

National Building Museum
Community in the Aftermath Series
AHPP: Post Disaster Housing Solutions
October 26, 2010

Patrick Kraich: Good afternoon everybody. I sincerely apologize for the technical delays we had but I think we're back on track. My name is Patrick Kraich. I'm the public programs coordinator here at the National Building Museum and it's my pleasure to welcome you to the museum and to this afternoon's program.

Today is the 6th of the Community in the Aftermath lecture series. This series is sponsored by the U.S. Department of Housing and Urban Development and the Federal Emergency Management Agency in partnership with the museum, and we are truly grateful for their support and to Dana Bres who will take the podium after I do, who is a research engineer with HUD, for helping us coordinate this series, couldn't do it without them so thank you, Dana.

So as you may or may not know, the focus of this series is the Federal Emergency Management Agency's Alternative Housing Pilot Program, which is a grant program to develop a more viable, versatile, and readily available, cost-effective, post-disaster housing. Today's speakers are -- we have kind of two focus today and it's a little interesting, different tactic than what we've taken before, and Dana is going to provide a little

bit more context, but I can tell you we're looking at the Joint Housing Solutions Group, which is an organization within FEMA that evaluates vendors of post-disaster housing, so we'll hear from them, as well as we'll hear from the New York City Office of Emergency Management as they look at ways to provide post-disaster housing in dense urban environments, so really looking forward to that.

So this is the second to the last program in this series, so I encourage you all to come out. We are in the process of planning our last program for spring of 2011 and right now, we're looking at that to be a wrap-up of sort of lessons learned from the other areas that we've covered in this series and the way forward, so that should be a really interesting program. And as always, if you missed previous programs in this series you can -- transcripts and audio are available on our website which is www.nbm.org.

So with that, I'm going to welcome Dana Bres to the podium. He's going to provide some context for today's program and tell a little bit more about the speakers we'll be hearing from. Dana.

Dana Bres: Thank you, Patrick. Again, thank you for attending this presentation of Community in the Aftermath. We envision this to highlight the progress and the results of the Alternative Housing Pilot Program. It was a FEMA initiative to

test better strategies for communities to rebuild housing in the aftermath of Hurricane Katrina.

So in the past we heard from -- we've taken a look and heard from the states of Louisiana and Mississippi and then the community of Bayou La Batre, Alabama in the approaches that they used. And every one of them, there is something to learn from, both there are things that we say we can use this somewhere else tomorrow and other things that this was a little harder to implement than we thought and maybe we want to make sure that we focus our effort there. So obviously, the focus of post-disaster housing has to be much broader than just the Alternative Housing Pilot Program. There is really no pixie dust kind of solution. There is no single solution to the myriad questions that we face. And to that end, today's presentation highlights a few of those.

FEMA, obviously, the nation's leader in disaster response and disaster housing has a number of irons in the fire and Steve Miller and Joel Pirrone today will discuss some of them. Steve runs the direct housing assistance mission for FEMA and is responsible for a number of areas that he'll talk about. And Joel Pirrone and David Ledet are working on the Joint Housing Solutions Group, which is an effort to look for housing approaches that might not have hit the mainstream but may

present tremendous promise for disaster in a post -- for housing in a post-disaster environment.

Following along that theme, what's new and unique and how can we make it work, we have the -- we can offer today a discussion of the unique situation of New York City. Because of New York and the vision of the New York City Office of Emergency Management, Cynthia Barton from New York City OEM and Matt Charney and Karen Kubey from the Homeland Security Regional Catastrophic Preparedness Grant Program will discuss how they're working to address the needs for post-disaster housing in a dense urban environment.

Obviously, the same challenges that we see every place else - quality housing, affordable housing, safe, accepted but oh by the way, we need to fit it into a relatively narrow space, relatively small spaces, and we have a lot of folks we need to house. So they have a number of big challenges. The point here, the takeaway point here is that there can't be a one-size-fits-all solution. There is not a single kind of disaster housing that will work everywhere, and so what you'll hear today is an acknowledgment of that reality and kind of opening up the other facets of disaster housing. So with that, I'd like to introduce Steve Miller from FEMA.

Steven Miller: Thank you all for being here. As we all know, housing survivors in the aftermath of a disaster is always

challenging and to understand why we're looking at alternative units, something that we need to know is what does FEMA traditionally do to do housing? Immediately after disaster, we go into sheltering which is for emergency assistance, preserving life, and preserving property as well. And to begin the next step of the process though which is the recovery process, the goal to allow survivors to move back into their community so the community could begin that recovery process really is where our disaster housing picks up from a standpoint of housing the individuals.

Now understanding FEMA's approaches to interim housing or temporary disaster housing, it certainly follows the line of our sequence of deliveries. Initially, we start with the financial side of the house. We look for rental resources in the available areas. We provide rental assistance to folks. We also provide repair funds as well as replacement funds for dwellings. But when the available resources in an area are unavailable or infeasible for some reason then FEMA's interim housing or direct housing mission is put into effect. And traditionally what we use, everybody knows, is the mobile homes, park models, and the infamous travel trailers from Katrina.

