research, studies, testing, and

demonstrations related to the HUD mission. These functions are carried out internally through contracts with industry, non-profit research organizations, and educational institutions and through agreements with state and local governments and other federal agencies.

The bill includes \$40,000,000 for research and technology, which is \$22,000,000 below the budget request. Of this amount, the Committee recommends \$30,000,000 for research, technology, and policy analysis. Additionally, the Committee recommends the fiscal year 2000 level of \$10,000,000 for the Partnership for Advancing Technology in Housing (PATH) initiative, which is \$2,500,000 below the request.

Of the amount provided for research, technology, and policy development, \$3,000,000 to be used exclusively for program evaluation and data collection to support strategic planning, performance measurement, and budget. In its 1999 report on Government Performance Results Act (GPRA) in HUD, the National Academy of Public Administration noted that full implementation of GPRA—especially for managing to results—requires an investment in both the collection of data which might not be available as well as in evaluation to determine the links between the every-day activities of the Department and the ultimate goals specified in the department's strategic and annual performance plans.

The NAPA report states, in connection with one program that, "... the department may not be able to measure this intermediate outcome using existing data sources; the department may need to develop additional data sources, in this case through the use of surveys. These new sources may need to be developed in cooperation with other federal agencies and non-federal service partners." The Committee directs HUD to establish a process for using these funds that shall be sent to the Committee for approval within 60 days after the enactment of this bill.

In fiscal year 1998, this Committee recommended that HUD study how new technologies contribute to lowering the costs of constructing and operating affordable housing. Based on this directive, HUD proposed the PATH program. One of its goals is to coordinate the governmental effort to increase Federal support for housing research, development, and demonstration programs. As a research tool, it would be inappropriate to move PATH from the Office of Policy Development and Research (PDR) to the Federal Housing Administration, a home loan insurance program with little research capacity. Therefore, the Committee directs HUD to retain the program, and its administration, in the Office of PDR. Furthermore, HUD is directed to cooperate fully with the home building industry, and particularly the National Association of Homebuilders (NAHB) Research Center, which coordinates industry participation and research planning for PATH. HUD is also directed to recognize the role of manufactured homes in providing housing to Americans and research through the Manufactured Housing Research Alliance (MHRA).

The Lead Hazard Reduction Program, authorized under the Housing and Community Development Act of 1992 (P.L. 102-550) provides grants to state and local governments to perform lead hazard reduction activities in housing occupied by low-income families. The program also provides technical assistance, undertakes research and evaluations of testing and cleanup methodologies, and develops technical guidance and regulations in cooperation with EPA.

The Committee recommends an appropriation of \$80,000,000 for this program, which is the same level appropriated in fiscal year 2000 and is \$40,000,000 below the request. Of the amount appropriated, \$1,000,000 is for CLEARCorps, and \$10,000,000 is for the Healthy Homes Initiative.

The Committee is concerned about several provisions in the proposed Lead-Based Paint rule, and plans to carefully monitor ongoing negotiations between HUD and the industry on the impact of the rule. While the Committee does not have a recommendation at this time, the Committee reserves the right to revisit this issue, should it be necessary, in Conference.

MANAGEMENT AND ADMINISTRATION

SALARIES AND EXPENSES

(INCLUDING TRANSFERS OF FUNDS)

	By transfer							Total
	Appropriation	FHA funds	GRMA funds	OPD	Title VI	Indian Housing	APIC	
FY 2001 recommendation	\$475,647,000	\$518,000,000	\$9,383,000	\$1,000,000	\$150,000	\$200,000	\$0	\$1,004,380,000
FY 2000 appropriation	477,000,000	518,000,000	9,383,000	1,000,000	150,000	200,000	0	1,005,733,000
FY 2001 budget request	565,000,000	518,000,000	9,383,000	1,000,000	150,000	200,000	1,000,000	1,094,733,000
Comparison with 2000 appropriation	- 1,353,000	0	0	0	0	0	0	- 1,353,000
Comparison with 2001 budget request	89,353,000	0	0	0	0	0	- 1,000,000	- 90,353,000

In the past, a single appropriation has been provided to finance all salaries and related costs associated with administering the programs of the Department of Housing and Urban Development, except the Office of Inspector General and the Office of Federal Housing Enterprise Oversight. These activities include housing, mortgage credit, and secondary market programs, community planning and development programs; departmental management, legal services, and field direction and administration.

The Committee recommends an appropriation of \$1,004,380,000, a decrease of \$90,353,000 below the request. This appropriation is premised on no more than 9,100 employees. Funds for object classes are dispersed in the following manner:

Personal Services—\$745,000,000.

Travel and transportation of persons—\$10,000,000.

Rent, communications, and utilities—\$120,000,000.

Transportation of Things—\$800,000.

Printing and Reproduction—\$3,500,000.

Peg Brown

From: Elizabeth J. Burdock [Elizabeth_J._Burdock@HUD.GOV]
Sent: Friday, August 25, 2000 7:21 AM
To: dperlmutter@dutkogroup.com
Subject: Re: Technology Inventory Deletions

Please read email below. I am concerned that Ken may want to leave the office and EPA may get upset at the treatment of their employee. I may need your help in smoothing this over with EPA. Do you think I should discuss with Bill White? Obviously, this is out of my control, Dave views this to be his program with no PATH office involvement what so ever. You will also see that he copied Liza. I can't in good faith continue to try to get agency involvement and ask to have employees detailed over to the office if this is how they will be treated. -----
Forwarded by Elizabeth J. Burdock/PDR/HHQ/HUD on 08/25/2000 09:20 AM -----

David Engel

08/09/2000 08:11 AM

To: Kenneth G. Sandler/PDR/HHQ/HUD@HUD @ MTA
cc: Susan M. Wachter/PDR/HHQ/HUD@HUD, Lawrence L. Thompson/PDR/HHQ/HUD@HUD, Dana B. Bres/PDR/HHQ/HUD@HUD, Carlos E. Martin/PDR/HHQ/HUD@HUD, Elizabeth J. Burdock/PDR/HHQ/HUD@HUD, Eileen Faulkner/PDR/HHQ/HUD@HUD, Diane E. Dorius/HSNG/HHQ/HUD@HUD, scarnes@ICFConsulting.com@MTA, Patricia H. Parker/HSNG/HHQ/HUD@HUD, Samed B. Rahamtalla/PDR/HHQ/HUD@HUD, mritter@facstaff.wisc.edu@MTA, klmarti3@facstaff.wisc.edu@MTA, Meghan M. Goodman/PDR/HHQ/HUD@HUD, LBOWLES@NAHBRC.ORG
Subject: Re: Technology Inventory Deletions (Document link: Database 'Elizabeth J. Burdock', View '(\$Inbox)')

All these technical decisions are made by my office - you have absolutely no role in this. Please state your authority to even be sending this e-mail to my GTRs - & my contractors. You are neither a GTR nor have technical expertise nor are even a HUD employee. If you have a concern please contact Carlos & express your opinion. We will certainly give your opinion great consideration. I have tried to make this clear to you for many month to no avail!!!! I guess I have to be blunt

Kenneth G. Sandler/PDR/HHQ/HUD@HUD on 08/08/2000 09:53:12 AM

To: "Robert Fuller" <bfuller@nahbrc.org>
cc: Dana B. Bres/PDR/HHQ/HUD@HUD, Carlos E. Martin/PDR/HHQ/HUD@HUD, Elizabeth J. Burdock/PDR/HHQ/HUD@HUD, Eileen Faulkner/PDR/HHQ/HUD@HUD, Diane E. Dorius/HSNG/HHQ/HUD@HUD, scarnes@ICFConsulting.com, Patricia H. Parker/HSNG/HHQ/HUD@HUD, Samed B. Rahamtalla/PDR/HHQ/HUD@HUD, mritter@facstaff.wisc.edu, klmarti3@facstaff.wisc.edu, Meghan M. Goodman/PDR/HHQ/HUD@HUD, David Engel/PDR/HHQ/HUD@HUD
Subject: Re: Technology Inventory Deletions

There will need to be a fair amount of consultation among the Research Center, PD&R, the PATH office and other important parties (e.g., our Federal partners) before these deletions are approved. At least a few words per technology explaining why the technology is proposed to be dropped would be helpful.

We'll also all need to be clear on the specific criteria for adding and subtracting technologies from the Inventory, both for our own edification as well as to explain to the outside world why certain technologies might vanish from PATH.

Carlos and Dana: Could we meet on these issues sometime in the near future?

Thanks,
Ken

"Robert Fuller" <bfuller@nahbrc.org> on 08/07/2000 03:08:13 PM

To: Dana B. Bres/PDR/HHQ/HUD@HUD
cc: NOW1@hudgate.hud.gov, KIS1@hudgate.hud.gov, Carlos E.
Martin/PDR/HHQ/HUD@HUD, Kenneth G. Sandler/PDR/HHQ/HUD@HUD
Subject: Technology Inventory Deletions

The following section of this message contains a file attachment prepared for transmission using the Internet MIME message format. If you are using Pegasus Mail, or any another MIME-compliant system, you should be able to save it or view it from within your mailer. If you cannot, please ask your system administrator for assistance.

----- File information -----

File: Deletions.doc

Date: 7 Aug 2000, 14:51

Size: 22016 bytes.

Type: Unknown



Mac Word 3.0

PATH TECHNOLOGY INVENTORY

Recommended Deletions or Modifications

1. Batt Recycler for Loose Fill
2. Blower Door
3. Cob Construction
4. Cordless Nailing Tools
5. Duct Blaster
6. EIFS -- Drainable Systems
7. Electric Moisture Meters
8. Fibrous Concrete Reinforcement
9. Fire Retardant Wood Structural Panels
10. Fly Ash Based Cement (combine with Fly Ash Concrete)
11. Full Cut-Off Outdoor Light Fixtures
12. Full Spectrum Fluorescent Lamps (replace with new Compact Fluorescent Lights)
13. Humidity-Sensing Control Device
14. HVAC Sizing Practice
15. In-Line Fans (combine with Ventilation write-up)
16. Laminar Flow Fixtures
17. Mass-produced Composite Panels (combine under Panel Technology write-up)
18. New Generation OSB Sub-flooring
19. Combine Plastic Chamber Leach Fields and Non-Aggregate Leach Field
20. Precast Concrete Passive Solar Home
21. Programmable Thermostats
22. Rain Screen Exterior Walls
23. Recessed Sealed Lighting Fixtures
24. Combine Straw-Bale, Straw-Based Building Products, & Strawboard Panels
25. Tilt-up Roofs for Manufactured & Modular Homes
26. Universal Design Bathtubs and Showers
27. Universal Design Kitchen Cabinets
28. Combine Modular Air Handler Hot Water Coil & Water Heaters with Space Heating Capability
29. Whole-House Cooling Fan
30. Combine Window Film and Thermochromic Window Film

Peg Brown

From: Elizabeth J. Burdock [Elizabeth_J._Burdock@HUD.GOV]
Sent: Friday, August 25, 2000 12:02 PM
To: mritter@facstaff.wisc.edu
Subject: Steel letter

I suppose there will be another letter from the Manufacturing Housing Institute who is also in bed with the RC. I wondered when the industry attack was going to occur.