These past several years or past decades the experiences that we have, have certainly exposed weaknesses in our traditional housing capabilities and essentially -- especially

in the events of a catastrophic occurrence such as -- even in Florida, the four hurricanes in Florida and certainly in the Katrina-Rita environment. And what we are trying to do to address that is we're working with our partners to incorporate lessons learned, beginning to do the challenges with the AHPP, we're evaluating opportunities out there, solutions that we have not looked at in the past.

We're looking at innovative new methods and partnerships to enable us to improve how we do business, specifically preparing for those environments such as the urban environments, some OCONUS environments, extreme conditions, insular areas, and even to support a large catastrophic requirement. But we understand very much so that there are weaknesses in what we do and that we need to look at additional options to support what we do.

So what we've done is we have begun the Alternative Housing Pilot Programs, we've done the Joint Housing Solutions Group, and we've also incorporated the National Disaster Housing Task Force as a result of Katrina, which are actually three main focuses that we're putting forward in developing these alternative housing options out there.

The National Disaster Housing Task Force which is an interagency working group that's composed of federal agency partners, there are multitudes of them including HUD, Department of Homeland Security, Department of Justice, Department of the

Interior, just to name a few. And what they're doing is it's providing a full-time multiagency focus on disaster housing-related issues, and they're working on developing some documents and online resources that will be available for the local communities and the states and local communities in the event of a disaster, even one that they don't have -- that is not presidentially declared.

The next of course is - you've already probably know about it - the Alternative Housing Pilot Program, a grant program outside of FEMA's normal grant process that addresses the housing in the four Katrina-related states; Alabama, Mississippi, Texas, and Louisiana. And they are currently evaluating the units that they have out there. They will be able to answer some questions as far as the status of them, if you have afterwards, any questions afterwards.

And then of course we have the Joint Housing Solutions Group, which is our internal research and development group who have been working as we put into place to evaluate the alternatives out there, reaching out to the commercial markets, even reaching out further than the commercial markets, just having new products that they evaluate. We've done selections, we've established -- of course, I don't want to take Joel's thunder away here, but we've established actually laboratories

up at the Emergency Management Institute in Emmitsburg which he will discuss here further.

But we do take it seriously. We understand that this is something that we need to address. Part of our catastrophic planning is to have all of the additional tools in the box that we may need to help support bring these communities back to their original state as quickly as possible.

With that being said, I want to introduce Joel Pirrone and like I said, we do have representatives from National Disaster Housing Task Force and the Alternative Housing Pilot Program. If you have questions after this, they'll be glad to answer them. Joel.

Joel Pirrone: Good afternoon everyone. All right, I'm going to talk to you about the challenges that we meet, face in Joint Housing Solutions Group, what we're doing to overcome them, and where we currently are in the process of evaluating options in the marketplace, what's commercially available. We're also going to look at the range of capabilities that we have, and wherever else briefly as we said -- had mentioned to talk about our laboratory up at the National Emergency Training Center located at Emmitsburg, Maryland.

We were established right after Katrina when we faced difficulties identifying viable alternatives to the traditional housing that FEMA had within its inventory - the park model, the

manufactured home and travel trailer or the park model. So we were established to look at alternatives. As you remember Katrina, we had a lot of difficulty trying to house people in that catastrophic disaster, and so we had no internal research and development core that would continue to look at housing outside in the marketplace, and so we were set up to go out and do that market research, that research and development into the marketplace.

We set up a couple of guiding principles within the process of going out and evaluating. We looked at the timeliness, the livability, the range of use and cost. And all these things are important characteristics in looking at a unit to make sure it would fit into within the FEMA housing need, the requirements that we have for housing. I think I'll touch a little bit right here - timeliness. How fast can we install that unit out in the field? If it takes a long time to get manufactured, to transport, to install, it really does not become a viable option for FEMA.

Livability - we all know that if you're living in a unit that just does not work in terms of comfort, accessibility needs. It's just not going to work long term especially if you're in there for a long period of time after disaster, you've lost a lot of your belongings or your house, loved ones. That can be a real big issue.

Range of use - some units are very good in urban environments, some units are not very good in rural environments. And with FEMA, we have disasters across the board; we have disasters in rural environments, we have disasters in urban environments. And so a unit that can be used across environments makes it much more applicable or appealing to us in terms of what we can utilize it for.

And then the other thing we can't forget is cost. How well is this unit priced out in terms of installation, lifecycle cost? We don't want to buy a million-dollar home that does everything we need. It just doesn't work out practical-wise.

We set up an online database to have manufacturers submit their information about their product and it became -- formulated to about 225-question questionnaire about their unit. It talks about building codes, escapes, cost of installation, number of man hours to install, how fast you can produce them. And that gives us a read on how well the unit would fit into our requirements. We rate them from that initial thing and determine what ones look very promising.

From that, we go out and we do an on-site field visit. This is quite extensive. Most of our manufacturers tell us that it's very exhaustive, it's very -- it gets down to a lot of detail, but that gives us the ability to know how well that unit is going to perform within FEMA, and we go through several

evolutions of this. So this is the first evolution, then we go out and do a field visit, and then we do the laboratory which is a third assessment.

We've done 50 field assessments so a unit that is very, very promising, we go out and verify the information they provided us. This usually is preceded by a conference call or two to kind of work through some of the issues to make sure that they're where they said they are. We produce these little fact sheets on the units, and we keep those as a library so that in the event of a catastrophic disaster and other disasters for example, we've provided some of this for other federal agencies that do international aid to help them out with some of our research so we can really leverage our research.

And you could see we've been quite -- almost across the United States looking to manufacturing facilities all across the United States, so nationally and internationally too. So we have a wide range of capabilities, and some people will say, well, what kind of possibilities can you go into, you have rural, you have urban, what else is there? Well, we also have obviously mentioned urban, the accessible sites.

In California, in the wild fires, we are faced with a lot of inaccessible sites, small roads that went up and sprawled down into a large manufactured home park, and getting those units up there and those units were up there -- that were

brought up there a long time ago. Getting those units up there can be very difficult and obviously we have lots of areas in the country that -- getting those units up there. So we have flat-packs that we look at in terms of getting accessibility. This also gives us great shipping options for remote areas.

Immediate sheltering - Steve touched on this. We have the immediate need of providing life safety, life-preserving needs right away. If we can bring in something that can serve as a shelter and then transition to a home, that is really beneficial to the survivor that we can provide them good home or shelter right away and then move over to housing.

We have temporary to permanent. AHPP has been working a lot on that in terms of providing something that would be transformable into permanent housing. We do this a lot in FEMA right now at the private sites where we take a unit and then install it in a person's private home while they do repairs to their house. They can stay in the unit and make repairs and they could stay in their community which is really important to them and to the politicians to make sure that they keep that community together and then get it back on its feet.

On prepared sites, we face this at night. We had large areas of electrical grid that was not coming back on line. In Katrina also, we had a power cover that was faltering in terms of its ability to provide power after the disaster, so we

had faced with the grid that was unable to come up. We have units that can come up and provide solar array and provide power that way so we can get people back into their community faster.

So we have a lot of different options. How does this all translate into what the marketplace is providing right now? So we have durability, indoor air quality, I'll talk on that in just a second. Timeliness, we mentioned that; how fast can we get them produced, how fast can we get them installed. Storability, we store these things in storage sites and we're going to continue to keep doing that. Can the units be stored a long time? There are a lot of issues related to that.

Accessibility - most people who buy manufactured homes do not consider this as a thing. We in the federal government, we have to meet the needs of a lot of our survivors from disasters and some of them have accessibility needs and we need to meet those needs. And of course range of use - we kind of just talked about that. Indoor air quality - following Katrina, we ran into some issues with indoor air quality and in response to that, FEMA developed a protocol to ensure that we had much better air quality in our units going forward, so we have a very strict protocol in terms of indoor air quality.

So these are our unique requirements and they translate into what they mean to the manufacturer, and these things can be quite difficult given engineering standards and principles that

we have out there in codes. So you could see that these all translate into very difficult challenges in the marketplace, and that's one of the things that we go through and we exhaustively look through a lot of manufacturers.

Last year, we installed six units at our NETC, National Emergency Training Center laboratory. This is a training center just much like any other federal training center. We have students that come in for a week or two at a time and they volunteer to stay in the units. As part of their volunteer requirement, they have to complete a 75-question survey on the unit. We ask questions such as what kind of housing unit were you in before, is this something that's acceptable. So for example, someone staying in a 10-acre farm and they're staying in a small D&D unit here, it may not feel as comfortable, so we wanted to kind of put that in the reference. We also look at some other little bit of issues as you can see.

We've deactivated or uninstalled a few of these items. We've uninstalled Arkel, and we've uninstalled the TL unit to make way for three new manufacturers that we're going to be installing, and that's these: Green Horizon is the one that we mentioned that has the solar component to it. We will have a solar component up at NETC. It can operate off the grid, much like a Hybrid Prius car if you're familiar with those. They operate on solar power. When the solar power does not the meet

the demand, they draw from the batteries and then when the battery is not able to meet the demand, a generator will kick on and resupply the batteries.

Our first foray into urban housing, urbanized model dwelling units is the global disaster housing. This is a three-stack style unit that will actually be installed next week, and this is our first foray into that. And there are some issues that relate to this in terms of accessibility, staircases. This is going to be something very new for FEMA and we're going to be looking into this at the laboratory.

And finally our Mid-Gulf unit, which is very similar to the Louisiana College that's located with the AHPP program, all of these can be stacked, however only one is going to be stacked in our laboratory. This provides us great range of use for our disasters so we can put this in a rural environment or very urban environment.

So where are we going from here? We're going to continue to search for units. We're going to continue to search for units or solutions that may not be units. That's a very important aspect of this, so we're going to keep looking at smaller footprints, units that can do a wider range of use to have their cost and all that stuff.

We're going to be working with other groups. Joint Housing Solutions Group is an interdisciplinary group. We have

representatives from HUD, from NIBS, National Institute of Building Sciences, and from other groups. And so we've been working with obviously New York City who will be up here in a little bit. The Department of Navy - they've been doing some containerized testing, we've been working with them a bit, and then obviously HUD with their disaster housing standards. So that's about it. I'm going to transfer it over to Cynthia.

Cynthia Barton: Thanks very much. I wanted to thank Dana for inviting us down here, and we're very glad to be here at the National Building Museum. Special thanks to Patrick as well. And working on this project for New York City is a great complement to the work that Joel just presented, and it also has regional ramifications. And I wanted to introduce Karen Kubey and Matt Charney who are the plan managers for a regional housing plan that they're going to tell you about first and then I'll present the New York City urban interim housing pilot program.