----- Forwarded by Elizabeth J. Burdock/PDR/HHQ/HUD on 08/25/2000 02:05 PM ---

David Engel

08/25/2000 01:23 PM

To: Elizabeth J. Burdock/PDR/HHQ/HUD@HUD
cc: Susan M. Wachter/PDR/HHQ/HUD@HUD
Subject: Steel letter

There is a letter that was assigned to me for which Susan would like you to draft a response for her concurrence & the Secretary's signature. It is a PD&R control but a response would best be drafted by you. It is a letter from the American Steel Framing Alliance unhappy with the program

I am in my office so you can send someone over to pick it up

NORTH AMERICAN
STEEL FRAMING
ALLIANCE

July 27, 2000

The Honorable Andrew M. Cuomo
Secretary
Housing and Urban Development
451 Seventh Street, S.W.
Washington, DC 20410

Dear Mr. Secretary:

As you know the North American Steel Framing Alliance (NASFA) has been an integral part of the Partnership for Advancing Technologies In Housing (PATH) since the President unveiled this initiative more than two years ago. NASFA continues to applaud your vision and leadership in working with the housing industry to accelerate technology adoption.

NASFA has supported the effort and aggressively reached out to both House and Senate members to encourage the strong need for resources to keep PATH fully funded. However, there are issues that we believe need attention.

In September of 1999 the National Association of Home Builders (NAHB) passed a resolution at their Fall Board meeting that states in part:

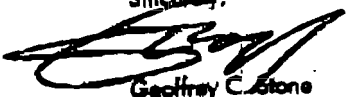
"Whereas, lumber prices continue to undergo large and unpredictable swings and have nearly doubled since the early 1990's making it increasingly difficult for NAHB members to build affordable homes; Whereas the shortage of funding research and development of non-wood based alternative materials is delaying or preventing the introduction of new building systems."

Mr. Secretary, we are perplexed that given the current lumber climate, and that the nation's homebuilders are seeking viable material alternatives for homebuilding, PATH, at the exclusion of alternative materials, supports with staff resources conferences solely focused on lumber products. Further, we believe that interagency agreements between HUD and the Forest Products Laboratories (FPL) sends the wrong message about PATH seeking 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. In fact, as is noted in the resolution, the U.S. government annually provides millions of dollars in research and market development activities for wood and wood-based products through the Department of Agriculture and its Forest Products Laboratory and other Federal Agencies, which has been successful in helping develop engineered wood products.

The steel industry is committed to providing the best material possible for residential construction and values the support we have had from HUD's Office of Policy Development and Research and the nation's homebuilders. We are however concerned about the recent alliance between the PATH office and the wood products industry.

I look forward to hearing from you soon.

Sincerely,



Geoffrey C. Stone
Director Corporate Programs

cc: Roger Glunt, Chairman, Industry Steering Committee
Lisa Bowles, President, National Association of Home Builders Research Center

1726 M Street, NW Suite 601 Washington, DC 20036-4523 202.785.2022 Fax: 202.785.3856 www.SteelFramingAlliance.com
Affiliates: Hawaii Steel Alliance, Mid-West Steel Framing Alliance, Southeastern Steel Framing Alliance, Southern California Steel Framing Alliance, Southern Ontario Steel Framing Alliance



Peg Brown

From: Elizabeth J. Burdock [Elizabeth_J._Burdock@HUD.GOV]
Sent: Friday, August 25, 2000 3:13 PM
To: dperlmutter@dutkogroup.com
Subject: Pat Hamill

----- Forwarded by Elizabeth J. Burdock/PDR/HHQ/HUD on 08/25/2000 05:17 PM -----

William C. Apgar
04/24/2000 11:43 AM

To: Elizabeth J. Burdock/PDR/HHQ/HUD@HUD
cc:
Subject: Pat Hamill

----- Forwarded by William C. Apgar/HSNG/HHQ/HUD on 04/24/2000 11:44 AM -----

David Engel
04/21/2000 03:27 PM

To: William C. Apgar/HSNG/HHQ/HUD@HUD
cc:
Subject: Pat Hamill

FYI- after the meeting I called to ask what happened to Pat Hamill. This is the response I got.

----- Forwarded by David Engel/PDR/HHQ/HUD on 04/21/2000 03:26 PM -----

"Liza K. Bowles" <lbowles@nahbrc.org> on 04/21/2000 03:17:35 PM

Please respond to lbowles@nahbrc.org

To: David Engel/PDR/HHQ/HUD@HUD
cc:
Subject: Pat Hamill

You asked me about what happened with the lack of response to the Pat Hamill tour. I asked Mark and all the tours were promoted the same by us with each builder doing some individual promotion.

Pat's was not specifically Green but more PATH. Liz was supposed to promote Pat's project at the two speaking spots we gave her. According to the tapes, she did not do that. She might also have promoted the specific PATH tour at the PATH booth. I did not see whether or not the booth was staffed, and if material on

the tour was available.. I can check here, I'm sure someone will
know. I hope this helps. Liza

Liza K. Bowles

(301) 430-6200

President

NAHB Research Center, Inc.

(301) 430-6180 (Fax)

<http://www.nahbrc.org>

Peg Brown

From: Elizabeth J. Burdock [Elizabeth_J._Burdock@HUD.GOV]
Sent: Friday, August 25, 2000 3:11 PM
To: dperlmutter@dutkogroup.com
Subject: Re: BULL

----- Forwarded by Elizabeth J. Burdock/PDR/HHQ/HUD on 08/25/2000 05:16 PM -----

"Christine Thompson Barbour" <christine@nahbrc.org> on 11/19/99 02:37:18 PM

Please respond to christine@nahbrc.org

To: David Engel/PDR/HHQ/HUD
cc: mnowak@nahbrc.org, lbowles@nahbrc.org, William E. Freebome/PDR/HHQ/HUD,
Elizabeth J. Burdock/PDR/HHQ/HUD, NELSON A. CARBONELL/PDR/HHQ/HUD
Subject: Re: BULL

Dave,

We added "Technical assistance provided by Steven Winter Associates" to the demonstration programs as a stand alone sentence right before the updates section. This provides visibility without seeking excessive PR. Will this meet your goals and SWA's needs?

On 19 Nov 99, at 10:55, David Engel wrote:

I asked a staff member at Steve Winter to update the description of some demo sites & was told that since the SWA name was removed from the demo site that it is not their responsibility to update what they are doing on the demo.!!

1. This is absolute bullshit & must stop now!!! I assume the staff member was so directed to respond. As long as working on a demo site is being paid for by Uncle Sam & it is, then I expect each contractor to update the inf. I will not tolerate this sort of shit anymore!!

2. I appreciate the concern that any reference to SWA is being removed. That is likewise unacceptable. These write-ups are being prepared with public money. They should not be marketing pieces for anyone but I dont see any reason why the firm providing assistance cannot be mentioned. If we want to start a general policy of not mentioning any of the organizations providing TA I am open to discussing this. However we will not be selective. This is a public document!

I am going to make it clear once and expect to never raise this again. We are all very busy & dont have time for this sort of foolishness!. We are all doing this work on the public ticket. We all work for HUD & the govt. I want any market competitive issues kept totally out of this program. If this is not acceptable then perhaps we should get

other contractors.

The next time I have to discuss this issue it will be in the context of requesting that existing contracts be terminated. I am really serious on this!!.

Christine Thompson Barbour
Director, ToolBase Services

christine@nahbrc.org

301-249-4400 x620

<http://www.nahbrc.org>

<http://www.nahbrc.org>

Peg Brown

From: Elizabeth J. Burdock [Elizabeth_J._Burdock@HUD.GOV]
Sent: Friday, August 25, 2000 1:26 PM
To: dperlmutter@dutkogroup.com
Subject: Re: Misc issues

no one is answering the phone in the office right now. what can I say? _____
Forwarded by Elizabeth J. Burdock/PDR/HHQ/HUD on 08/25/2000 03:30 PM _____

Michael A. Ritter

06/15/2000 02:22 PM

To: David Engel/PDR/HHQ/HUD@HUD
cc: Ralph M. Wagner/ADMIN/DES/HUD@HUD, Elizabeth J. Burdock/PDR/HHQ/HUD@HUD, Ayse Can Talen/PDR/HHQ/HUD@HUD
Subject: Re: Misc issues (Document link: Database 'Elizabeth J. Burdock', View

'CYA')

Dave

I apologize if there is confusion on the issues you raised in your attached e mail. The meeting at the National Building Museum yesterday was my first exposure to the idea for construction of a demonstration house, and it was suggested by OSTP and the building museum staff that the previously planned house on the mall be resurrected for this project. I simply offered to facilitate an investigation into possibilities. Liz and I have discussed this and we both feel that PATH sponsorship of a single material house is not appropriate in this situation.

I understand your concern that, in my PATH role, I not serve as an advocate for the use of wood over other materials. I agree. The only wood project that I have been involved with was the planned house on the mall, which was strongly endorsed by both Liz Burdock, Bill Apgar, and OSTP. I have spent a great deal of time on both steel and concrete projects and recently worked over 100 hours on developing and presenting the Hands On Builders Workshop at Civano, which was a tremendous success and showcased 7 new housing technologies using non-wood alternatives. I should also note that my salary and expenses for this participation were paid by the Forest Products Laboratory, as they have been since I started working on PATH in December, 1998. If you have specific cases where I appear to advocate wood over other materials, in the past or in the future, I would appreciate you bringing it to my attention.

David Engel

06/15/2000 09:58 AM

To: Elizabeth J. Burdock/PDR/HHQ/HUD@HUD
cc: Michael A. Ritter/PDR/HHQ/HUD, Ayse Can Talen/PDR/HHQ/HUD@HUD
Subject: Misc issues

1. Right now, we will have no technical person at the RAND Roundtable . OREM has very little money left. As a result, . Dana Bres who is handling this whole area of information technology , will not be able to go. Have you spent out your travel allocation for the third quarter ending at the end of the month? If not I strongly recommend that the PATH travel funds cover Dana in what is basically a PATH type initiative.
2. When we met last week, we agreed that an exhibit at the Building Museum should not be an APA/wood PR effort. However, I understand that Mike at yesterday's meeting with teh Museeum urged putting the APA house originally planned for the Mall at the Building Museum. Have you had a chance to tell Mike of our discussions & agreement?
3. I briefly raised a related issue with Susan yesterday. She agrees that Mike, as your Deputy, should recuse himself from all issues that result in advocacy or strong favorable support for the wood industry. I assume that you also raised this issue when you met with her in the morning. Correct?