Matt Charney: As Cynthia described, we're going to be talking briefly about two projects; one is directly related to Joel's presentation and one that gives a little bit of context. So both of these projects for the New York City region are based on an all-hazards, catastrophic planning scenario. So what would happen for instance if New York City and the New York region were hit by a category three hurricane?

Obviously a lot of this stems from what we saw five years ago in the gulf coast after Katrina, Rita, and Wilma. And we don't have to go back too far to see what this would look like in the New York City region. These are the images from the 1938 Long Island Express Hurricane. If you're familiar with New York City, that image on the right is Battery Park City.

So the first project that we're going to be talking briefly about is the Regional Disaster Housing Recovery Plan. The goal of the plan is to provide an all hazards plan and to provide guidance for the implementation of interim housing and the restoration of permanent housing. As we were talking about earlier, interim housing is the interim period post the immediate shelter and prior to the restoration of permanent housing. It's usually a period of up to 18 months. And permanent housing then talks about the repair, reconstruction, and development of safe, sanitary housing for displaced victims without continued disaster assistance following a catastrophic event.

So if I can step back, the project is part of the Regional Catastrophic Preparedness Grant Program, which is a Department of Homeland Security and FEMA grant program. It was given to 11 target sites around the country. This is the one that we're working on. It spans four states - Connecticut, New York State, New Jersey, and one county in Pennsylvania, Pike County,

Pennsylvania. That's 30 counties over the four-state area, that's three FEMA regions, two HUD regions, so the jurisdictional overlaps are sort of in this project. All told, it represents planning for 22 million people, which is one out of every 12 Americans -- one out of every 14 Americans living in this area.

So the project is led by the New York City Office of Emergency Management as well as the New York State Office of Emergency Management, New Jersey and Connecticut with a steering committee made up of 13 different agencies that have identified what plans the grants should be used for. The disaster housing plan is one of those eight projects that we're currently working on.

So again, back to the goal of the housing plan, it's to provide guidance for the implementation of interim housing and the restoration of permanent housing. As Joel mentioned, interim housing alone is not a single solution but a variety of solutions, both in the direct housing provided directly to the residents brought in that he was mentioning and also finding existing vacancies and the rapid repair of existing and moderately damaged units. So that's a big issue itself.

And then the restoration of permanent housing, it gets even larger and brings in even more players and more partners into this. While there are billions of dollars, using Katrina as an

example, given by the federal government in the way of Stafford Act funds and congressional appropriations, it's largely a private sector mission to restore permanent housing. So when we talk about that, you get sort of an idea of the scope of the work and the variety of government organizations, nonprofit agencies, faith-based organizations, and displaced individuals themselves that would be involved.

So our plan does not attempt to provide a solution to the mission of housing recovery. What we want to do is to provide a startup kit, so all these agencies, all these organizations, all these people that would need to be working on this mission to try to restore housing after a catastrophic event, our plan attempts to be a startup kit. And to do so, Karen will talk about how we intend to do so a little bit.

Karen Kubey: So Matt sort of described the huge issues that are related to the disaster housing recovery, thinking about billions of dollars coming to the region, private, nonprofit, and government working together. So our plan takes this large issue and breaks it down to manageable pieces that can be addressed after a catastrophic event.

So basically, what the plan does is to take each of these pieces and ascribes a taskforce that will be addressing these issues or these submissions, below the mission of housing recovery. So at a very basic level, the taskforce guidance

describes what, who and how. So what is this mission they need to be dealing with? Who or what agencies need to be involved? And how or what is the information they need to make tons of decisions very quickly after a disaster?

So this describes the way that our plan is starting to be broken down. We've been working with a really amazing planning team of about 200 individuals from around our region that start to represent the various areas involved in housing recovery. So very briefly, the plan describes finance, construction, disaster case management, damage assessment, land use planning, information management, and interim housing and the issues described there.

So again, Matt mentioned that our plan really focuses on the decisions made in the activation response phase but looks out into long-term recovery in these parallel missions.

And the end goal here is really to get a common operating picture. It's a coordinated plan saying how can we be on the same page when we're trying to get this done together as a region?

So very briefly, we produced a plan draft last August with the help of our planning team through a lot of workshops, et cetera, and we're working on refining that draft and expect project completion in about a year, September 2011. So as Matt mentioned, this is -- we're working on the densest region in the

country that produces very specific challenges in terms of deployable housing that Cynthia Barton will discuss.

Cynthia Barton: Okay. Thank you, Karen. I'm going to talk about New York City Office of Emergency Management's Urban Interim Housing Unit Pilot Program. And the goal for this project which we've been working on since about 2007 is to create a proven capability for deployable housing that will work in urban areas.

And we started considering this project as a competition which was called "What if New York City" and looking at the idea of, as Matt said, category three hurricane hitting New York. And we have in New York City these particular challenges of scale - 3.1 million units in the city and basically a third of them are lying within our evacuation zones, and the yellow is the evacuation zones which were identified by an Army Corps of Engineers' model. And so through our coastal storm plan, we built a sheltering system that will house 605,000 people for up to five weeks, and so we know that we're going to need interim housing after that. So right now this is a gap in federal preparedness. How do you get interim housing in cities like New York where we have very little open space and we need multi-storey buildings and multifamily housing tapes?

And so the thing that we did basically, our first step was to get the best ideas on this topic and we started a design

competition, as I was saying, to collect ideas from designers, and we got over 100 entries from all around the world. And since then, to make bringing housing to New York a viable option, we have been looking at what's out there on the market, and then we also have been looking at what it is that we really need and trying to meld those two together.

And so what we did was create an urban housing performance specification, and what we did was basically put that out there as an RFP asking vendors to submit to us the performance of their existing systems sort of against our specification, and I'll tell you a little bit more about that later. And so then the other question that we ask when we're dealing with housing in cities is what it is that makes a neighborhood. The goal of the program is to keep people close to home and to create the feeling of a neighborhood and of their own communities and really use housing to stabilize people's lives.

And so we want to of course test this in the real world, and where we are in the project now is we're working with the City University of New York to develop a prototype of this, you know, of a system of prototypes that we will then evaluate and refine the performance specifications so that what we're doing is coming up with a specification that will work for urban areas throughout the country.

And this module right here came out of a design competition. It sort of embodies everything that we were looking for in the actual unit design itself which is to say it's flexible, can it accommodate a bunch of different sizes of unit, and then also is progressive in terms of sustainability. We want low operating costs. We want smart, innovative, green strategies for this. And we're also really looking at speed and scale. How do we get as many of these housing units to the city as fast as possible?

And so in the competition, we were asking people to show us a full sequence of logistics. Do they come by boat? Do they come by air? And then when they get to the city, how was it that they're assembled? So the process of assembly is something that we're interested in, and this had some appeal. This is basically repurposing some other -- this is repurposing an auto factory to create housing, and the thing that we liked about this project is that it had sort of an infinite scale and the units could stretch out. So if we create a capability to really generate huge amounts of housing, we're also looking at where they go in the city. So this has really been sort of an urban design project from the beginning.

And as we're sort of pursuing this goal of how to keep people close to home while permanent housing is being restored, we also have been sort of looking at different strategies.

Could they go above a street bed while the houses are being restored behind? Or this proposal for housing that was attached to the buildings that were being repaired below. But really we're focusing on practical solutions and what we can actually do now.

So with our Department of Design and Construction, we created a performance specification that allows us to leverage the full capability of the private sector and so this isn't a design specification. It's just a performance specification. If a company can meet our standards in terms of universal access and various code requirements that we have for fire safety and a spectrum of other things that I'm happy to tell you about if you'd like to ask after the presentation, and so then as I've mentioned, we put this out on to vendors and asked them to show us, okay, we have seen a lot of data on how these work as individual units, but how is it that they work as multifamily, multi-storey buildings? And so the responses that we got back, we evaluated in terms of the plans and the details and also the logistical strategies that I mentioned earlier, and then cost estimates that we got from the vendors, and also sustainability and mechanical performance.

So when we talk about speed so fundamentally as I've said, we're dealing with this problem of speed and scale in cities, and so we took the typical process of construction in New York

City, and this is a project that we've been working on with our Department of City Planning, and looked at pieces of the process that could be waived or combined or better coordinated to get housing in place very fast.

The project that we've been pursuing very recently is this urban design playbook, and we've been basically looking at typical conditions in the city that might be available after a disaster and looking at how we can put housing in these various conditions, clear blend and existing super block appear, and looking at design strategies that make this operate like a community or like a real New York City neighborhood. So how do you include services like laundry or retail, restoration of mom-and-pop businesses, pharmacies, and access to critical neighborhood anchors? Then also how do you make -- how do you include public space areas for children to play, good places for people to gather outside?

Really, we've been focusing on this critical aspect of any urban neighborhood which is street life. How do you include that as part of a post-disaster condition? Because we know that the reality is that these will be in place for several years. So when we're providing housing, we also want to really think about this in terms of a real community, temporary community.

I'm going to show you a movie now which is a very recent project that we have with City Planning. We're also tying this

project to projects that have to do with climate change and the gradual change that comes from global warming. So this shows how interim housing is related to that. The voice that you'll hear is our chief urban designer, Alex Washburn, who is working on a lot of the city's climate change initiatives. This is just a minute long.

Alex Washburn: This is Prospect Shore. Like many New York City neighborhoods, its story begins at the water.

Here is a vibrant shopping street. The next block is walk-up apartments and townhouses. Here is industry on the waterfront and a bulkhead dating back more than a century. Then one day, it rains [inaudible] and the seawater rises. The bulkhead and much of the industry is washed away. Un-reinforced masonry buildings are collapsing into one another. A layer of debris and foul-smelling mud blankets the ground. Clog soars leaving pools of standing water and shards of debris.

Interim housing is brought unit-by-unit onto a vacant lot. The units sit lightly on the ground. They draw their power from rooftop solar panels, their water from water towers. Rain is captured for laundry and irrigation of temporary plantings that line the courtyard where children play. Then overtime, permanent mixed-use development replaces the interim housing. The remaining masonry buildings are preserved, hardened, and integrated into hurricane-resisting building fabric. They also

have breakaway ground floor panels reserved for areas of retail and parking. The geometry of their envelopes is optimized to withstand wind forces.

The new streets and buildings in Prospect Shore drained into a restored waterway where native plants bioremediate any toxins before they reach the harbor. Industries we built at the waterfront but now integrated with the public esplanade and protected from storm surge by an earthen levee. Wet lands had begun to take root and barrier islands lined the shore, perhaps with oyster habitats. The neighborhood is back, better and more sustainable than before.