Thanks

Peg Brown

From: Elizabeth J. Burdock [Elizabeth_J._Burdock@HUD.GOV]
Sent: Friday, August 25, 2000 3:08 PM
To: dperlmutter@dutkogroup.com
Subject: Re: Issues

I think you are right there are issues that need to be clear, however, email is not the appropriate format. I think it would be best if we met next week to discuss this. I was thinking I should either meet with Liza to discuss will set up a me

"Larry O. Zarker" <lzarker@nahbrc.org> on 03/16/2000 03:41:37 PM

Please respond to lzarker@nahbrc.org

To: Elizabeth J. Burdock/PDR/HHQ/HUD@HUD
cc: David Engel/PDR/HHQ/HUD@HUD
Subject: Issues

I am concerned that there is an awful lot of negativity developing toward the Research Center by you and being expressed in arenas other than to us directly. If you have any issues or concerns with the role of the Research Center in the PATH program, you should direct them to Liza Bowles or me. We have been working very hard to get builders, remodelers and product manufacturers to participate in the various aspects of the program—e.g. field evaluations, demonstrations, technology roadmapping, durability research, and cooperative research. This is not easy work and we do not have a pre-set agenda of people to work with or technologies to evaluate.

I understand that you are upset by the article by Roger Lewis in the Washington Post. You should understand that we did not ask him to write the article nor direct him in any way. Having said that, this is by far the best article I have seen written on PATH and it goes a long way—both in Washington and throughout the industry—to demonstrate that meaningful work is underway. You should congratulate yourself for the scope and depth of progress that the article demonstrates rather than quibble about petty issues over representation and credit. Rather than write an "op-ed" piece in reaction, I would look for ways to endorse the content of the article and pass it out like candy to people throughout government and industry.

We regularly brief the leadership of NAHB on progress in the PATH program. In fact, Liza is in Las Vegas through the weekend at the Senior Officers meeting where she was asked to bring them up to speed on PATH. I understand that you would like to have a meeting to brief Bob Mitchell on the program. I think this is a good idea and we will help set this up. In fact, we are also requesting a briefing from the building industry for Secretary Cuomo to bring him up to speed on the program and would be happy to do the same for Bill Apgar. We would like to include you in those briefings, too.

I want to be clear on the issue of the agenda for the PATH Industry Steering Committee meeting. We are bringing together people—at their own expense and commitment of time—people who have volunteered to provide technical guidance and direction to the program. We need to be judicious with their time and use it wisely for decision-making. By May we will have a lot to present to them from the Technology Roadmapping activity. I am not opposed to finding time for other working groups to present provided that they have made progress and have issues that merit the ISC's discussion and decision-making. This may also be an appropriate time to take up the idea of a National Forum to discuss what it could accomplish and what format it could take.

We chose the Spring Board meeting of NAHB so as to reduce the cost (both in time and in dollars) for setting up another meeting. We also need concurrence from them on the specific roadmapping activities that need to get started in the early summer.

I look forward to the opportunity to address any of these issues with you.

Larry Zarker
Vice President of Marketing
NAHB Research Center, Inc.
400 Prince Georges Blvd.
Upper Marlboro, MD 20774 USA
301-430-6205 (Direct Dial)
301-430-6180 (New Fax Number)
301-249-4000 (Main Number)
lzarker@nahbrc.org
<http://www.nahbrc.org>

CIVANO

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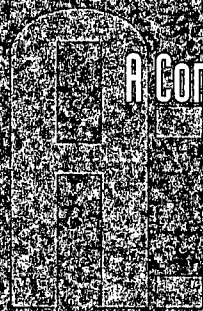
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SHAPING THE CITY

Roger K. Lewis

Building Blocks For a Model Future

The National Association of Home Builders Research Center in Upper Marlboro is trying hard to find ways to save you money while enhancing the quality of your home and safeguarding the environment.

NAHB researchers have undertaken "technology road mapping" in a public-private effort known as PATH, the Partnership for Advancing Technology in Housing. PATH, launched in 1998 under a contract with the U.S. Department of Housing and Urban Development, has set forth ambitious goals to be achieved by 2010:

- Reduce monthly housing costs by 20 percent.
- Cut in half the environmental impact and energy use of new homes while cutting energy consumption in 15 million existing homes by 30 percent.
- Improve housing durability while reducing maintenance costs by 50 percent.
- Reduce natural hazard losses by 10 percent.
- Decrease construction work force injuries and illnesses by 20 percent.

To achieve these laudable goals, PATH has identified a number of technological strategies targeting specific components of a house as well as the process for building homes. The thesis is that prevalent construction methods entail too many building trades, too much labor and material, too much energy and time, and thus too many dollars. Moreover, much of what is built doesn't perform well.

The PATH strategies target:

- Wall, roof and foundation systems.

See LEWIS, G18, Col. 1

Builders Group Seeks to Bring Housing Into th

LEWIS, From G1

- Interior finishes and furnishings.
- Conditioned air distribution, heating and cooling equipment, and mechanical, plumbing and electrical systems installation.
- On-site utilities.

Also targeted are "whole house" design and construction, the assembly of the entire dwelling unit, or a major portion of the unit, in a factory rather than on-site.

PATH is also considering the potential benefits of information technology. Better communication and more reliable data could improve housing design and construction by instantly providing industry decision-makers with up-to-date information about building codes, materials, suppliers, construction techniques and costs.

Consider your roof, an assembled system typically made up of at least five components: shingles or roofing membranes, roof flashings and sealants, sheathing, insulation and the roof structure itself, which usually consists of shop-fabricated trusses or rafters. Building a roof requires multiple manufacturers and suppliers of materials, as well as two or more trades.

And all of these can have problems. Asphalt shingles cover millions of residential buildings. They have a useful life of 15 to 20 years and have to be repaired and replaced periodically. Membranes buckle or delaminate. Flashing corrodes, comes apart or deforms. Sealants deteriorate after years of assault by sun and weather. Sheathing exposed to moisture sags or rots, fasteners fail and structural members bend. Always at risk, roofs often present a less-than-pretty picture aesthetically, technically and economically.

Accordingly, the PATH roof systems strategy hypothesizes that the industry could do better. Noting that the prevalent use of prefabricated roof trusses saves money and time, PATH nevertheless believes that there is "significant room for improvement in labor content, material durability and job site safety."

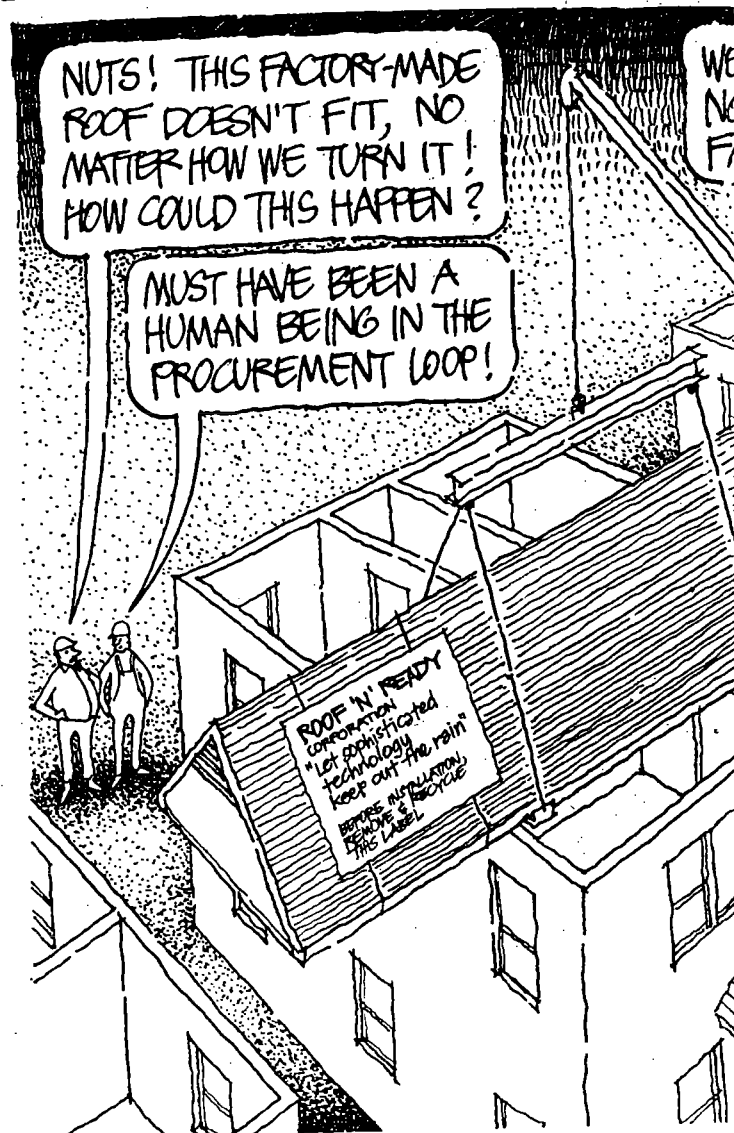
The program suggests that better roof coverings could be developed and postulates new and better roofing materials, the use of factory-made, insulated structural panels, and foolproof assembly and flashing techniques. Since constructing roofs in the field is a risky trade, it also suggests developing better methods to ensure the safety of roof installers.

But PATH participants realize that serious impediments stand in the way of effective innovation.

Most formidable is human nature, with its reluctance to change. How homes look and how they are built embody traditions, habits and tastes to which people cling tenaciously. To be effective and meet PATH's goals, the kinds of technological innovations being advocated would radically alter the home-building process as well as the appearance of houses. This will be a hard sell to risk-averse Americans.

Building industry fragmentation is another formidable obstacle. The industry consists of hundreds of thousands of disparate, autonomous but interdependent business entities—developers and builders, engineers and architects, construction contractors and subcontractors, manufacturers and suppliers of materials, financial institutions and real estate brokers and investors.