Cynthia Barton: So thank you. That's the end of the presentation, and again we're very honored and glad to be here. I think we'll have a panel discussion now.

Patrick Kraich: Folks, just give us a couple of minutes. We're going to set up the chairs for the panel and we'll have them all on the stage so they can answer your questions. So just give us a couple of minutes and we'll get that set up. Thanks.

We have the panel here so I have the microphone and if there are any questions you'd like to ask the panel, please raise your hand and I'll bring you the mic. And please remember to speak into the microphone because we are recording.

Executive privilege here, Dana is going to lead on with the first question.

Dana Bres: The big question would be - obviously there are a number of strategies that have been presented - what's the best way to get the costs borne by the folks that are receiving the benefit?

Male Voice: To which one is that directed towards?

Male Voice: [Inaudible]

Cynthia Barton: Well, can we put some HUD policy people on that one? Yeah. Right now, Matt and Karen and I all have backgrounds in architecture and so what we've been focusing on is really how do you make this possible logistically as a construction project? When it comes to these really complicated financing questions, there's a lot that we have to work out, particularly this urban interim housing actually falls right into a gap between FEMA's temporary housing and HUD's manufactured housing. And as you may imagine, there's a lot of kind of technicalities that are wrapped up in the problem but I would say that there's a lot of policy work that surrounds this project that we're just tapping into and so that sort of phase two is figuring out how to do that.

Joel Pirrone: From the FEMA perspective, we provide interim housing at a hundred percent federal rate. We provide all the funding for that in the actual housing. Within FEMA,

though, we have a group called Mitigation. What they do is they look at strengthening existing buildings and improving the code that would make buildings less resistant to disasters. So it's kind of a double-edged sword. You want to prevent the buildings being susceptible to disasters; at the same time, there's always going to be some buildings that would be susceptible to disasters and that the federal government would come in.

I think the key thing there is that it's a partnership and we started doing that at the state-led housing taskforce that the local and the federal agencies get together and work on a way to make sure that that investment that does occur is in the best interest of that community, moving that community back towards its recovery and not something that's just a stop-gap measure. It's something that's going to take them down that road.

Male Voice: Please provide some more specifics in terms of delivery of those FEMA units and cost in terms of range and costs of -- and I think it also maybe would help the audience - I've had some experience in response and recovery - to define your terms. You use terms like all hazards, you use terms -- it's helpful to have the timeframe of weeks, months, years in terms of what you're talking about. But I'd like to get into specifics in terms of delivery times of these units that some of them look pretty sophisticated, and range of delivery time and

costs, and maybe someone else can address this whole sort of defining of terms of temporary housing in terms of timeframes. So a couple of questions there.

Joel Pirrone: Yeah.

Male Voice: I'd like to start with the FEMA program.

Thanks.

Joel Pirrone: Sure. Thank you. We have several units up there that have various costs. They range from anything as cheap as roughly around the \$30,000 price range for the unit price itself, not including installation and transportation surrounding costs. They go up as much as \$80,000 per unit, no installation cost.

I don't want to get into the specifics of what each item would cost, but they have a range of costs. Some of the more costly units offer other advantages that the other ones don't offer. They may mean more green in the sense that their building materials are more sustainable. So it really comes down to a benefit-cost analysis of what are we looking to gain in terms of what we're going to get out of the unit versus what the cost is, and we have to find that right touch point.

The timeliness of installing these things also ranges. Some of the units, the stackable units which are containerized, they're using existing containers, so it's really just modifying that existing container; whereas, other materials or other units

are produced from raw materials like a manufactured home or what have you. Some are SIP panels so they have the panels that are seen in a warehouse and you just basically play assembly person with the panels on the site.

So again, they also vary in cost. I hope that addresses your question. I can't really go through laundry list and give you identified production time and cost. Does that meet what you're looking for?

Male Voice: So there's a period of time where they're out there in the raw, and then there's a delivery time to procure these units unless they're sitting somewhere and you were talking about that aspect of it.

Joel Pirrone: Right.

Male Voice: So it's a complicated set of questions here, but I'm trying to get some sense of how long and what's the delivery stream and what are people doing in the interim because they're living their lives everyday and --

Joel Pirrone: I got you. We have several programs that occur after disaster. Mass Care which is a public assistance function offers reimbursement to state volunteer agency and religious organizations who conduct shelters. We reimburse them for the cost of operating those facilities through the city at local state. We also have what is known as the transitional shelter assistance, TSA, not to be confused with the folks at

the airport, and that is where we pay hotels to house disaster survivors, and that is the other interim gap that takes -- or the immediate sheltering need. And the idea is that in that six-week period, it gives the responders, the recovery people time to get units in place.

FEMA currently has 4,000 units in inventory and storage in two locations that we could dispatch immediately. We have multiple contracts to produce the traditional forms of housing at about 150 manufacturers. So it really comes down to how fast we can install those units whether we have viable locations to install those locations, and then ideas that those two would come together.

The issue where it gets difficult is in cash after a disaster and that's one of our ongoing challenges. How do you handle a disaster where there is cash that will go to a half a million people, if you will, and housing those people temporarily in a shelter or -- and then the longer term of housing, how do you bring that housing into place?

Those are the challenges that we're still working through. There's no single solution to that. There are multiple ways of how you would address those populations. Certain populations could be handled best in certain strategies and anything like that. And the cash after a disaster is kind of a little different than a Hurricane Ike.

Patrick Kraich: I'm going to jump in with a question actually if folks don't mind. You both mentioned in your presentations there's ongoing sort of sustainability element and a green element, if you will, in the units. And so I guess my question is do you find -- when asking for these specifications, is there a steep learning curve for manufacturers? And then also the folks from New York City seem to really be embracing this as well. Is there some thought once you would have these sustainable units - you mentioned in your presentation about the actual siting of the units - does sustainability, is that a factor also in those siting considerations for the units? So I guess I have two questions.

Cynthia Barton: Yeah, I would say absolutely and part of that is keeping operating costs low and if you can do smart passive ventilation and basic design strategies like that, that mean that you use less energy to heat or cool these units, then that's absolutely where we want to be. And then also when we're talking about really trying to leverage market capacity, I think the modular housing and any sort of housing provider that does this on a daily basis is moving towards sustainable systems and so that's an emerging market trend that we hope to encourage and to take advantage of.

Matt Charney: Also, I think that the aspects like the low-flow toilets or solar power, those are done so that these units

can exist off the grid, not sustainability for sustainability's sake but to make some practical solutions. So I think it ties in a lot that way in just making these units more practical as temporary housing options.

Joel Pirrone: Yeah, I would agree with that. A lot of things we look at are challenges that we face in the post-disaster environment. Again, power grid is an issue, water system that tends to be another issue that we run into. So getting those provides a water system, sewer system. So those sustainable options can also help us in getting temporary housing back in the community where we normally would have to wait for those services to come up, up to par for reoccupying that area. It gives us an option to move in sooner rather than later.

The question is, is the cost-benefit analysis that we need to do, the sustainable options, the construction methods sometimes cost a little bit more and we have to remember what our true mission at hand is to provide temporary housing. So again, there's no single way of saying that we're going to go green all the time. You have to look at it and evaluate it.

Male Voice: I was intrigued that both FEMA and New York touched on, at least, the development of temporary to permanent housing, and I'd be interested in you discussing some of the factors that are pushing you in a somewhat nontraditional

approach to looking at providing temporary to permanent. What are the problems that you haven't solved yet as you would look at making that movement from temporary to permanent?

Patrick Kraich: Do you want to start?

Cynthia Barton: Well, one question that we have is who's going to own these housing units, and so that's really kind of the question of what happens to them after their use immediately post-disaster. One thing that we're doing is sort of expanding the definition of temporary beyond the 18 months that's right now specified by FEMA because we expect that it would take actually a lot longer than that to rebuild the city and to replenish sufficient permanent housing stock. And also we want these units to be high quality, safe places for people to live and so they do meet our New York City 2008 construction codes with a couple of exceptions.

But I would say that with the performance specification, we're really saying we want housing that's very similar in a lot of ways to permanent housing, and is it more cost effective in certain situations to be able to rapidly deploy housing that can be ultimately permanent? And whether that means that we partner with a nonprofit developer in certain cases or sell units cheaply to individuals, it could go a variety of ways and, Joel, maybe can talk more about that.

Joel Pirrone: As you know that we have the Alternative Pilot Program. They've spoken at the sessions before and they really start doing the temp to perm situation. We learned after Katrina and actually other disasters that the housing stack following disaster for the various socioeconomic segments does not always come back online as fast as we would like. Again, as Cynthia pointed out, FEMA's statutory program is 18 months. We're faced with the reality, though, that sometimes housing does not come back in 18 months. It would depend on how bad the disaster is and the economic climate of the situation. I mean, obviously, if we has a disaster now, obviously that the economic climate of the current day would obviously have some impact on it. The wealth of the community in that area also has an impact on it.

So we've kind of come to the realization because we still have folks in temporary housing in the Gulf Coast area from Katrina/Rita, there may not be -- we cannot always meet the 18 months. There is no [indiscernible] disaster but if there was one, 18 months may be doable.

For example, if you look at Greensburg, Kansas where that community was very devastated by a tornado, 18 months was more than enough for them to get majority of their housing online through building on their own or moving out to other communities

or what have you. So that was sufficient. But again, that's a different type of disaster than a Katrina/Rita disaster.

So we're facing the reality of housing stock not being brought up to be repaired after disaster. We're realizing that. And that also comes out as you might be aware of, as the Disaster Housing Assistance Program, which is in cooperation with HUD and FEMA, to provide vouchers to folks to find housing who may not have the income post disaster to find the appropriate housing for themselves. So there's also that aspect of it too. So there's the job aspect, I can't find a house unless I have a job and that stuff too.

Male Voice: Thanks. A couple of presentations mentioned obviously the challenges of complying with the current codes and standards. I'm curious, aside from I know you mentioned obviously accessibility especially with the stackable units, but are there any challenges that you run into like maybe from a fire safety code standpoint or structural or areas like that? I'd be interested in hearing any experiences along those lines.