Fragmentation guarantees extraordinary diversity, flexibility



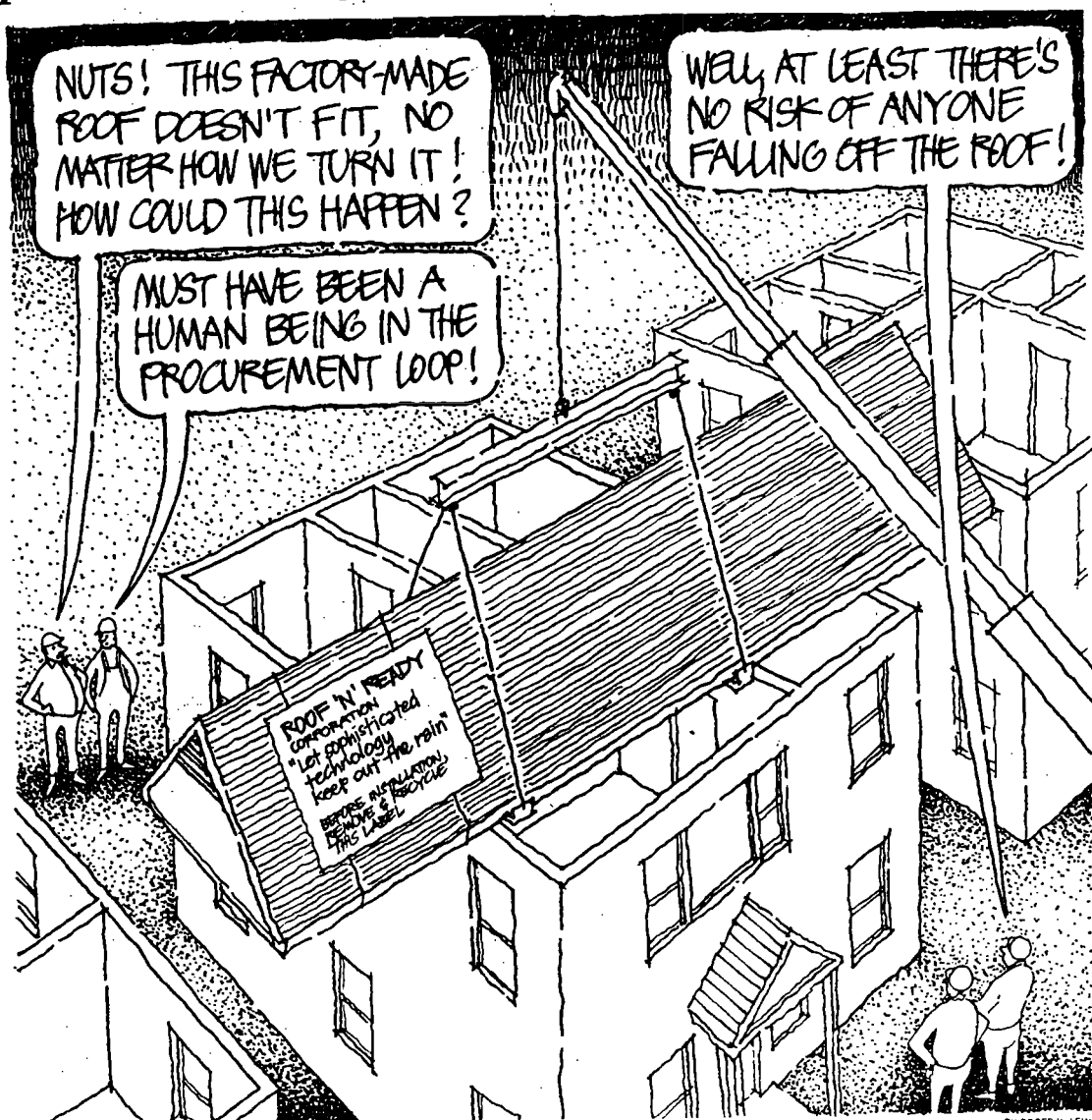
and choice. But it also obstructs standardization and the ability to generate, coordinate and implement industry-wide initiatives.

Yet another significant

impediment is the assortment of building codes throughout the United States. These vary not only from state to state, but also among county and municipal jurisdiction:

SHAPING THE CITY

Group Seeks to Bring Housing Into the 21st Century



BY ROGER K. LEWIS

capital to fund technological research, experimentation and production within the construction industry and it is easy to understand why coordinated home-building innovation is a daunting challenge.

Finally, the way we finance, market, deliver and operate housing makes technological innovation difficult. The total, life-cycle cost of a house dwarfs its actual construction labor and material expense. When the costs of land and land development, permits, fees and decades of mortgage interest, taxes, insurance, utilities and upkeep are factored in, even a substantial savings in initial construction cost and time can be economically marginal.

To get beyond marginality, PATI is wisely dealing with all components of the dwelling simultaneously. Yet to fully achieve its goals, technologically innovative materials and construction assembly methods will not suffice.

HUD sponsored the similarly motivated "Operation Breakthrough" 30 years ago, inspired by America's technological triumph in reaching the moon. Many observed then that significantly transforming housing is more than a technical problem.

Nothing has changed. It still requires a radical change in how we organize and regulate the building industry, how we manage the landscape and natural resources, and how we finance and deliver housing. Above all, it requires new attitudes about innovation and innovatively designed habitat.

Roger Lewis is a practicing architect and a professor of architecture at the University of Maryland.

and choice. But it also obstructs standardization and the ability to generate, coordinate and implement industry-wide initiatives.

Yet another significant

impediment is the assortment of building codes throughout the United States. These vary not only from state to state, but also among county and municipal jurisdictions

within a state. A design or component acceptable in Montgomery County might not be permitted in Baltimore or Virginia. Add to all this the scarcity of

TALKING POINTS

HOUSING TAX CREDIT

- President's proposed housing tax credit presents a great opportunity to bring together an alliance between the Administration and home builders, and to highlight environmental and economic benefits of energy efficient homes.
- Homebuilders are supporting the Thomas-Rangel bill, HR 1358. It has 55 cosponsors, but was not given serious consideration in last year's House tax bill.
- Need to bridge gap between Administration proposal and homebuilders to see if we can achieve bipartisan legislation this year. Key differences are:
 - Industry wants a \$2000 tax credit for a home that is 30% more efficient, while Administration favors \$1000 credit for 30% homes and \$2000 credit for homes that are 50% more efficient. The \$1000 credit would be available for 3 years.
 - The industry credit would be available for new and existing homes, whereas the Administration would be available only for new homes.
 - Industry wants an industry certification of homes, whereas the Administration wants government approval of certifiers.
 - In the case of new homes, industry's proposal would grant the tax credit to the home builder, while the Administration proposals grants the credit to the home buyer.
- The Treasury Department has expressed interest in a Cuomo-Summers event before Earth Day to promote the tax credit and its benefits. We would like to explore ideas to promote the credit and the successes of the PATH program.

• Homebuilders #1 issue is a broken deal w/ EPA on Brownfields.
- maybe package this

• Tell them that we will be in room a tender day, not Thomas.
• Can be for our bill and for Thomas.

TAX CREDIT FOR PURCHASE OF ENERGY EFFICIENT NEW HOMES

Current law

No deductions or credits are provided currently for the purchase of energy-efficient new homes.

Reasons for change

Residences, which account for about one-sixth of all U.S. greenhouse gases, offer one of the largest single sources of carbon saving potential. Some States and certain Federal programs require new houses to meet Model Energy Code standards for insulation and related construction standards, and for heating, cooling and hot water equipment. By the use of cost-effective means, many new homes could reduce energy consumption by 30 to 50 percent or more compared to the standards in the Model Energy Code or the more recent 1998 International Energy Conservation Code (IECC). A targeted credit for such highly energy-efficient new housing could increase the use of energy-efficient building practices and efficient heating and cooling equipment. In addition, it may help spur innovation in the ways that houses are designed and built, thereby providing significant energy-saving and environmental benefits over the long term.

Proposal

A tax credit of up to \$2,000 would be available to purchasers of highly energy-efficient new homes that meet energy-efficiency standards for heating, cooling and hot water that significantly exceed those of the IECC. A taxpayer may claim the credit only if the new home is the taxpayer's principal residence and reduces energy use by prescribed amounts as compared to the IECC for single family residences. The tax credit would be \$1,000 for new homes that are at least 30 percent more energy efficient than the IECC standard, and that are purchased in the two-year period beginning January 1, 2000 and ending December 31, 2001. The tax credit would be \$1,500 for new homes that are at least 40 percent more energy efficient than the IECC standard, and purchased in the three-year period beginning January 1, 2000 and ending December 31, 2002. The tax credit would be \$2,000 for new homes that are at least 50 percent more energy efficient than the IECC standard, and purchased in the five-year period beginning January 1, 2000 and ending December 31, 2004.

02/07/95

16:49

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NO. 012

002

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13:20PATH → AFFORDABLE HSG R
PATH → 623 937 3435NO. 561
NO. 552004
002

Department of Energy
Washington, DC 20585

January 21, 2000

Mr. William C. Apgar
Assistant Secretary
for Housing-Federal Housing Commissioner
U.S. Department of Housing & Urban Development
451 7th Street SW
Washington, DC 20410

Dear Bill:

I want to follow up on the conversation we had at the recent PATH Principals Interagency Committee (PIC) meeting. We believe strongly in the concept of PATH but also believe that greater inter-agency cooperation would improve progress toward the President's goals. Let me outline our views.

First and most fundamental is the nature of the partnership. As you recall, when we began, DOE was assigned as co-lead on policy. Unfortunately, we have never been afforded the opportunity to participate as co-lead in policy development. For example, the budgets and strategic plans have been presented to us at the same time they have been presented more generally. The level of consultation simply has not been adequate and does not reflect our co-leadership.

Second, it is important that your staff and other agencies understand your commitment to a more inclusive definition of the industries we need to have fully engaged in the program. Homes are built with insulation, windows, roofing, HVAC, appliances and other vital components. Many of these industries feel disaffected because of the emphasis on NAHB as the "industry" that will lead to adoption of improved technologies and reduced energy use.

Third, it appears the new, "stick-built" part of NAHB is the most involved in PATH and they and your staff seem to be less supportive of research not conducted by them. As you know, Building America, the foundation of PATH's pilots projects, has been in the field with leading homebuilders proving the case that one can build energy efficiently at no extra cost. We have yet to hear a positive word from your staff about Building America and, despite denials, we still hear rumors of your staff voicing criticism of the program. The strength of Building America is not only its NAHB-member builders but the 150 associated companies that produce high efficiency products. Building America has been built on over two decades of highly regarded R&D, which is apparently being disregarded. As an example, despite years of world-class research by our national laboratories and strong partnerships with the insulation industry, your staff has never consulted us about the research agenda HUD has begun with Dow on insulation in general. I fear we risk charges of duplication or lack of coordination if we don't do a better job of including DOE, our national laboratories, and our industry partners in PATH.

02/07/00

11:04

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005

02/03/00

13:20

PATH → 623 937 3435

NO. 552

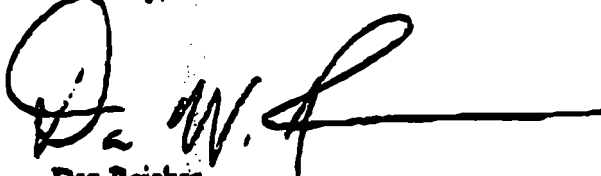
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Fourth, at the meeting I strongly urged that we include low-income weatherization as a high priority to meet the President's goal of 15,000,000 existing homes that are 30% more energy efficient by 2010. Since the PATH announcement, your staff has made it absolutely clear that weatherization was not a strategy they would embrace. When I insisted, they finally allowed \$200,000 for a greatly reduced weatherization pilot. Instead of five technologies, we are limited to one. I fear we are not aggressively pursuing the existing home market and are missing a big opportunity to include all income levels in PATH. I am proud of this Administration's commitment to social justice and will continue to be a strong advocate for improvements in existing low-income homes. We hope your staff will be as open-minded as you were at the PIC meeting in understanding the value of weatherization. Rather than resisting funding for weatherization, perhaps your staff can work with mine to find ways to include this important segment of society in the program. We will soon send to Liz Burdock a revised proposal to address existing homes by applying PATH Technologies in low income homes through the Weatherization program.

Finally, I want to address the way we co-promote PATH in publications, appearances and communications. Both EPA and DOE have long-standing programs in energy efficient homes. It is unrealistic to expect that we will completely subsume those successful programs in favor of PATH. However, where it makes sense, we will include PATH logos and references. At the same time, I would expect that PATH publications would refer to the inter-agency nature of the program and include references to our major branded programs. In that regard I must tell you, I was surprised and disappointed to see a fancy PATH publication (attached) with a blue cover that had the HUD logo on the front - - and no reference to any other agency or inter-agency collaboration. Frankly, that is very discouraging and damages the spirit of inter-agency partnerships.

I offer these views in the spirit of collaboration. For PATH to be as successful as we both would like we must address these issues. I suggest we meet immediately to resolve them and put PATH on a firmer foundation.

Sincerely,



Dan Reicher
Assistant Secretary
Energy Efficiency and Renewable Energy

Enclosure

PATH Publication

0013



Henry C. Kelly
02/14/2000 07:22:50 PM

Record Type: Record

To: Roger S. Ballentine/WHO/EOP@EOP, David Gardiner/CEQ/EOP

cc:

Subject: talking points for Path phone calls

Background: This is from the official PATH website:

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.

PATH links key agencies in the federal government with leaders from the home building, product manufacturing, insurance, financial and regulatory communities in a unique partnership focused on technological innovation in the American housing industry.

In late 1997, President Clinton designated the Department of Housing and Urban Development (HUD) as the PATH Secretariat and the first PATH Director was appointed in January 1998. President Clinton formally inaugurated the program on May 4, 1998 in Los Angeles at the site of an affordable housing project that had benefited from technical assistance provided by PATH partners.

This is a good background piece but illustrates the problem we've got. HUD never mentions the other agencies involved. DoE in fact did most of the work and spent most of the money on the LA site and continues to be the dominant funder. HUD, however, has relationships with builders and a huge national network which is essential to actually getting the DoE technology adopted. HUD argues that the more DoE is mentioned, the more skittish mainline builders (eg builders which are not DoE contractors -- most of them) become. There's a long history of bad blood between the two on this issue but they are both essential!

Talking Points:

For Apgar:

- Want to thank you for doing a splendid job of getting PATH on the right track after a difficult start.
- It seems that the new research programs are well managed and the demonstration sites are moving along
- The President talks about PATH technologies and the LA housing project whenever he gets a chance. The program tells a very powerful story about how technology can help builders, homeowners, and the environment.

- We're particularly grateful for your hard work in getting the strong support of the National Association of Homebuilders. Their support makes it possible to think that the program can have a major impact on mainstream builders.
- I've seen the letter that Dan Reicher wrote you. Leaving aside the merits of the specific issues raised, I'm concerned that continuing friction between DoE and HUD are threatening to boil over and become public. Both agencies have capabilities critical to PATH's success.
- I recognize that it has been difficult working with DoE, but we need your leadership to overcome a problem that threatens to embarrass the administration and slow progress in a critical program.
- I understand that your staff and DoE have begun working together and are on their way to resolving the issue. Liz Burdok has been great for PATH but her management inexperience probably means that she'll need some active mentoring from you.
- It seems to me that the PATH office should (a) meet with the DoE people regularly and try to get a DoE person assigned fulltime to the PATH office. DoE needs to feel that they helped invent the PATH concepts and petty squabbles should be identified and resolved quickly. (b) go out of your way to give DoE credit whenever possible.
- PATH must be seen as an administration program with HUD and DoE providing guidance -- not just a small HUD appropriation. The sense of a national, coordinated program is essential.
- I hope you can contain your understandable frustration and help us through this. The project has high visibility and is important to the President. Can we count on you?

For Reicher:

- Want to thank you for helping get PATH on the right track. Your staff provided me with an excellent presentation for the NAHB meeting last month. It graciously gave credit to all participating agencies.
- It seems that the new research programs are well managed and the demonstration sites are moving along
- The President talks about PATH technologies and the LA housing project whenever he gets a chance. The program tells a very powerful story about how technology can help builders, homeowners, and the environment.
- I've seen the letter you wrote to Bill Apgar. Leaving aside the merits of the specific issues raised, I'm concerned that continuing friction between DoE and HUD are threatening to boil over and become public.
- I recognize that it has occasionally been difficult working with HUD, but we need your leadership to overcome a problem that threatens to embarrass the administration and slow progress in a critical program.
- I understand that your staff and DoE have begun working together and are on their way to resolving the issue. The staffs should be in continuous contact and it may be best if you could assign a person full time to the PATH office.
- We clearly need to give DoE credit for its contributions to housing technology. We understand that Build America has been the major instrument making the PATH demonstration sites possible. PATH must be seen as an administration program with HUD and DoE providing guidance -- not just a small HUD appropriation. PATH must be seen as a national coordinated program is essential.
- I hope you can contain your understandable frustration and help us through this. The project has high visibility and is important to the President. Can we count on you?

PATH

PARTNERSHIP FOR ADVANCING TECHNOLOGY IN HOUSING

FAX COVER SHEET

Date: JAN - 5 2000 Number of pages, including this page: 4
To: Roger Ballettine
Phone: 456-1782 Fax: 456-1736

From: Elizabeth Burdock
Phone: (202) 708-4277 Fax: (202) 708-4250

Subject: _____

451 Seventh Street, SW Suite B133 Washington, DC 20410



JAN - 5 2000

Mr. Roger S. Ballentine
Deputy Assistant to the President
For Environmental Initiatives
115 Old Executive Office Building
Washington, DC 20502

Dear Mr. Ballentine:

Thanks for taking the time to talk with me today. As we discussed, the Forest Service agency request for FY 2001 included \$4 million for PATH, but was dropped from the budget at USDA. Subsequently, the attached briefing paper was prepared for OSTP to be forwarded to Linda Delgado, USDA Special Assistant to Undersecretary Rominger, for consideration in the FY 2001 USDA budget during passback from OMB. OSTP has attempted to follow up on USDA actions, but there has been no apparent action, and no funding has been planned for PATH support in FY 2000. It is our understanding that OMB added \$5 million to the Forest Service research budget under Global Climate Change for PATH support. However, this funding was not specifically identified for PATH and was allocated to other Forest Service research programs.

The PATH office needs your assistance in adding language to the FY 2001 Forest Service research budget explanatory notes for the Center for Advanced Housing Research at the Forest Products Laboratory in support of PATH.

As always, thanks for all of your assistance and guidance in this matter. Please call me at 708-4277 if you need additional information or have any questions.

Sincerely,

Elizabeth J. Burdock
Executive Director
Partnership for Advancing Technology
In Housing

★ ★ ★ ★ ★

Mailing Address: 451 Seventh Street, SW ★ Suite 8133 ★ Washington, DC 20410
Phone Number: 202-708-4277 ★ Fax Number: 202-708-4250
Office Location: 470 L'Enfant Plaza, SW ★ Suite 7110 ★ Washington, DC
www.pathnet.org

Technology Making a Difference Where Americans Live

The Partnership for Advancing Technology in Housing (PATH)

Background

PATH was launched by President Clinton in May 1998 as part of the Administration's Climate Change Initiative. Residential Construction is America's largest single industry—everything that happens in the housing industry impacts all of our daily lives and the environment. Specifically one-third of all carbon emissions are from buildings—one half of those emissions are from residential dwelling units.

When President Clinton launched PATH, he looked at the program to be a comprehensive vehicle for helping the housing industry by promoting and developing new advanced technologies that lessen the environmental impact of housing, increase energy-efficiency by 50 percent in new housing and 30 percent in existing housing, reduce maintenance and increase durability by 50 percent, and decrease the monthly cost of housing by 20 percent. He also wanted the program to be a true partnership between the Federal government and private industry so that solutions could be developed together to meet the PATH goals he established. PATH involves ten Federal agencies: HUD, DOE, USDA, FEMA, NIST, DOD, DOL, White House Office of Science and Technology, Federal Housing Finance Board, and National Science Foundation. Administration of the initiative is led by HUD. The program has been fully endorsed by the National Association of Home Builders (NAHB), the housing industry's largest trade association with more 200,000 members.

As a full partner in the program, the White House expects each agency to look at their individual programs and decide how they can be coordinated and enhanced under the PATH initiative. In addition, each agency should review their role in the program and make sure that their activities are sufficiently budgeted. PATH will play the role of insuring that funding is leveraged and not wasted on duplicative activities.

The USDA Forest Product Laboratory (FPL) has the capability to contribute significantly to the PATH program and help achieve the goals established by the President, especially in areas related to housing durability and performance. However, funding has not been available for the extended PATH research program.

FPL Contributions

FPL has been long recognized as a world leader in such housing-related areas as engineered wood products and structures, moisture and indoor air quality, material design and performance, coatings and finishes, adhesives, wood preservation, biodeterioration, and wood/non-wood composites. Many of the materials and technologies currently used in housing were developed through FPL in cooperation with industry, academia, and government. FPL has strong links to industry and has played a very active role in development of codes and standards. For the PATH program, FPL has formed several consortiums to move forward with advanced technology housing research. Current PATH research includes:

1. Development of reliability based design for housing in high-wind areas.
2. Effects of cyclic moisture on engineered wood panel products.
3. Development of wood/non-wood composites using recycled materials.
4. Improved indoor air quality and moisture management in housing.
5. Use of recycled lumber for construction.
6. Improved durability of coatings, finishes and sealants.
7. Improved utilization of secondary wood species for engineered wood products.

Center for Advanced Housing Research

To help meet the goals of the PATH program, FPL has established a Center for Advanced Housing Research for wood-frame housing. Research at the center will evaluate technology needed for both new and existing housing and will encompass all types of residential structures in which wood and/or wood based products are used as primary or secondary building components. Emphasis will be on the improved use of traditional wood products, the use of recycled and engineered wood composite materials, energy and sound efficiency, indoor air quality, an improved living environment, and natural disaster resistance. The Center research will focus not only on the housing structure, but will also move forward with the latest theories and ideas in landscape design, options for water conservation and recovery, and an improved surrounding environment to make housing more livable.

Funding History

The USDA Forest Service funding history for PATH is summarized below:

FY 1999: No funding was allocated specifically for PATH, but approximately \$235,000 was redirected into housing research to meet PATH goals.

FY 2000: The President's budget included \$2.1 million for FPL housing research, but Congress did not accept the President's budget and funding levels were changed. The final allocation has not yet been made within the Forest Service, and it is uncertain if housing research will be funded.

FY 2001: The agency request included \$4.0 million for PATH, but this was dropped from the budget at USDA. There is currently no funding identified for FPL housing research.

Current Budget Request

If the FPL is allocated funding for FY 2000 and 2001, then the Center for Advanced Housing Research can move forward as a full PATH participant. It is requested that funding for the Center be identified as a specific item within the Forest Service research budget.



**National Institute of
BUILDING SCIENCES**

1090 Vermont Avenue, N.W., Suite 700
Washington, D.C. 20005-4905
(202) 289-7800
FAX (202) 289-1092
www.nibs.org

***** FAX MEMORANDUM *****

TO: Roger Ballentine
FROM: David Harris
DATE: September 27, 1999
SUBJ: Building Product Pre-Approval Program (BPPAP)
PAGES: Six (6) pages sent, including this page

In response to your telephone discussion with Mary Ellen Fise last week, information about BPPAP is attached. The dates Mary Ellen is available for a meeting about BPPAP are noted in the copy of the letter to Janet Anderson.