Joel Pirrone: I can talk a little bit about this. Right now in our current inventory, we have three basic types of units. We have the travel trailer which is constructed to the NFPA 1192 standard; we have the park model which is constructed to the ANSI 119.5 standard; and of course we have the HUD manufactured home which is constructed to HUD 3280 code. We

also have some homes up here I mentioned that were constructed to the IRC, the ones we have going now to our laboratory. I believe one is constructed to the IBC code if I'm not mistaken. I'm checking my live resource here. So we have various codes.

One thing we are realizing and within our own organization is that the progress of codes is set at different paces. So you have IRC, the International Code Council's are set at one pace; whereas, HUD maybe set at a different pace. And that's for different reasons. The HUD manufactured home code is influenced by the manufacturers which want to slow down the development of code for their benefit because their segment that they reach to is important. Does that answer your question?

Patrick Kraich: Yeah. That's a follow-up question.

Male Voice: I'm actually active in the IRC and IBC code arenas so of course I'm familiar with the codes, but I know that. I represent NAHB. I'm their program manager for structural codes and standards, and so I'm aware that within the codes, even for permanent housing, I know there are particular areas of the code that present challenges to a builder just trying to do regular housing and would possibly, probably present even more challenges trying to do a very cheap, very easy to construct, very quick to construct interim solution. So kind of within that, I was wondering what challenges actually

working with one of the codes that some of the programs you may have encountered.

Cynthia Barton: Yeah. I would say that one example that we've had on that topic is fire safety, and we initially said that we want to have two-hour ratings for our construction and we want it to be noncombustible. But in order to leverage as many manufacturers as we can, the capability to build noncombustible units is not something that everybody has. And so we've been trying to address that with our Department of Buildings and our fire department looking at can we actually do sprinkler systems in the units and actually many manufacturers have that capability. So right now, actually, we're in the process of deciding what the actual specifications in relationship to fire safety in our performance spec will be, but I would say that there are a lot of tricky things like that.

Male Voice: One of the things that we discovered with the Alternative Housing Pilot Program was as long as you stay within the boundaries, it's just an engineering problem. If you said I want to build to 900-mile an hour wind speeds, then it stops being an engineering problem and it starts becoming space rocket science or something like that.

And in the quantities we're talking about, all of these folks can pretty much get what we ask for. If you go to Ford and want to buy one Taurus, you're going to get a Taurus. If

you want to buy a Taurus with fins like the 1959 Cadillac and you're willing to buy 40,000 Tauruses, you're going to get fins like the 1959 Cadillac. You see, so the market has a lot of control, and the Alternative Housing Pilot Program is designed to best the IRC. They have more wind resistance, just a number of additional performance elements.

We're working with FEMA now to maybe craft a body of specifications, not code, that would raise the bar, that would cross multiple flavors of units so we could thus say it doesn't matter whether you get a small unit or a medium-sized unit or a big unit, you're going to get a unit that protects your family at the same level and performs the same way.

And the manufacturers have frequently been -- they're willing to engage in those discussions as long as the quantities are high or high enough. When you're building one of them, it doesn't work. But when you're building hundreds or thousands, it becomes pretty much -- it becomes a fairly straightforward process. I don't want to diminish the fact that the manufacturers have this angst about us changing the way they're doing business, but at sufficient quantities, they'll deliver just about whatever we ask for as long as we don't get --

Male Voice: Unreasonable.

Male Voice: Unreasonable I guess is a good -- crazy may be a better term.

Patrick Kraich: We have time for one last question.

Female Voice: Just curious about the homes that you're -- the prototypes that you're looking at. When I was out in the field after Hurricane Katrina, there were several families that had very large families and we had to put some of the families into trailers. So are you looking at some prototypes that can accommodate large families?

Patrick Kraich: Do you want to start first?

Cynthia Barton: Sure. For New York City, we are, and part of our specification is one bedroom units scaling up to three-bedroom units and then -- so three-bedroom is our biggest unit. And then since these are really multifamily, multi-storey units, it could be effectively -- there's some flexibility there as far as what you could even open up for connecting these units or having people sort of on the same hallway, next door to each other.

Joel Pirrone: Part of the issue may have been is that the footprint of the person's place where they're going into, we had to meet the floodplain requirements, we had to meet the size lot they had and so we could put two travel trailers in there versus one manufactured home which had a nice three-bedroom.

One of the things that we've been looking at with the alternative housing is buildings that have configurable designs so if you need one bedroom, you can get a one-bedroom there. If

you need two bedrooms, as Cynthia mentioned, you put two units together and you can shift them around to meet the footprint of that private site if you're going to a private site. That was - - usually most of the problems we ran into was either floodplain or footprint that we were forced to go into. That's what kind of hampered us in terms of putting a large family into two smaller units.

Typically, we have a policy that we put folks into an appropriate size unit. Obviously, the household may have just chosen to stay at home and have two smaller units than going across town to a group site with a larger unit. So they make that decision themselves; we give them the option. These are the two options. Obviously, when a disaster occurs, there are always these circumstances that you run into that prescribe how you execute it and that fix it.

Karen Kubey: Yeah. So I think it's something that makes this such an interesting field is that takes something like what you're talking about where really the nuclear family is not what we're looking at always in housing and sustainability issues, and cost issues and speed issues and just makes them much more urgent so that we can think about all those things all at once and then think about how they can actually permeate out into issues beyond just post-disaster situations.

Patrick Kraich: So with that, we'll wrap up our program.
I'd like to thank everyone for coming, and let's have a round of
applause for our speakers.

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