Copy to: Mary Ellen Fise



**National Institute of
BUILDING SCIENCES**

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Washington, D.C. 20005-4905
(202) 289-7800
FAX (202) 289-1092
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September 27, 1999

Ms. Janet Anderson
Climate Change Task Force
734 Jackson Place, N.W.
Washington, D.C. 20503

Dear Janet:

As we discussed late last week, the attached describes the goals, status and value of the Building Product Pre-Approval Program (BPPAP), an initiative begun in 1996 by the National Institute of Building Sciences under contract to the Department of Defense. It is timely to expand both the participation in and support for BPPAP in order to help expand and advance federal energy efficiency and environmental responsiveness efforts as defined by recent Executive Orders and legislation. Based on the recent telephone conversation between Roger Ballentine and Mary Ellen Fise, a Presidential appointee member of the Institute's Board of Directors, Roger asked that information about the program be sent to you. Similar information has been forwarded to Roger.

We look forward to an opportunity to present BPPAP to you and discussing the program's potential and the resources needed to realize it. In the interest of setting a date to meet with you, Mary Ellen gave me the following dates when she is available:

September 29 (a.m.), October 1 (10:00-11:00 a.m.), October 5 (anytime), October 7
anytime except lunch, October 8 (anytime except 11:00 to noon).

I'll contact you soon to discuss the best time to meet. In the mean time, please call if you have any immediate questions.

Sincerely,

David A. Harris, FAIA
President

Enclosures

Copy to: Roger Ballentine and Mary Ellen Fise



**National Institute of
BUILDING SCIENCES**

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Building Product Pre-Approval Program (BPPAP)

The Building Product Pre-Approval Program was established in 1996 by the National Institute of Building Sciences (NIBS) with funding from the U.S. Department of Defense. BPPAP is designed to provide national leadership toward the objectives of purchasing best value for the government and addressing global climate-change issues. The specific goals of BPPAP are to identify and pre-approve commercially available building products that: 1) meet the technical performance requirements of federal specifications, 2) achieve top 25% energy efficiency, and 3) are environmentally preferable products.

BPPAP efforts are performed under the direction of twelve federal agencies.

DOD Department of Defense (Chaired by OSD)
NAVFAC Naval Facilities Engineering Command
COE Army Corp of Engineers
USAF Air Force
NASA National Aeronautical and Space Administration
VA Department of Veterans Affairs
GSA General Services Administration
DOE Department of Energy (FEMP)
EPA Environmental Protection Agency
OFEE Office of the Federal Environmental Executive
NIST National Institute of Standards & Technology
OFPP Office of Federal Procurement Policy

BPPAP accomplishes its work with the assistance of Technical Review Committees (TRCs) composed of the actual authors of federal agency building specifications in the appropriate product categories. Responsibilities of the TRCs are to identify and classify product categories, identify product test requirements in guide specifications, identify energy, environmental, and life-cycle analysis requirements, and to approve manufacturers test reports for pre-approved products.

To pre-approve specific products, BPPAP uses the following process: 1) Identify various requirements for specific generic products currently found in federal guide specifications, 2) Solicit test reports and other data from commercial product manufacturers demonstrating that those specific commercial products meet the identified requirements, 3) Review these reports and data through technical review committees to ascertain that a specific commercial product meets the identified requirements, and 4) Publish the list of pre-approved commercial products for distribution throughout the federal government and private industry.

To date Technical Review Committees have been convened to address the following product groupings:

Doors	Glazing	Roofing	Insulation	Floors
Paint	Walls & Ceilings	Tile & Terrazzo	Boilers	Heat Pumps

BPPAP TRCs are being formed to address the following new product groupings:

Lighting	Electrical	Chillers
Air Handlers	Control Systems	Door Hardware

Over 400 specific products have been pre-approved to date in the following groupings.

Insulation	Flooring	Tile
Doors	Glazing	Wall/Ceiling

BPPAP is working with window manufacturers associations to publish a Window Products database with 60,000 approved window products certified by three nationally recognized trade organizations, the American Architectural Manufacturers Association, the National Window and Door Association, and the National Fenestration Rating Council. The window standard upon which certification is based will also be incorporated into federal agency guide specifications.

BPPAP has developed a Pilot Project addressing the environmental preferability of paints and electric chillers in conjunction with Green Seal and Scientific Certification Systems, the two preeminent environmental labeling organizations in the United States.

The Building Product Pre-Approval Program will provide the following benefits to the federal government:

Communicate Federal Requirements More Clearly – BPPAP will give contractors, suppliers, and construction managers examples of intended products; rather than requiring managers to perform research to identify potential solutions and to identify compliance methods.

Increase Competition – BPPAP will remove unnecessary requirements and identify products from all interested manufacturers, rather than, as often happens, one product initially discovered when offered by the contractor's supplier.

Emulate Commercial Practice – BPPAP will highlight commercial, off-the-shelf products as required in FAR 12, applying the private industry practice of specifying salient requirements and listing products meeting those requirements.

Conform to Energy and Environmental Requirements – BPPAP responds to numerous Executive Orders by identifying the energy efficiency, recycled content, and toxic pollutants contained in or produced as a result of the manufacturer of each specific product.

Enhance the Quality of Projects – BPPAP will improve and update guide specifications by providing a peer review through Technical Review Committees, and will reduce the incidence of design being compromised by misunderstood, incorrect or out of date requirements.

Lower Costs – BPPAP will sharpen bid prices through increased competition and by providing more alternatives during product selection, and requiring fewer resources from contractors and government during product selection, approval and submittal process. BPPAP will also reduce rework and change orders during construction by providing clearer communication of requirements and products meeting them.

The objectives that BPPAP is working to accomplish have been called for by a range of federal laws, regulations, and executive orders the latest of which is EO 13123; specifically Sec. 403(b)(3).

September 24, 1999

Building Product Pre-Approval Program

By pre-approving manufactured products as to their energy efficiency, technical performance, and environmental preference, the Building Product Pre-Approval Program

(BPPAP) provides an effective, industry-based system for carrying out laws mandating the use of energy-efficient construction products in federal buildings.

The BPPAP list of pre-approved products will be made available to all federal agency designers and contractors with federal construction authority. There is currently no fee to participate, and products on the list also receive a link to their company's website from the BPPAP web page.

The overall goals of the BPPAP program are to:

- Identify various requirements for generic products currently found in federal guide specifications.
- Solicit test reports and other technical data from commercial product manufacturers demonstrating that their specific commercial product meets the identified requirements.

- Review these reports and data through a technical review committee to ascertain that the product meets the identified requirements.
- Publish a list of pre-approved commercial products for broad distribution throughout the federal government and private industry.

The BPPAP program streamlines the product selection process by offering:

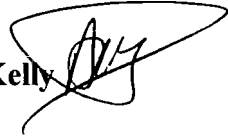
- **Clearer communication of federal requirements.** BPPAP gives contractors, designers, suppliers, and construction managers actual examples of intended products rather than requiring managers to perform research to identify compliance methods.
- **Enhanced quality of projects.** BPPAP improves guide specifications through peer review by Technical Review Committees and reduces the incidence of design being compromised by misunderstood, incorrect or out of date requirements.
- **Conformance to energy and environmental requirements.** BPPAP responds to applicable executive orders and regulations by identifying the energy efficiency, recycled content, and toxic pollutants contained in products or produced as a result of their manufacture.

BPPAP invites construction product manufacturers to be among the first on the BPPAP List by visiting www.njbs.org and clicking on BPPAP, or by calling 202/289-7800 and asking for BPPAP information. The product forms for various product types are available for download at the website.

TDG

MEMORANDUM

TO: Roger Ballentine

FROM: Deana Perlmutter and Henry Kelly 

DATE: July 19, 1999

RE: Status of PATH and Assistance Needed

Background:

The Partnership for Advancing Technology in Housing (PATH) aims to apply many of the innovations to homebuilding which have helped manufacturing firms cut costs and improve quality at the same time. One important aspect of quality is the operating cost of the home – including the energy costs and the insurance and other costs associated with risk of damage from high winds and earthquakes. This is a critical part of our climate plan since 20% of all CO₂ comes from residential housing. It is also an integral part of the Vice President's "livable communities" program since the PATH communities will be built to be pedestrian friendly, safe, accessible to elderly and handicapped, provide an attractive local environment (while helping the global environment), and be generally great places to live.

The housing industry faces far greater difficulties than ordinary manufacturing businesses in using modern technology to design, build, sell and operate its products. Attempts to blindly apply manufacturing production methods to housing have failed. The industry is highly fragmented (with the largest producers building less than 1% of all new housing) and few firms have any engineering or research staffs. It is regulated by thousands of individual building code and inspection jurisdictions making it difficult to get new designs approved on a national level. Some of the challenges are outlined in Exhibit A (attached).

Our hope for PATH stems from the fact that a new generation of builders recognizes that they need technical innovations to satisfy their customers, keep housing affordable, and meet increasingly stringent demands for safety and environmental quality imposed by

public regulation and by the insurance industry. Builders, building suppliers (and would-be suppliers), and federal research agencies have joined in the partnership and its ambitious goals to:

- Cut the environmental impact and energy use of new housing by 50 percent 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,
- Reduce the monthly cost of new housing by 20 percent or more.

The Assistance Needed from You

We would like you to:

1. Attend the next principals meeting of PATH for at least part of the session both to reinforce the Administration's interest in having the program succeed and making it clear that we want to the agencies to make a good faith effort in putting together a coherent FY2001 budget plan.
2. Help us ensure that individual agencies submit credible budget proposals and help us ensure that OMB reviews the PATH budgets as a whole. It is particularly critical that HUD align some of its main-stream financing and regulatory programs with PATH goals (such as regulation of manufactured housing, home equity reinvestment programs for retrofits, management of public housing funds, etc.) We also need to get NIST to make this a priority – the housing people are way down in the pecking order. Since many of the examiners involved are in parts of OMB unfamiliar with the climate change plan, this has required a lot of education but we're getting there. The formal memo from OMB to the agencies giving instructions on how to present budget data for next year's budget instructs them to report climate change technology proposals and specifically mentions only two specific initiatives: PNGV and PATH.
3. Help us identify PATH events suitable for participation by the POTUS/VPOTUS/FLOTUS or Cabinet secretaries. We have many opportunities to host events in connection with milestones in our large pilot sites, or can convene meetings of principals of major firms across the country.

Status:

As with PNGV, we began the program by building on programs already underway in the agencies. The most important of these are:

- The Build America program in DoE, which has encouraged research partnerships linking builders and suppliers. Several years of work have resulted in significant innovations are now being tested on a major scale in several PATH demonstrations.
- The NIST building and fire safety research teams have played a major role in helping coordinate state and local building codes and inspections and developing new test procedures.
- FEMA's Project Impact-Building a Disaster Resistant Community has partnerships with seven pilot communities providing expertise and technical assistance. FEMA spent \$20 billion to help people repair and rebuild communities after natural disasters. The number and severity of natural disasters have increased over the past decade increasing the need to find technology that can reduce the threat that hurricanes, tornadoes, severe storms, floods and fires at a modest cost.
- The EPA's green buildings, green lights, indoor air quality, and other programs play a major role in helping builders and consumers find ways to cut costs and energy bills.
- The Forest Service operates a Forest Products Research Laboratory, which focuses on advanced methods for using wood and wood composites in construction.
- HUD has many programs aimed at housing affordability and a small research program.
- The US Army is consolidating base housing and will be contracting for construction of a large number of units during the next decade. They want to ensure that these are high-quality, and affordable.

The group has launched a number of new research and regulatory reinvention projects. It has also focused on finding ways to take advantage of five major developments that have agreed to work with PATH in testing the concepts. These have been identified at the PATH National Pilot Sites and include:

- Civano (2500 units) outside of Tucson. It has several dozen units constructed with 50% of the average energy use of typical new Tucson homes. It hasn't been able to do this by reducing costs but the cost increment is small and makes economic sense for the buyers.
- Village Green (186 units) in northern Los Angeles. This site has focused on utilizing advanced construction techniques and energy efficient systems to reduced Village Green homeowners' utility bills by 50% compared to a typical new home. In partnership with the Los Angeles Department of Water & Power and BP Solar,

almost all of the homes have photovoltaic systems to provide a large fraction of the homes' electrical needs.

- Playa Vista (approximately 13,000 residences) is located on the Hughes Aircraft plant site in West Los Angeles. Goals of the Playa Vista builder, certified as an Energy Star Builder, are energy efficiency, improved indoor air quality, waste minimization, enhanced livability, and consumer savings. In addition, Playa Vista will be served by an advanced energy efficient mass transit system.
- Stapleton (housing for 25,000 residents) is taking the former airport site in Denver and developing a new, mixed-use urban community. The Stapleton Development Corporation, a non-profit organization created by the City to implement a Plan developed by the Mayor, City Council and private citizens, has already begun work recycling materials from the demolition of the old airport, runways and roadways and using them in the infrastructure for the new development. The community will utilize recycling, renewable energy, natural resource conservation, and other environmentally sound practices.
- Summerset at Frick Park (713 homes) is a brownfields development in Pittsburgh utilizing land recycling, smart growth planning and urban in-fill. The housing is being built with the latest in technology, a commitment to quality, energy efficiency, low monthly operating costs and strong value.

Management:

PATH is managed by an executive committee cochaired by Dan Reicher of DoE and William Apgar of HUD. Day to day operations are run by a PATH office headed by Elizabeth Burdock on loan from HUD with a small staff on loan from other agencies. A key person is Larry Zarker, the industry liaison, on loan from NAHB Research Foundation. He provides a lot of technical and management strength. A 30 member advisory committee meets periodically to review the work and has established five subgroups working in areas like technology, and financing.

PATH suffered an early setback because the first executive director selected by HUD looked great on paper but managed to alienate virtually all constituencies. Fortunately we have since fixed the problem and his replacements have been very effective in restoring morale and a sense of purpose.

The program is still suffering growth pains because of the difficulty of reconciling the agendas of the agencies, particularly HUD and DoE. Getting these two to work together is difficult but essential to making the program work. Todd Stern personally negotiated the management plan that was reluctantly accepted by both HUD and DoE. The problem stems from HUD's reluctance to use any of its mainstream programs to promote technology (particularly technology aimed at environmental quality or energy reduction) and DoE's refusal to recognize the enormous influence and credibility that HUD has with the building community.

While HUD has \$10M allocated specifically for PATH, we need to be clear that the budget for the entire program is the combination of projects in many agencies to support the PATH goals (identical to the situation with PNGV). The \$10M PATH line-item should be used **only** for interagency coordination functions (including private sector panels), and for filling gaps in areas not covered by any mission funding. It should **not** be used by agencies to complement their already existing programs. This has caused some confusion since in the first year of the program HUD transferred some of its funds to NIST, NSF, and EPA to get projects started. This caused great problems since DoE was angry that it didn't get its fair share (the DoE budget is much larger than the other agencies' in building research). We've been clear that this interagency transfer was a startup phenomena and should not be a permanent style of operation. We need agencies to ask for their own funds in areas clearly within their mission.

Exhibit A

- Productivity improvements in the building industry are lagging far behind all other industries (indeed productivity may be declining!).
- The average price of homes has grown almost 14% since 1990, and has almost doubled since 1980.
- Buildings are responsible for 27% of all energy use and 2/3 of electricity consumption.
- The inefficient process of building and remodeling residential structures creates more than 10 million tons of waste annually which are stressing land fills.
- The cost of covering disaster losses by owners, government and insurers has been estimated at almost \$1 billion/week and in some places it's getting harder and harder to insure homes.
- The average expenditures for maintenance and repairs have almost tripled since 1980.
- Energy use in buildings account for more than one-third of air emissions, producing over 350 million metric tons of carbon emissions and growing rapidly
- Residential consumers spend over \$30 billion on energy in buildings and it's growing, while low income consumers spend 15% of gross income on energy.
- Construction remains one of the most dangerous occupations. Workplace accidents have caused productivity to decline and insurance costs to climb.
- Some communities are expanding so fast they can't guarantee water supplies for the life of the house.

PATH

PARTNERSHIP FOR ADVANCING TECHNOLOGIES IN HOUSING



PATH will change the way Americans live.

Advanced technology is increasingly becoming a driving force of positive change in America. From the stock market to health care, technology is making striking improvements in all walks of life – housing will be no different.

The Partnership for Advancing Technology in Housing (PATH) will make a difference in the lives of citizens all across the United States. PATH is a voluntary, public/private initiative which seeks to speed the creation and widespread use of advanced technologies to radically improve the quality, durability, energy efficiency, environmental performance and affordability of our nation's housing.

A few of the expected results from the PATH initiative are:

- increased housing affordability;
- lower construction costs;
- reduced monthly cost;
- fewer construction injuries;
- lower disaster losses; and
- accelerated development and increased market acceptance of new housing technologies.

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

Who benefits from PATH?

PATH creates opportunities where everyone wins – homeowners, the housing industry, and even the environment.



The **American housing and construction industries benefit** because PATH's technology development and utilization process ensures that these industries will be a dynamic force far into the 21st century. The PATH initiative stimulates housing design and construction change by providing the latest information on innovative building materials, processes and systems; showcasing innovative housing developments that can serve as models for builders and homeowners 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.

Often, emerging technologies that could be useful to the housing industry are not readily accepted. This occurs because the housing industry, unlike other major industries, is extremely fragmented.

The housing industry consists of hundreds of thousands of separate companies. To introduce a new technology into this marketplace, let alone achieve any significant market penetration, is a time consuming and costly process - one which discourages most attempts at true innovation and slows down those that do get past the prototype stage. It can take 10 to 25 years for a new housing product or technique to achieve full market penetration.

PATH concentrates on those areas where technology is failing to reach the marketplace - whether it be because of regulatory barriers, lack of information, or inadequate technical support. By helping industry close these gaps, and get advanced technology into the market faster, PATH will have a significant impact on the quality and affordability of U.S. housing.



American homeowners also have reason to celebrate.

Because of PATH's firm commitment to energy-efficiency and affordable housing technology, American

homeowners could save a substantial amount of money. For example, the average new house energy bill is around \$1,200 a year. If PATH technologies reduce energy bills by 50 percent, the annual cost would drop to \$600. Monthly savings for the homeowner will be \$50. Approximately

WHY DO WE NEED A PARTNERSHIP?



By working together, PATH partners 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 is a necessary partnership because it is difficult for the housing industry to advance technology on its own. Despite the importance of the housing industry, expenditures on residential technology research and development are relatively low compared to other industries and in comparison to other industrialized countries.

PATH FEDERAL PARTNERS

- Department of Agriculture
- Department of Housing and Urban Development
- Department of Commerce
- Department of Defense
- Department of Energy
- Department of Labor
- Department of Transportation
- Environmental Protection Agency
- Federal Emergency Management Agency
- National Science Foundation
- Federal Housing Finance Board
- White House Office of Science and Technology Policy

PATH PRIVATE PARTNERS

- Home Builders and Developers
- Remodelers
- Product Manufacturers
- Home Systems Producers
- Nonprofit Housing Providers
- Code Organizations
- Financial Institutions
- Utility Companies
- Insurance Providers
- Academic Institutions
- Realtors
- Appraisers
- Product Retailers
- Homebuyers/ consumers

1,000,000 new homes are built each year. Multiplying the \$600 savings per home by 1,000,000 results in \$600 million dollars saved in energy costs each year for new home buyers.

Significant savings are also possible with existing homes. For example, reducing the average \$1,300 energy bill by 30 percent will save the homeowner approximately \$390 a year or \$11,700 during the life of a 30 year mortgage. Monthly savings for those homeowners will be \$32.50. The total potential energy savings in dollars for 15 million existing homes is \$5.8 billion a year.



PATH is not only good for homeowners' pockets, **it helps the environment.** By the year 2010, PATH technologies could save consumers \$64 billion a year in energy costs and reduce annual carbon emissions by 13 million tons, equivalent to the amount produced each year by more than 10 million cars. Through the use of PATH energy efficient technologies like solar energy systems, we rely less on nonrenewable resources and take less away from our environment. We also preserve our environment by concentrating on innovative uses of recycled materials such as floor tile created out of recycled automobile windshields.

PATH Goals

The PATH program aims not only to improve the quality, affordability, durability, and energy efficiency of today's new and existing homes, but to strengthen the technology infrastructure of the United States and to help create the next generation of American housing.

PATH seeks to encourage the development of innovative housing components, designs and production methods and 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. PATH strives for these ultimate goals:

- Reduce the monthly cost of new housing by 20% 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 decrease by at least 20 percent work-related illnesses and injuries in residential construction.

PATH PROGRESS

How is PATH achieving these goals? PATH works toward these goals using an integrated strategy of:

➤ TECHNICAL ASSISTANCE

PATH offers technical assistance to individual builders and remodelers who are willing to evaluate specific promising innovative technologies in their housing. Manufacturers participating in the PATH initiative can ask for guidance on improving their products' ability to meet PATH goals.

Sometimes PATH highlights specific technologies that can accomplish one or more key goals. Take disaster resistance, for example. Working with FEMA, PATH will encourage building a “safe room” in homes located in disaster prone areas.

PATH Pilots, Demonstrations and Field Evaluations

Legend:
 ◆ Pilot
 ▲ Demonstration
 ● Field Evaluation

Locations marked on the map:
 ◆ Reno
 ◆ Fernando Valley
 ▲ Simi Valley
 ◆ Pine Ridge
 ◆ Denver
 ▲ Tucson
 ▲ Dallas
 ● Greenfield
 ◆ Pittsburgh
 ▲ Washington, D.C.
 ◆ New York City
 ▲ New York City

PATH's web site (www.pathnet.org) keeps builders connected to the latest housing technology information. With the NAHB Research Center's HOMEBASE SERVICES, PATH also offers in-depth descriptions of more than 132 innovative materials, products and systems considered to have less than five percent of their potential market share. PATH also promotes and spotlights with HOMEBASE case histories of field applications of new housing technologies.

PATH tackles such institutional barriers to the acceptance of innovation as 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, inadequate training, and risk aversion. With experts, PATH develops strategies for overcoming these roadblocks to progress. PATH is currently supporting the development of the Building Innovation Center to provide an affordable, independent basis for code evaluation of innovation technologies.

➤ FORGING RESEARCH PARTNERSHIPS

PATH promotes focused, cooperative housing research among industry, government and university and national laboratory partners. Research partners include the National Science Foundation, the National Association of Homebuilders Research Center and DOW Chemical.

National Pilot Sites

National Pilot Sites help further the PATH goals by modeling new land planning and design techniques and highly innovative technologies that cut environmental impact and energy use.

National Pilot Site Focus

Village Green, Los Angeles



Village Green is a 186-unit subdivision of affordable, energy-efficient housing. Village Green has a number of characteristics that showcase how technologies can help achieve PATH's goals.

ENVIRONMENTAL BENEFITS

- Village Green is built on an in-fill site (an area where the utilities and roads are already in place). Thus, the new community will contribute to the existing urban environment rather than continue urban sprawl. This design characteristic also cuts building costs.
- 180 of the homes will have photovoltaic systems to provide up to 90% of electrical needs.
- The site is conveniently located next to a Metrolink transit station, encouraging use of public transportation.

HOMEOWNER BENEFITS

- Monthly utility bills are expected to be up to 50% lower than conventional homes through a partnership with the Los Angeles Department of Water and Power and BP Solar.
- Fannie Mae is offering a location-efficient mortgage, a reduced mortgage due to Village Green's proximity to the Metrolink transit station.
- Village Green meets the Engineered for Life quality standards for the Energy Star program, surpassing the requirements of the Model Energy Code and saving up to 40% in monthly Energy Bills.

PARTNERSHIP BUILDING

- Village Green's builders used the Department of Energy's Building America's systems engineering approach. Designs, once made piece meal, considered the entire design, manufacturing, and construction processes.

NEW TECHNOLOGY

- A forced-air duct distribution system which ensures that all ductwork is contained within the home's thermal barrier (ductwork located in exterior walls or attic spaces can leak and lose energy, increasing energy costs.);
- Solar control glazing for windows (lets visible light through, but keeps the solar heat out in summer and the heat inside for winter);
- Innovative space heating systems; and
- Gas air conditioning.

National Pilot Projects are large-scale developments containing hundreds to tens of thousands of homes. Announced by President Clinton in May of 1998, the pilot projects are Village Green and Playa Vista in Los Angeles, Civano in Tucson, Stapleton Airport in Denver, and Summerset in Pittsburgh.

National Demonstration Sites

PATH Demonstration sites include an integration of several technologies into a home as a system and are comprised of entire subdivisions usually between 25 and 100 units. PATH's involvement on these sites is significant. PATH is working with builders throughout all phases of the projects to illustrate and evaluate how PATH technologies perform on a community wide or production scale. Demonstrations focus on technologies whose cost and performance is well documented. The relatively small scale and duration (usually within 2 years) of the projects will allow prompt feedback to the building industry.

Demonstration Site Focus **Armory Park del Sol, Tucson, AZ**



Armory Park del Sol was selected as one of the first PATH demonstration projects to create a sustainable community in the historic Armory Park portion of inner city Tucson.

It will consist of 99 single-family homes affordably priced from \$80,000 and equipped with cutting edge solar technologies to provide electricity, hot water and heating. Some key aspects of Armory Park del Sol's design and technology that help move PATH towards the goals of reduced environmental impact and increased durability are:

- Precast concrete will be used to provide durable, energy efficient and cost effective walls to frame the homes
- Armory Park del Sol will use high density urban infill development techniques in an effort to preserve open spaces.
- It will feature extensive walkways to encourage pedestrian traffic, reducing the negative effect of vehicle emissions on the environment.
- The use of water saving technologies (greywater irrigation) and native vegetation in landscaping will reduce water consumption by approximately 65 percent when compared to typical homes.

PATH Field Evaluation

Field evaluations are the most basic step in the introduction of PATH technologies into the homebuilding industry. Although many PATH technologies are not new, the information available

Field Evaluation Focus

Washington Square, La Plata, MD



The Washington Square community was built to meet the requirements of senior citizens who are independent and active. This eighty-unit, owner-occupied senior's housing development is located about 25 miles south of Washington, DC in La Plata, MD. The community will consist of 1 and 1½ story townhouse/duplex units, ranging from 1,000-1,500 square feet. Selling prices are expected to be between \$126,000-\$155,000.

The homes are designed with insulating concrete forms (ICFs), to provide energy-efficient and durable exterior walls. ICFs also provide higher thermal resistance, decreased sound transmission, and increased fire safety. ICFs will be used for all 80 units, providing an opportunity to document the learning curve associated with ICF construction and to gauge the effect of cost saving techniques and technologies for ICFs. In particular, the use of frost-protected shallow foundations, stem walls, and monolithic slabs will be assessed by the NAHB Research Center to determine their contribution to improving the cost effectiveness of ICFs.

In addition to ICFs, several PATH technologies will be used throughout the project, including:

- Tubular skylights (use the sun for lighting interiors without the drawbacks associated with regular skylights),
- Cost-effective ventilation systems (Effectively mixing the house air can increase energy efficiency, reduce moisture condensation problems, and increase indoor air quality), and
- Tankless water heaters (provide hot water when needed at the point of use without storage, thereby reducing or eliminating standby losses).

to the industry on many of the technologies is either vague or nonexistent. Information gathered by the NAHB Research Center in field evaluations will fill these information voids. This comprehensive evaluation is necessary to determine a technology's potential for advancing the goals of the PATH program.

PATH Technology Inventory

PATH's Technology Inventory is a unique source of information on technological innovations in the housing industry.

The inventory focuses on technologies currently considered to be "emerging" (i.e. with a market share of 5% or less) in a wide range of categories; from new materials, components and systems to complete houses.

Focus on PATH Technology Inventory

Over one hundred promising technologies are currently listed in the PATH Technology Inventory. Products range from photovoltaic roofing material to foundation sealants, from tankless water heaters to HVAC smart zoning controls. Read about the technologies below and learn more about these and others at the PATH web site where the entire inventory can be accessed.

High Efficiency Air Conditioners without CFCs

As ozone-depleting chlorofluorocarbons (CFC) refrigerants are phased-out, manufacturers of air conditioning equipment are charged with developing air conditioners that do not use CFCs. One residential product currently on the market employs a refrigerant called R-410a. Unlike CFCs, R410a is not an ozone depleting substance and, therefore, does not pose a risk to the ozone layer. Non-CFC air conditioners are available in high efficiency models of up to about 15 SEER (Seasonal Energy Efficiency Ratio).

White LED Lighting



You thought fluorescent lighting was energy-efficient! But LED (light emitting diode) lamps consume less than a quarter of the electricity that fluorescent lighting does, and the lamps last about ten times as long. Until recently, though, the price of an LED lighting system was too high for most residential use. With sales rising and prices steadily decreasing, it's been said that whoever makes the best white LED will open a gold mine.

Spray Foam Insulation

Imagine insulating your home with something as safe as pillows! Many spray foam insulations consist of materials that are similar to those found in pillows and mattresses. Spray foam insulation is typically easier to install, safer to the environment, and more energy efficient than traditional batt insulation. It is used in the same places as traditional batt insulation, but instead of being stuffed and crammed into place, it's sprayed into place and expands into even the smallest cavities.

RESEARCH

PATH promotes focused, cooperative housing research among industry, government and university and national laboratory partners. Research partners include the National Science Foundation, the National Association of Homebuilders Research Center and DOW Chemical.

Focus on Research & Development

Super Insulation Technology Development

PATH, in conjunction with the NAHB Research Center and Dow Chemical Company, is exploring home product applications for a new class of insulation technology that promise dramatic residential home energy saving.

The technology called "vacuum insulation" works by removing gas molecules that transfer heat within an insulating space. The principle has been used successfully for years in vacuum-insulated containers to keep beverages hot or cold. Dow Chemical's version of the technology "vacuum insulation panels" may have application in the residential housing industry.

The new panels conduct heat at one-sixth the rate of glass-fiber, a significant improvement likely to lead to substantial energy savings for a variety of applications. This energy efficient material is commercially available, but has not been specifically targeted toward the home construction and remodeling sectors.

With PATH Support, NAHB Research Center will conduct initial market studies to assess the potential for various applications of the technology (i.e. doors, walls, roofing products, garages, window frames, etc.), conduct preliminary analysis of the potential energy-savings, and work with DOW to evaluate the results of the studies and to prioritize product development. DOW will provide manufacturing support for producing prototype products, improving them as necessary and produce them on a large scale for use by the housing industry.

Prototypes can be ready for field trials within 12 to 18 months and full production shortly thereafter. The field trials also offer an opportunity to monitor the home's performance and quantify the energy savings – information that will be disseminated under the PATH program. This technology promises to be one of the early successes of the PATH program.

HOMEBASE

PATH also supports HOMEBASE SERVICES, a technical information resource provided by PATH in cooperation with the NAHB Resource Center. HOMEBASE provides easy access to information on new housing technologies, quality management techniques, and best practices for residential construction. HOMEBASE SERVICES is the information link between the PATH program and the home building and remodeling industry.

HOMEBASE SERVICES include:

- The HOMEBASE Hotline, a toll-free telephone resource for builders and remodelers to discuss building problems and product failures, technical solutions and resources, and ways to get information on new products and materials with NAHB residential experts.
- Ask An Expert, a way for a builder to ask questions or share experiences and receive technical advice through e-mail.

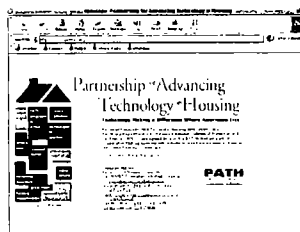
- The Catalog of Building Products and Services, published both on CD-ROM and the Internet.
- Technical briefs, fact sheets, and other useful references for builders and remodelers.
- HOMEBASE NEWS, a technical newsletter distributed quarterly through NAHB home builder associations to nearly 70,000 builders, remodelers, and contractors nationwide. Current and previous issues are available on the HOMEBASE SERVICES web site.
- Information on Green Building Practices.

PATH Makes a Difference

At a time when advanced technology is affecting every aspect of life, PATH is a reassuring resource. From providing builders with innovative technical information to showcasing technologically advanced housing projects, PATH is committed to finding new ways to improve the quality of our nation's housing. For homeowners, that means lower household energy costs, more choices in housing, and an opportunity to protect the environment. For

the housing and construction industry, it means forging an effective partnership between the federal government and private industry that will help break down barriers and encourage progress. Support PATH—and help make *all* Americans winners.

How to Learn More



For more information about PATH, log on to the PATH web site at www.pathnet.org. The web site contains information on PATH's goals, describes PATH's programs in action, lists links to federal agency partners, provides useful on-line resources, presents current funding opportunities, and has an on-line discussion forum. New content is added all the time – so check the site frequently.

To join the mailing list, please send an e-mail with your name, address, phone number, and e-mail address to efaulkner@pathnet.org, or call the PATH office at: 202-708-4277.